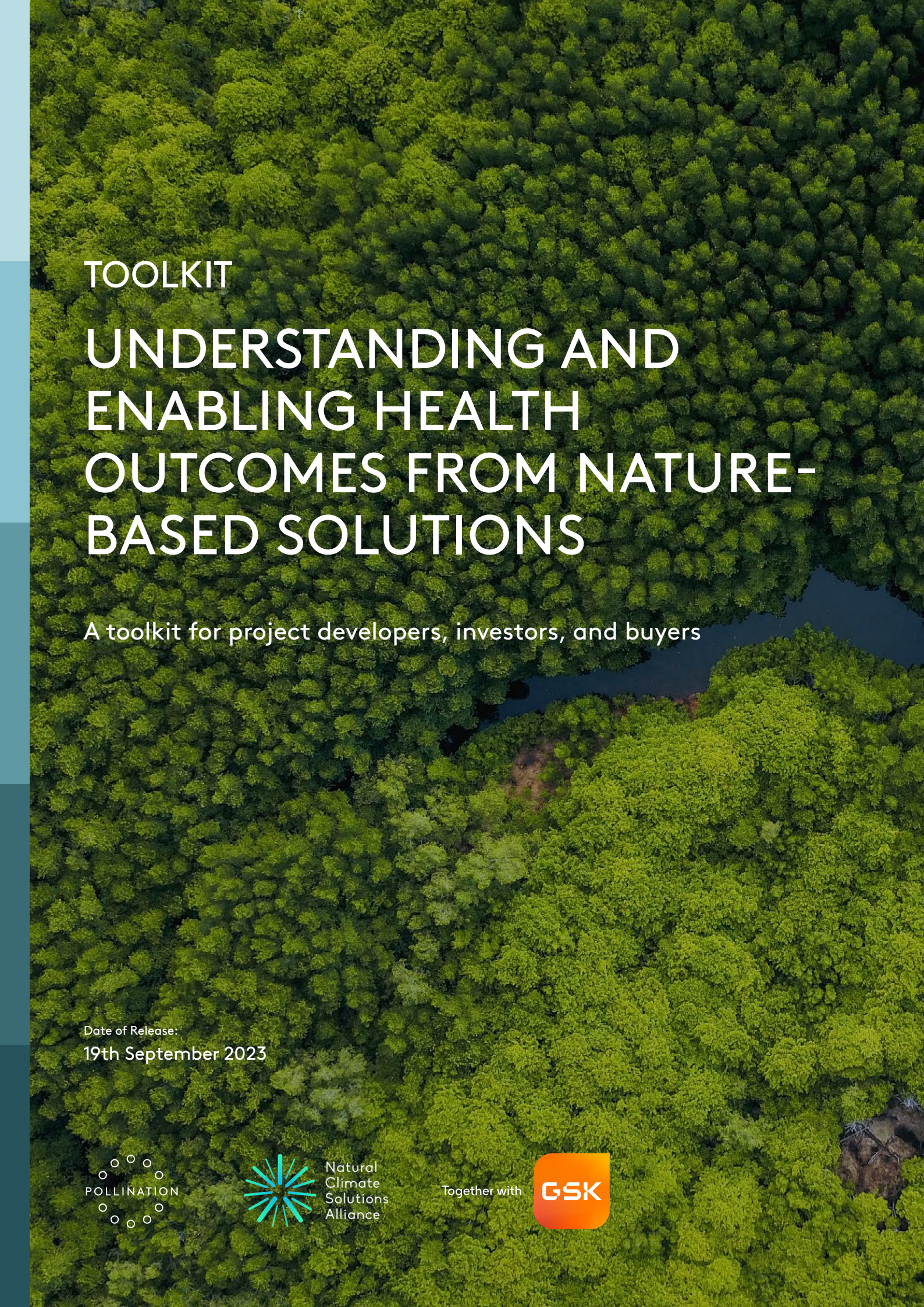


TOOLKIT

UNDERSTANDING AND ENABLING HEALTH OUTCOMES FROM NATURE-BASED SOLUTIONS

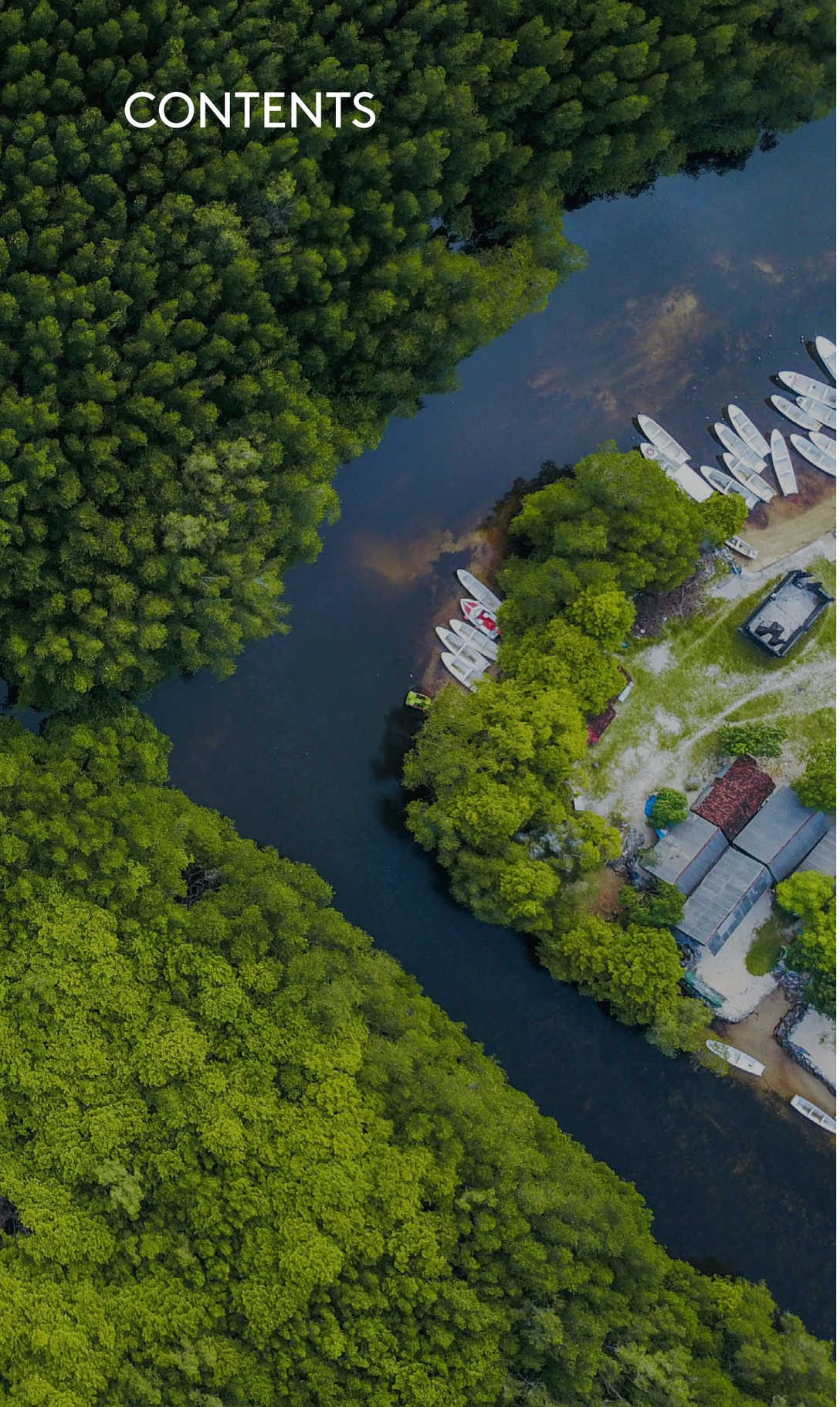
A toolkit for project developers, investors, and buyers

Date of Release:
19th September 2023

POLLINATION

Natural Climate Solutions Alliance

Together with GSK



CONTENTS

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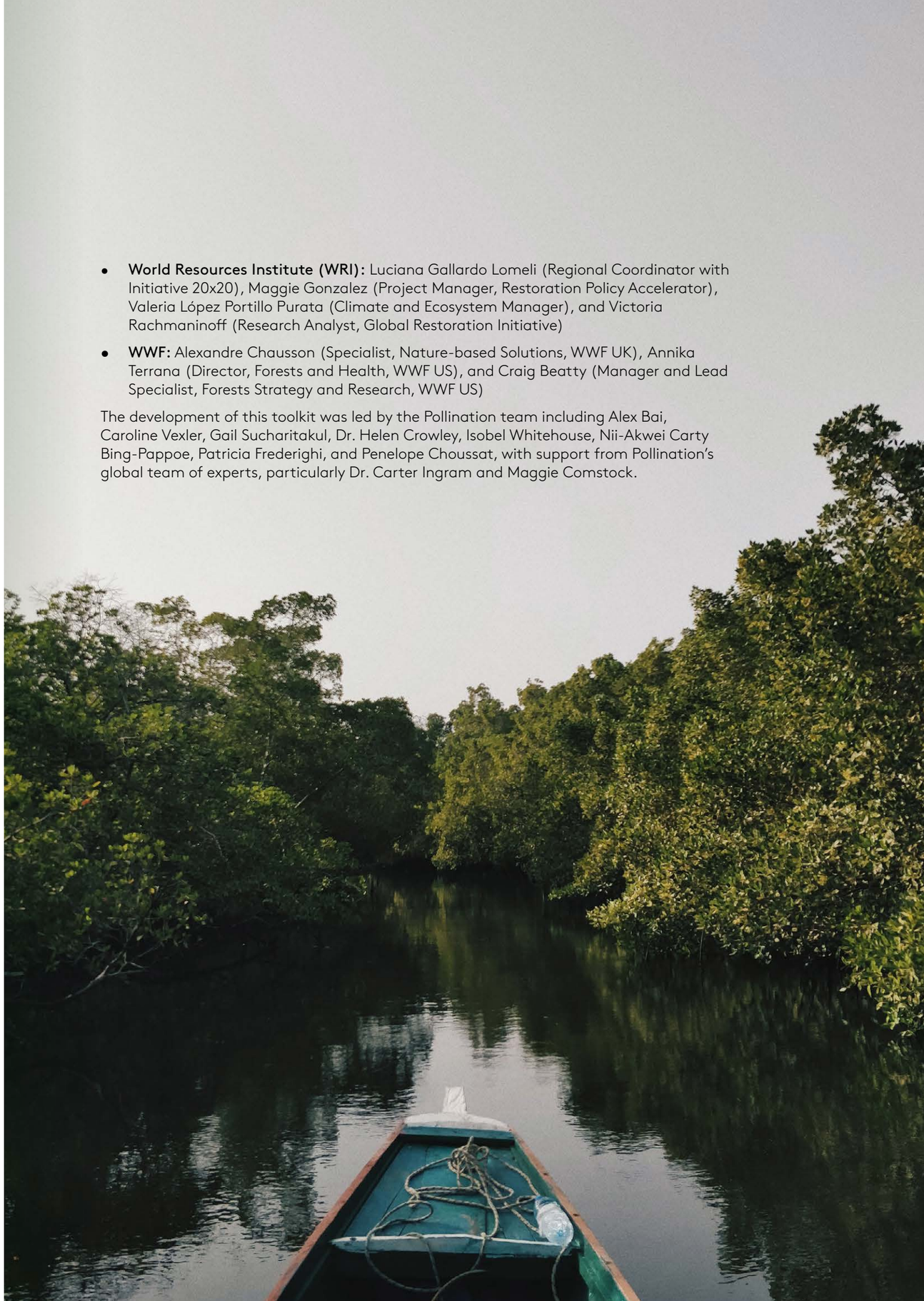


KEY TAKEAWAYS

1. Nature-based Solutions (NbS) should contribute to addressing climate and other societal challenges, while delivering both biodiversity and human well-being benefits.[a]

Projects and activities that do not deliver both biodiversity and human well-being benefits should not be considered high-integrity NbS projects or activities. For example, planting non-native tree species without considering the wider biodiversity and social impacts would not be considered a high-integrity NbS activity.

2. Indigenous Peoples' (IPs) health is a key determinant of planetary health.[b] IPs should thus be included as key NbS project stakeholders and be involved throughout the project development process.

As stewards of biodiversity, IPs play a fundamental role in safeguarding our planet's health, and thus, human health (both at the local and global levels). IPs' and local communities' health needs and priorities will differ based on the local context, therefore IPs' and local communities' (LCs) engagement should be an integral part of NbS project development to ensure it delivers both social and biodiversity benefits.

3. Local health considerations can be included from the very start of a project, and can also be integrated into existing projects.

The toolkit provides tools for project developers to embed local health considerations at different stages of project development.

4. This toolkit brings together existing tools and guidance with the aim of making the toolkit as practical and robust as possible.

All the tools and processes included in the toolkit are pre-existing and can be immediately used by project stakeholders aiming to embed health considerations throughout the different phases of the NbS project development process.

5. Embedding health considerations into NbS projects can contribute to improving project quality and integrity.

Embedding those considerations to enhance the health of IPs and LCs could lead to those groups ensuring the success of the project in the long-term, and therefore lead to long-term sustainability, permanence, and overall project quality and integrity.

6. Ultimately, the aim is for the toolkit to be used on the ground.

This toolkit provides practical guidance on how health considerations can be integrated into NbS projects, however the truth lies in what works or doesn't work on the ground and in the context of the project and/or activity.

[a] IUCN (2020) Global Standard for Nature-based Solutions
[b] Redvers et al. (2023) Indigenous determinants of health: a unified call for progress

DISCLAIMER

These tools are intended to only provide inspiration and illustrative examples for project stakeholders and rightsholders, they are not intended to be used in the format that is provided in this toolkit.

Stakeholders and rightsholders may adapt these tools as they deem appropriate to the context of their projects and stakeholders, acknowledging that health-related considerations are context-dependent and may be sensitive.

Also note that the examples provided in this toolkit are not exhaustive lists of best practices in any form, but provide only illustrative examples of different tools in the market at this point in time.

This document is intended solely for informational purposes and does not constitute a financial promotion or provide investment advice, recommendations, advice or endorsements of any kind. The content presented here is general in nature and should not be considered as tailored advice for any individual or entity in any manner.

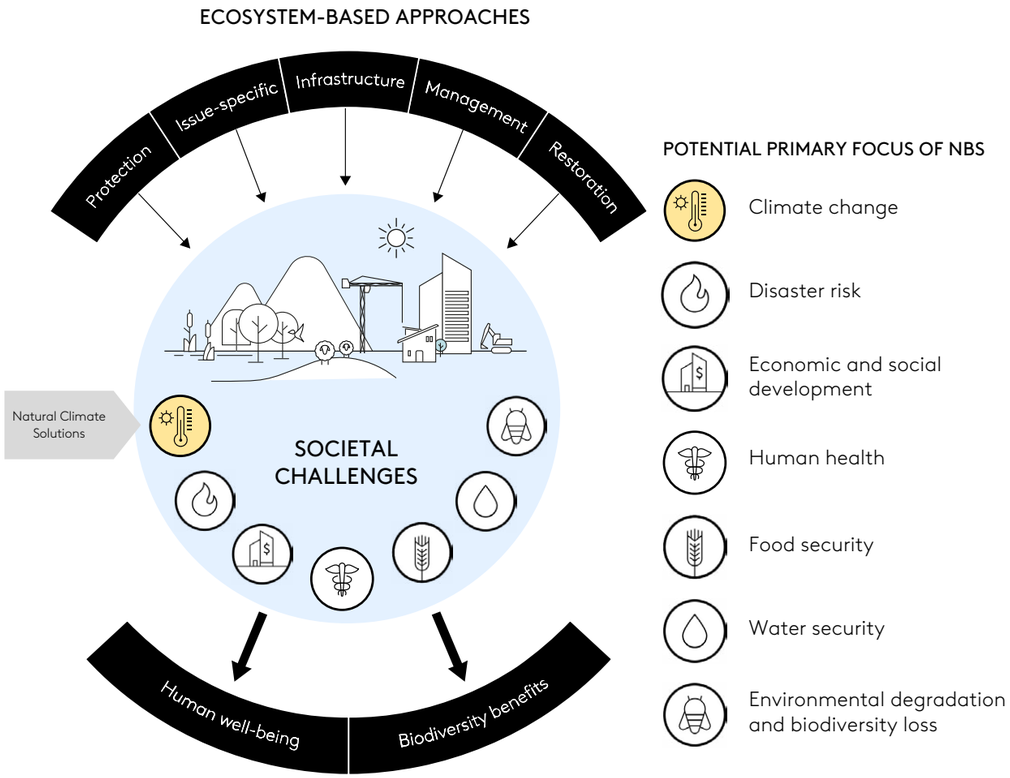
The information contained in this document has been compiled from various sources, but no representation and/or guarantee is made regarding its accuracy, completeness, or timeliness in any manner. Any decisions made based on the information provided in this document are solely at the reader's responsibility, discretio,n and risk.

KEY TERMS AND CONCEPTS USED IN THE TOOLKIT

Nature-based Solutions (NbS): "*Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits*" (IUCN 2020[1]). Successful NbS should deliver multiple benefits, enabling synergies and minimising trade-offs in achieving different global development objectives as set out in the Sustainable Development Goals (SDGs). As illustrated in Figure 1, NbS aim to address societal challenges (including climate change mitigation and adaptation, natural disasters, health, food, and water security), while contributing to human well-being and biodiversity.

Natural Climate Solutions (NCS): Type of NbS designed to address climate change[i].

Figure 1: A visual representation of NbS and NCS, adapted from the IUCN



Nature's Contributions to People (NCP): *"All the contributions, both positive and negative, of living nature (i.e., all organisms, ecosystems, and their associated ecological and evolutionary processes) to people's quality of life. Beneficial contributions include e.g., food provision, water purification, flood control, and artistic inspiration, whereas detrimental contributions include e.g., disease transmission and predation that damages people or their assets. NCP may be perceived as benefits or detriments depending on the cultural, temporal, or spatial context."* (IPBES)[2]

Human health, or 'health': A state of well-being for individuals and their communities, which encompasses physical, mental, behavioural, cultural, and spiritual health.[ii]

Global health: Health (as defined above) of all people worldwide. Global health focuses on improving health and achieving health equity globally, which means, "*working towards the absence of avoidable, unfair, or remediable differences among groups of people. [It aims to address the] many health issues and concerns that transcend national boundaries and that require collaboration between countries to address them*" (UKHSA, 2018).[3]

Local health: Health (as defined above) of people living in specific delimited areas. In the case of this toolkit, local health refers to the health considerations and outcomes achieved by the people who live and/or work in the NbS project area, or in close proximity to the NbS project area.

Health considerations: In the context of this toolkit, they are defined as the aspects of the health needs and priorities of Indigenous Peoples and local communities that are considered when designing and implementing projects and activities.

Health outcomes: In the context of this toolkit, they are defined as the result of projects that embed health considerations of Indigenous Peoples and local communities into project design. Health outcomes can be categorised in two key categories:

- **Potential health benefits:** positive health outcomes
- **Potential health risks:** detrimental health outcomes

Indigenous Peoples (IPs): *"Inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic, and political characteristics that are distinct from those of the dominant societies in which they live. Despite their cultural differences, Indigenous Peoples from around the world share common problems related to the protection of their rights as distinct peoples"* (UN DESA).[4]

Local communities (LCs): "*Non-indigenous communities with historical linkages to places and livelihoods characterized by long-term relationships with the natural environment, often over generations*" (IPBES).[5]

Culturally sensitive communication: Throughout the toolkit, there are references to "*sensitive and appropriate*" communication or "*culturally sensitive and appropriate*" communication, that is equal to culturally sensitive communication. For the purposes of this toolkit, culturally sensitive communication is defined as *"effective verbal and nonverbal interactions between individuals or groups, with a mutual understanding and respect of each other's values, beliefs, preferences and culture, to promote equity in healthcare with the goal of providing culturally sensitive care."* (Brooks et. al.)[6]

Local (human) health is referred to as 'health' throughout this toolkit.

[i] Adapted from UNEP's definition
[ii] This definition is aligned with One Health principles.

EXECUTIVE SUMMARY

Nature is fundamental to health. There is growing scientific evidence, adding to millennia of traditional knowledge, highlighting that nature provides essential material, psychological, and regulating contributions to health. The loss and degradation of nature and the services it provides impose, among many challenges, significant impacts on health at both local and global scales. The health implications of nature loss and degradation are not equitably distributed and are often more pronounced for vulnerable groups, particularly Indigenous Peoples and local communities (IPs and LCs) living closest to and depending the most on nature. IPs, who are stewards of at least 80% of the world's remaining biodiversity and over half of the world's remaining primary forests, are thus fundamental to safeguarding health.[iii] However, understanding the importance of the links between thriving nature and thriving health is not as widely considered as it should be in structuring the rationale and the actions for protecting, restoring, and regenerating biodiversity and the services that nature provides.

Nature-based Solutions (NbS)[iv] present powerful opportunities to tackle the challenges of biodiversity loss and climate change alongside creating resilient livelihoods and enhanced health for IPs and LCs. NbS projects can be key to enhancing health. They can do this in two main ways:

- Through protecting and restoring ecosystem functionality and therefore supporting the flow of fundamental benefits that can generate potential health benefits or mitigate potential health risks; and
- Through the design and implementation of the projects that consider and respond to health needs and priorities of IPs and LCs.

There is an imperative to integrate health considerations into NbS project design and implementation. Projects can be co-designed with IPs and LCs and other key stakeholders, and can target specific priority health considerations. However, local health considerations and outcomes are extremely context-dependent, therefore it is critical to understand the links between nature and health in the local context, and to identify potential trade-offs and unintended consequences that may arise. The extent to which projects integrate actions to enhance health outcomes depends on a range of factors including NbS project type, location and surrounding landscape, local socioeconomic context, local sociopolitical context, and different climate and nature future scenarios. Ultimately, the success of NbS projects will depend on the engagement, support, and contribution of IPs and LCs who may also be, in fact, the project developers.

Within the broad range of NbS projects and activities, Natural Climate Solutions (NCS) focus on delivering quantifiable climate mitigation outcomes along with multiple co-benefits and can be an important mechanism for the delivery of improved health outcomes. In particular, NCS projects can help deliver outcomes through the design of benefit-sharing mechanisms that are supported by revenues from the sale of high-integrity carbon credits. In turn, including IPs and LCs as partners in the project, and integrating their health needs and considerations to the project design, can help support the robustness and permanence of NCS projects and activities.

As investments in NCS grow, developers, investors, and buyers of carbon credits should all be able to engage in driving an increasing breadth and depth of positive health outcomes. Interest in NbS, and particularly NCS, has grown significantly over the past several years for both the carbon credits they generate as well as a suite of co-benefits for biodiversity and livelihoods. To better enable these projects to deliver health outcomes as these investments grow, project developers can embed local health considerations across the project development process. Investors and buyers can play a pivotal role in creating demand signals for the projects that do this integration appropriately.

The toolkit was created to: catalyse awareness of the critical links between health and nature; to provide science-based and evidence-based guidance on project design and implementation for enhanced health benefits; and to mobilise a group of leaders that can drive support for best-in-class NCS projects that incorporate health considerations. This first iteration of the toolkit was designed with expert input from academics, health practitioners, and representatives from across the spectrum of NCS, including developers of, and investors in, projects and initiatives, as well as buyers of carbon credits. This toolkit includes guidance ('tools') for:

- **Project developers** to enable the integration of local health considerations in key activities throughout the NCS project lifecycle. Tools and resources include evidence-based mapping of the links between nature and health, identification of potential health benefits and risks associated with mangroves and forests, tools and checklists for each NCS project activity (e.g., stakeholder engagement) and a compendium of case studies to draw from.
- **Investors and carbon credits buyers** to enable the integration of local health considerations into their due diligence processes. The tools and resources include key due diligence criteria as well as a sample due diligence questionnaire to help select projects that embed local health considerations.

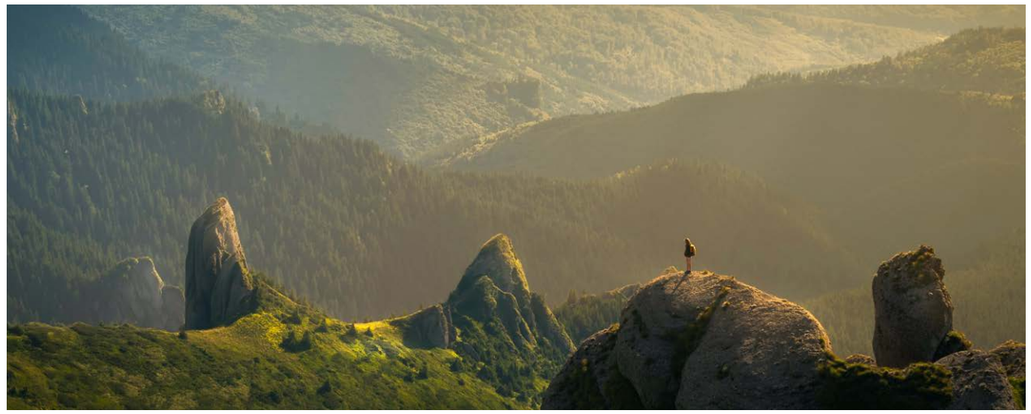
The ambition is that over the coming year the toolkit will be refined through field-based testing and ongoing expert review, with a particular emphasis on the perspectives of IPs and LCs. In this way, the toolkit will become increasingly pragmatic, robust, and relevant for those interested in supporting the restoration, regeneration, and protection of nature hand in hand with tangible benefits for the livelihoods and health of IPs and LCs.

Ultimately, the toolkit should be viewed not as a prescriptive 'how to' approach, but rather a resource and guide that can be appropriate across many types of NbS projects and initiatives. The success of the toolkit will be judged not only by how often it is used but also in the increased awareness of the necessary care and consideration that is needed to underpin robust, high-integrity NbS projects and initiatives to deliver measurable benefits for the health and well-being of IPs and LCs. Readers and users of this toolkit are invited to provide feedback through this link, which will be reviewed and incorporated as appropriate to the next iteration of the toolkit.

[iii] Redvers et al. (2023) Indigenous determinants of health: a unified call for progress

[iv] As defined in the Guidance for using the IUCN Global Standard for Nature-based Solutions. (2020) A user-friendly framework for the verification, design, and scaling up of Nature-based Solutions. First edition. Gland, Switzerland: IUCN.

OVERVIEW OF THE TOOLS IN THIS TOOLKIT



This toolkit is composed of three core sections:

Section 1

Overview of the links between nature and health: An overview of the current evidence on the links between mangroves and forest ecosystems, and health outcomes, underlining the importance of functional ecosystems and other elements of nature to both local and global health.

Section 2

NCS project developers' resources and tools: An outline of the NCS project development process along with tools and resources to potentially help identify both where and how project developers can integrate local health considerations and priorities into project design and implementation.

Section 3

Investors' and buyers' resources and tools: Outlines potential considerations and opportunities for NCS project investors and carbon credit buyers to drive enhanced health outcomes from their investments.

The appendix includes further details on key processes, concepts and terms, and the references for this toolkit.

To help navigate the resources in the toolkit, please see the opposite page for an overview with links. The 'tools' aim to be practical and to enable project stakeholders to integrate local health considerations of IPs and LCs into NCS projects. Many of the tools will also be relevant and applicable to NbS activities more broadly and offer insights into the links between health and nature.

TOOL	HOW TO USE THE TOOL	
Evidence mapping of the links between nature and health for two ecosystems: • Mangroves • Forests	This non-exhaustive list can help project developers understand the different ways in which mangrove and terrestrial forest ecosystems can support beneficial health outcomes or pose potential health risks to IPs and LCs. This can inform project design and implementation so that health benefits are enhanced, and any potential health risks are mitigated.	
Decision tree to consider contextual factors and enhance health outcomes in new and existing projects	This decision tree can help project developers identify the key contextual factors for embedding health outcomes when working on new or existing projects.	
Checklists for each project development activity supporting health outcomes: • Stakeholder identification • Stakeholder engagement • Baseline establishment • Project co-design • Governance structures • Benefit-sharing mechanisms • MRV • Communicating outcomes	These checklists are indicative of the different ways to embed health considerations at each step of project development. These checklists can be used by project developers to assess whether their current project embeds health considerations. These checklists can also be used for developers of new projects, as a way to ensure that they are embedding health needs and priorities from the start of the project.	
TeRRIFICA's stakeholder identification process	This five-step process can help project developers identify potential health-related considerations during the stakeholder identification step of project development.	
UNICEF's Minimum Quality Standards and Indicators for Community Engagement (UNICEF Standards)	This set of six standards can help project developers define a minimum threshold and prescribes a broader set of activities than noted in this toolkit for participative, inclusive, and beneficial community engagement.	
Long-list of Health Considerations	This tool helps project developers evaluate IPs' and LCs' perceived physiological and psychological health and well-being based on the concept of Health-Related Quality of Life.	
Example of Health-Related Quality of Life Questionnaire	This is an illustrative HRQOL questionnaire that project developers can adapt and update with the help of local health experts to assess the perceived health and well-being	
SBIA and problem flow diagram	This assessment framework can be used by project developers to ensure that project developers and project stakeholders are aligned on focal issues and the various factors that cause those focal issues. Solutions can be developed from this common understanding.	
Plan-Do-Study-Act problem solving tool for adaptive management	This problem-solving tool, also called a Rapid Cycle Improvement or Plan-Do-Check-Act, can help project developers ensure health outcomes are considered in the adaptive management of projects.	
Decision tree to identify when a robust due diligence is needed	This tool indicates potential due diligence requirements for investors and buyers to consider when looking to invest in or procure carbon credits from projects enhancing health outcomes.	
Due diligence criteria, questions, and example answers	This indicative questionnaire can be used by investors and buyers as a set of due diligence questions to indicatively screen projects for their local health considerations and potential health outcomes.	

Project developers

Investors and buyers

Objectives of this toolkit

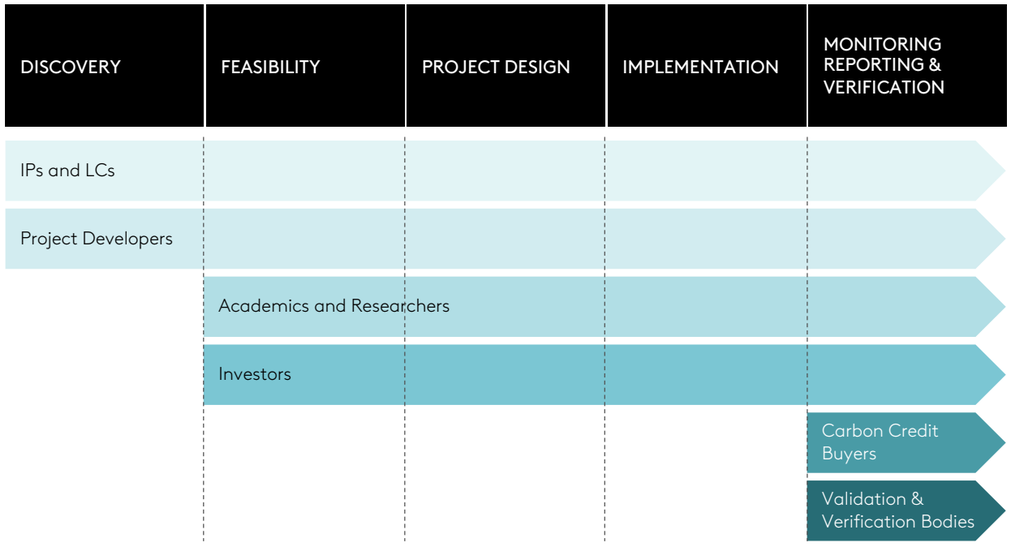
This toolkit aims to provide investors, buyers, and project developers with practical, accessible, and actionable guidance to enhance the positive impact of NbS, and more specifically of NCS projects, on human health. There is a growing wealth of academic research and evidence on the links between nature and health, and increasingly NbS projects are embedding health and other community and local stakeholder priorities as core objectives. However, there is a dearth of practical guidance explicitly focused on how to enhance health outcomes in project design, implementation, and monitoring.

This toolkit is based on a review of current academic research, existing NbS project-based evidence, best practices from the NbS project development space and the health sector. It aims to provide tangible tools that, in turn, can create new opportunities for health in NbS investments and projects.

This initial version of the toolkit has been designed to build knowledge and catalyse support primarily from project developers, carbon credit buyers, and investors. While these are not the only stakeholders and rightsholders (hereafter known only as 'stakeholders') integral to the success of the projects and their outcomes, they can drive and support appropriate project design and activities. The different project stakeholders are highlighted in Figure 2.

Figure 2: Overview of some of the key stakeholders involved in the NCS project development process, key points of the project development process they get involved in (and from there continue to stay involved in).

NB This is not a comprehensive view of all possible stakeholders involved in the project development process, and many of these stakeholders will be involved in multiple phases of the process.



This toolkit aims to provide investors, buyers, and project developers with practical, accessible, and actionable guidance to enhance the positive impact of NbS, and more specifically of NCS projects.

IPs and LCs: Instrumental in all stages of the project, and therefore engaged from the outset and throughout the project's lifetime. IPs and LCs can communicate their health needs and priorities, co-design, and co-implement projects to align with their local health needs and priorities. Note that IPs & LCs can also be project developers and can be the key interlocutors in providing input and tracking of local health needs, priorities, and outcomes.

Project Developers: Accountable for overall project development, in addition to the incorporation and accommodation of all stakeholder objectives. Priorities include embedding local health considerations, co-designing equitable benefit-sharing mechanisms, and supporting project permanence.

Academics and Researchers: Leverage best available evidence and conduct new research to guide and advise project development. Project stakeholders should use best academic practices to achieve relevant and tailored health benefits.

Investors: Selectively invest in projects that integrate health considerations, and can act as strategic partners to project developers, by providing the project financing and potentially additional resources. They can be consulted throughout project development and the project's foundations can incorporate their support and priorities.

Carbon Credit Buyers: Ppurchase the carbon credits that have been verified by Validation and Verifying Bodies (see below). They incorporate health considerations in due diligence processes for high-integrity credits.

Validation & Verification Bodies: Qualified, independent third-party auditors who are approved by standards (e.g., Verra). Validation and Verifying Bodies (VVBs) are experts in sectoral scope and technical areas of carbon sequestration and health improvements. During validation, a VVB determines whether a project meets all rules and requirements from the chosen standard.

Governments: Engage all stakeholders and support projects through the provision of legal structures and coherence on national ambition and frameworks.

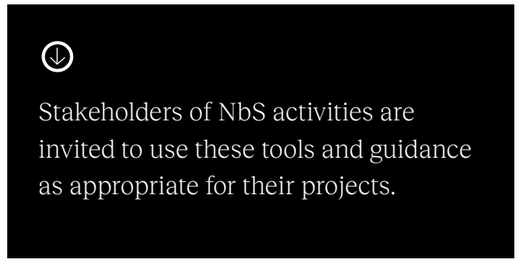
Scope of the toolkit

a. Type of projects and activities this toolkit focuses on

This toolkit is focused on high-integrity NCS projects and activities that protect and restore functional ecosystems. This refers to projects that are designed to deliver quantifiable climate mitigation as one of its key objectives, and that address other societal challenges (including human health), to provide both human well-being and biodiversity benefit.[v] Although this version of the toolkit is designed for NCS projects and activities primarily,[vi] many of the tools and approaches are relevant and applicable to NbS activities more broadly. Stakeholders of NbS activities are invited to use these tools and guidance as appropriate for their projects.

NCS projects can vary by the level of ecosystem functioning they protect and/or restore, which can determine that ecosystem's ability to support health benefits and mitigate potential health risks. NCS projects that protect and/or restore ecosystems[vii] to high functionality have significant potential to deliver health benefits and mitigate some potential health risks. For example, successful REDD+ activities in primary forests can deliver multiple health benefits through water filtration, climate regulation, and provision of nutrition and natural medicines (see evidence mapping for **forests** and **mangroves** for more examples of potential health benefits and risks from ecosystems). Other types of NCS projects may not prioritise restoring the full functionality of an ecosystem, but may still be able to support climate, biodiversity, and health outcomes. For example, agroforestry projects that harbour native nuts and medicinal tree species will sequester carbon and can contribute to enhancing biodiversity and livelihoods of IPs and LCs. In addition to supporting these potential ecosystem benefits, NCS also play a role in the mitigation of the potential health risks from ecosystem degradation. For example, degraded mangrove forests can provide breeding grounds through still waters for mosquitoes that may carry malaria, however, the restoration of these degraded mangroves can increase the population of natural mosquito predators, therefore controlling the population of mosquitoes, and subsequently reducing the potential malaria risk.

NCS projects and activities may deliver health outcomes in two main ways. These are, (i) through the protection and restoration of ecosystems that may generate a suite of health benefits and reduce potential health risks, and (ii) through the design and implementation of the NCS project in ways that prioritise health needs and priorities of the communities throughout a project's lifetime. For (i), projects can be designed in a way that enhances beneficial contributions from nature and mitigates potential health risks from natural ecosystems. For (ii) project developers can conduct health-specific activities that are designed to be a co-benefit of the project. In addition, the design of benefit-sharing mechanisms that enable a just distribution of the financial flows from the sale of carbon credits to IPs and LCs and that contribute to additional income from employment can also lead to positive health outcomes.[7]



[v] As per the IUCN's NbS definition: "Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" (2020)
[vi] Given the number of companies setting SBTi targets and committing to net zero, as well as the increase in demand for nature-based carbon credits, this first version of the toolkit focuses on NCS projects.
[vii] Examples of the different NCS project types can be found in Table 12, and examples of NCS accreditations can be found in Tables 13 and 14 in the appendix.

b. Type of health outcomes this toolkit focuses on

This toolkit focuses on health outcomes rather than global health outcomes given that local health outcomes are enabled at the project- and activities-scale. Local health outcomes refer to those health outcomes achieved by the IPs and LCs who live and/or work in, or in close proximity to the NbS project. Restoring and protecting nature can have global health impacts, however it is difficult to define the attribution and causality from NbS projects at a global scale. Therefore, throughout this toolkit, 'health' is used to refer to local health as the primary focus.

Given the importance of ensuring local health outcomes, the focus of this toolkit is on the NCS project- and activities-level. However, this toolkit acknowledges that NCS projects are defined by a smaller geographical area in comparison to some NCS programmes (that are jurisdictional and can be national or sub-national scales). Where applicable, the tools and considerations in this toolkit can also be extended to NCS programmes, activities, and interventions more broadly.

c. Type of ecosystems this toolkit focuses on

This first version of the toolkit focuses on two core ecosystems: mangroves and terrestrial forests[viii].

Investments in mangrove NCS projects are likely to scale significantly, therefore there is an opportunity to pursue additional environmental and socioeconomic outcomes. Mangrove NCS projects are relatively new in comparison to other NCS project types: Verra[ix] registered its first blue carbon mangrove project in Colombia in 2021.[8] Despite being relatively new, there is significant interest in mangrove investments. There are two key categories of mangrove NCS project types: reduction projects and removal projects (also considered as protection projects and restoration projects respectively). Removal projects include reforestation, whereas reduction projects include mangrove forest conservation. Specifically for NCS projects, there are different carbon methodologies between VVBs, including those from Verra, Gold Standard, Plan Vivo, and Social Carbon, that can be applied to mangrove ecosystems (see Table 13 in Appendix).

As the largest share of NCS investments, forest NCS projects have the potential to create significant impacts across climate, nature, and health. In 2021, investments in forest NCS projects were estimated to have reached more than USD$850m globally, which represented 58% of global NCS investments.[9] The different types of forest NCS projects include forest protection/ REDD+; Improved Forest Management (IFM), Agricultural Land Management (ALM); and Afforestation, Reforestation and Revegetation (ARR). Investments to date have predominantly been concentrated in REDD+ activities, which account for ~75% of carbon credits sold in the NbS segment of the voluntary carbon market (VCM).[10] To accommodate these different project types, there are carbon accounting and crediting methodologies that can be applied to forest ecosystems (outlined in Table 14 in the Appendix). Therefore, by embedding IPs' and LCs' health considerations, those investments could have additional positive outcomes (without necessarily increasing the financial investment into projects) while improving the project's integrity.

Future iterations of the toolkit may expand to other ecosystem types.

[viii] In this toolkit "forests" refer to "terrestrial forests."
[ix] Verra is a standard-setting organisation that was founded in 2007. Verra manage the Verified Carbon Standard (VCS) programme, as well as others including the Climate, Community, and Biodiversity Standards. More information on Verra can be found here.

Context for this toolkit

Nature is indispensable to human health.[x] Nature is the air we breathe, the water we drink, the soil we rely on to grow our food, and the ocean that covers most of the Earth – all fundamental to human health.[xi] The tangible benefits nature provides for global health include, but are not limited to, critical climate regulation that the entire global community depends on, and innovation in medicine where an estimated 50% of all medicine today is inspired by and/or derived from nature.[11] From a local health perspective, benefits include, but are not limited to, access to natural medicine, which an estimated four billion people depend on in their local environment,[12] and the cultural and spiritual value that nature provides.

Nature loss is therefore a human health challenge. The world is currently experiencing a period of unprecedented nature and biodiversity loss, driven primarily by land-use change, pollution, climate change, invasive species, and overexploitation of natural resources. There has been an estimated 69% decline in the relative abundance of monitored wildlife populations around the world between 1970 and 2018.[13] As ecosystem functions[xii] decline and are less able to provide critical ecosystem services,[xiii] the vital role that nature plays in supporting human health is increasingly at risk. In addition to these risks from nature loss, climate change can further exacerbate human health risks. Therefore the role of nature, particularly in providing climate adaptation and resilience, is becoming increasingly important.

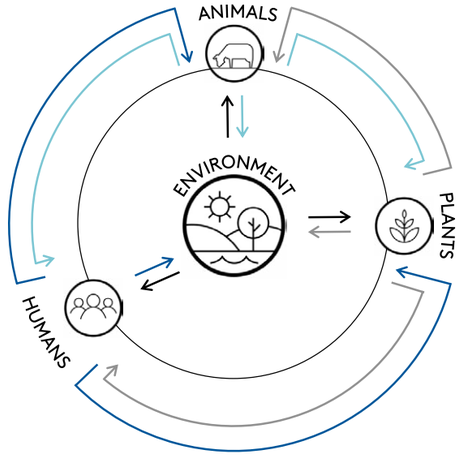
The impacts of nature loss are not evenly distributed. The health implications of nature loss and degradation can be more pronounced for vulnerable groups including women, children, ethnic minorities, and those with low income, and are particularly acute for rural communities and those depending directly on the services nature provides.[14] Addressing nature loss and operating within the safe and just earth system boundaries (which are built on the concept of planetary boundaries)[xiv] is therefore critical to supporting local, global, and equitable health outcomes.

As stewards of at least 80% of the world's remaining biodiversity, IPs play a fundamental role in tackling nature loss and safeguarding planetary health.[15] IPs have long understood the strong connection between their health and that of Mother Earth.[16] Their "systems of being, including thoughts, behaviours and lifeways" are thus meant to sustain the natural ecosystems they live in.[17] Therefore, "the well-being of Indigenous Peoples is an explicit determinant of planetary health."[18] Supporting IPs' health and adopting a holistic approach to human and planetary health is key to resolving the nature, climate, and health crises. A similar holistic approach to health, called 'One Health' articulates the ways in which "the health of humans, domestic and wild animals, plants and the wider environment (including ecosystems) are closely linked and interdependent."[19] NbS provide a critical opportunity to place IPs and LCs at the heart of addressing all the components of One Health concurrently.

Planetary Health: A solutions-oriented, transdisciplinary field and social movement focused on analysing and addressing the impacts of human disruptions to Earth's natural systems on human health and all life on Earth.[xv]

[x] When this toolkit refers to 'health', it refers to local human health and well-being.
[xi] TNFD identifies four realms of nature: land, oceans, freshwater and atmosphere (TNFD's definitions of nature).
[xii] Ecosystem function is the "capacity of natural processes and components to provide goods and services that satisfy human needs directly or indirectly" (de Groot et al., 2002), and examples of ecosystem functions include material cycling and energy flow.
[xiii] Ecosystem services are "the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fibre; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling," (MEA, 2005).
[xiv] The safe and just boundaries for the Earth system build on eight of the planetary boundaries to quantify their justice implications. Safe boundaries ensure stable and resilient conditions on Earth, and just boundaries minimise human exposure to significant harm. (Stockholm Resilience Center)
[xv] Lancet Commission on Planetary Health.

Figure 3: One Health approach, diagram adapted from the World Organisation for Animal Health.



One Health approach integrates the health considerations of humans, animals, and the environment. Each element's health can influence the health of the others.

NbS are increasingly recognised as critical opportunities for the world's transition to living within planetary boundaries. NbS projects are based on harnessing the efficiency of natural systems and processes, and are designed to deliver multiple different environmental and socioeconomic outcomes simultaneously. For example, regenerative agriculture projects can increase biodiversity and in the long term improve soil health and water retention, which also can support food stability and security.

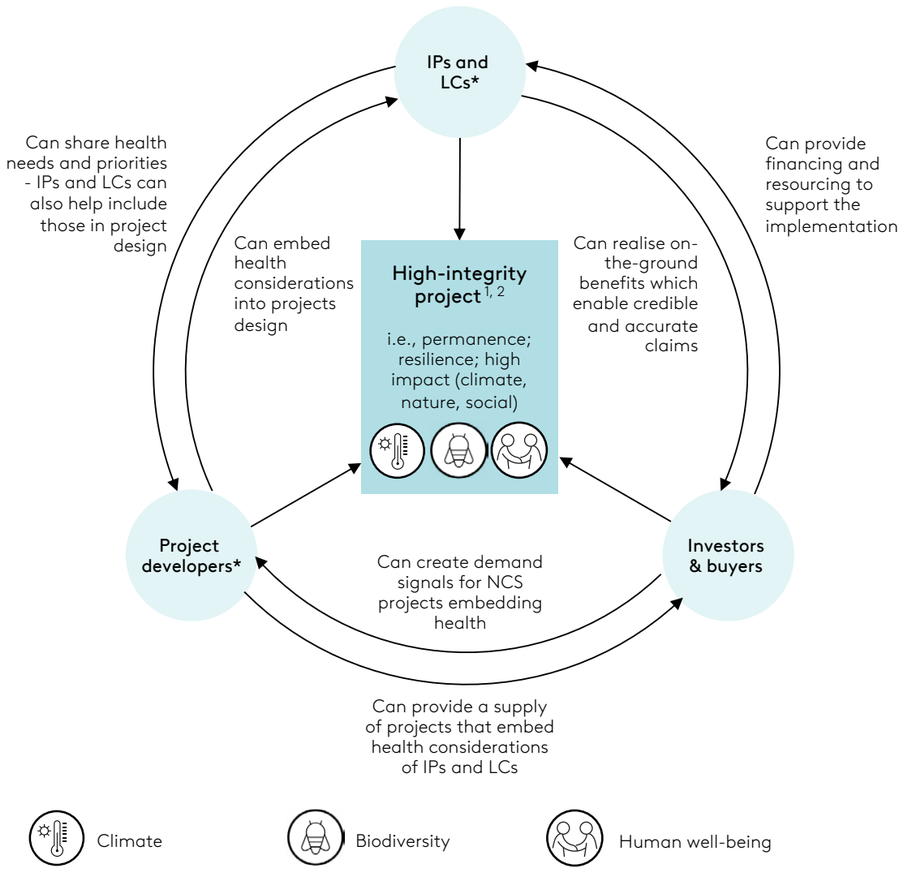
Growing attention on climate action has accelerated investment into NCS. Over the last two decades there has been an increasing focus on investments in, and developments of, NCS projects. Those projects can be financed through the compliance market, non-market mechanisms (e.g. domestic policy reform), and the VCM, where the value of which nearly quadrupled in 2021 largely owing to NbS and rising prices.[20] This is based, in significant part, on the increasing value of carbon credits for neutralising a company's residual emissions or to contribute to its beyond climate and value chain mitigation action.[21]

The implementation of NCS projects can have direct and indirect effects on IPs and LCs depending on resources from nature and the global community depending on well-functioning ecosystems. The health and social outcomes are variable across geographies, stakeholders, and project types; however, outcomes are consistently long-lasting. Therefore, ensuring meaningful community participation and ethical conduct, the construction of an informed design, and the fair delivery of the three aspects of equity (recognition, procedure, and distribution) are essential to ensuring that long-term health and social outcomes are positive.[22]

The key actors driving the VCM, and therefore, the successful development of NCS projects, are the investors, buyers, project developers, IPs and LCs, and other local stakeholders. While the investors and buyers, who have also been seen as the 'offtakers', drive the demand side of the VCM, the project developers tend to drive the supply side of the VCM. However, ultimately the success of the NCS projects will depend on the local stakeholders, i.e., IPs and LCs, who contribute to, and benefit from, the project outcomes. The importance of IPs and LCs to the project process is increasingly being recognised, but the role of NCS projects in supporting different types of health outcomes has not yet been addressed widely.

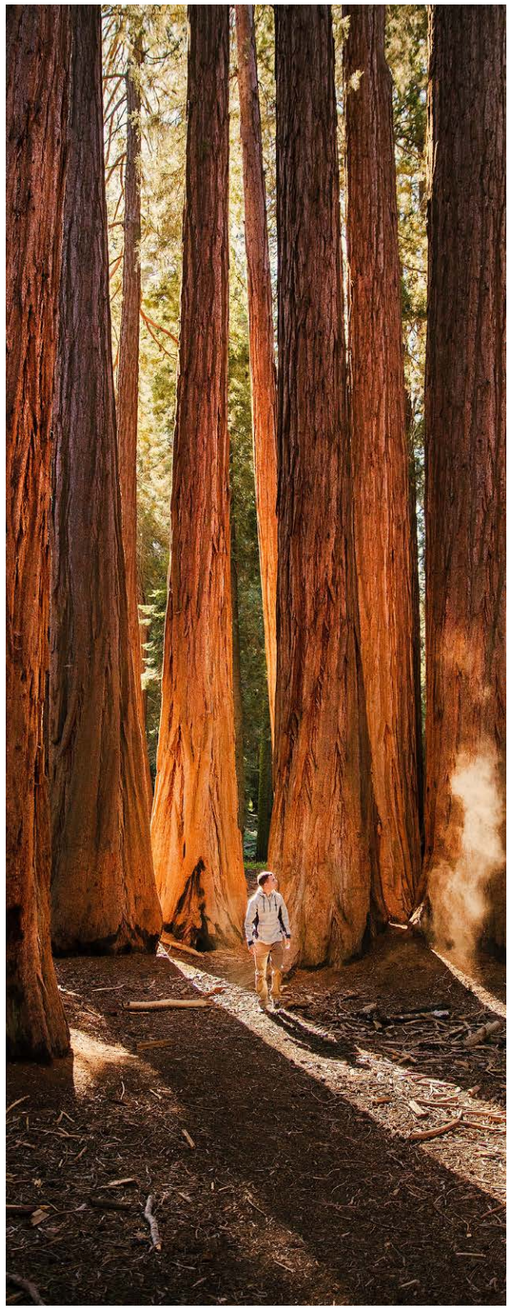
The lack of emphasis on health outcomes in NCS projects is thus a missed opportunity for all project stakeholders. Robust NCS projects contributing to enhancing and/or restoring the health and resilience of ecosystems and the services they provide can, as illustrated in One Health, improve people's health. As a result, embedding health and well-being considerations of the IPs and LCs living in and close to projects can unlock positive feedback cycles (see Figure 4), whereby project developers, IPs and LCs, and investors and buyers contribute to a successful, high-integrity project. This positive feedback cycle is further accelerated by the higher price that carbon credit buyers might be willing to pay for credits from a project a project with co-benefits.[23]

Figure 4: The opportunity from embedding IPs' and LCs' health needs and priorities in NCS projects for IPs and LCs, project developers, and investors and buyers.



* Note, IPs and LCs can also be the project developer, so these two categories of actors are not always distinct.
1. The principles for high-integrity of carbon projects were adapted from the ICVCM.
2. Examples of high-integrity NbS projects should follow the IUCN Global Standard for NbS.

With increasing investments in NCS, there is an opportunity to also increase the breadth and depth of positive outcomes for health (and broader social and livelihood benefits aligned with the SDGs) in addition to those for climate and nature. This will require targeted efforts to identify, design, and implement projects that enhance health outcomes and to ensure that health, nature, and climate are addressed concurrently. However, it is also important to recognise that there may be trade-offs across ecosystem services delivered by an NCS project, meaning that it may not always be possible to optimise for all outcomes. NCS investments tend to focus on contributing to 'SDG 13: Climate Action' and there is an opportunity for those projects to also contribute to 'SDG 3: Good Health and Well-being'. Some NCS standards (see Table 5) and projects have already started including health as an area of focus. Embedding health considerations in NCS projects could deliver benefits such as access to clean water and nutritious food, which are underlying factors that can reduce mortality rates. For example, in Indonesia's Gunung Palung National Park, a health care-conservation exchange intervention was designed whereby clinic discounts of up to 70% were provided in exchange for measurable reductions in illegal logging.[24] Furthermore, in the State of Pará, Brazil, projects have invested in community-designed solutions that have enabled routine health expeditions and COVID-19 vaccinations.[25]



1. OVERVIEW OF THE LINKS BETWEEN NATURE AND HEALTH

This section of the toolkit provides an overview of the technical evidence mapping of the relationships between nature and human health, specifically for mangroves and forests. NbS project developers and investors can use this mapping to develop well-designed NbS projects that identify and understand the potential health benefits and risks associated with their project, the value enhancement strategies, and importantly, consider the potential risks and trade-offs.

1.1. Potential health benefits from nature

Nature (i.e., natural ecosystems and the species within them) provides numerous contributions to people. The ways in which people benefit from healthy and well-functioning ecosystems can be understood in the NCP framework. This framework builds on the concept of ecosystem services, and includes "all the contributions, both positive and negative, of living nature (i.e., all organisms, ecosystems, and their associated ecological and evolutionary processes) to people's quality of life."[26] This framing is an evolution of the Millenium Ecosystem Assessment's framing of 'ecosystem services' outlined in Figure 11 in the Appendix. NCPs are highly context-dependent, and vary across spatial, temporal, social, and cultural contexts. For example, certain NCPs, such as the growth of medicinal plants, can occur quickly, whereas others such as changes in atmospheric or oceanic chemical composition can occur over centuries. Importantly, the NCP framing highlights the role of culture in shaping people's relationship to nature and recognises the role and importance of diverse scientific disciplines and knowledge systems, including IPs' and LCs' knowledge of the interactions between nature and people.

NCPs can be categorised in three key contribution types: [27]

- **Material contributions:** Physical products, substances, and objects from nature that can be used to sustain human physiology and infrastructure.
- **Psychological contributions:** Intangible, non-material contributions and impacts on human psychology.
- **Regulating contributions:** Biophysical structures and ecosystem processes that create impacts on the environmental conditions that humans experience. These can also impact the generation of material and psychological contributions.

The following examples of material, psychological, and regulating NCPs focus on forests and mangrove ecosystems. These examples also focus on nature's contributions to local health, even though this toolkit recognises that there are broader regional and global health outcomes that can be linked to those ecosystems.

Material benefits: Communities proximate to nature are often heavily reliant on natural resources for food, nutrition, medicine, and other products to sustain livelihoods and health. For example:

- **Food and nutrition:** Well-functioning ecosystems are often critical sources of food and nutrition for IPs and LCs.[28] Mangroves, as nurseries and retention grounds for fish larvae and juvenile fish ecosystems, are fundamental to the productivity of many fisheries.[29] In the Mekong Delta, Vietnam, studies have found that mangroves can increase shrimp aquaculture productivity by as much as 50%.[30] Similarly, fruits, leaves and sap can be harvested from many tree species in forests, some of which contain key vitamins and minerals. For example, leaves from baobab trees, which are found in many African countries and Australia are very high in calcium, protein, and iron. [31]
- **Medicine:** In both forests and mangroves, plant and tree species can have a range of medicinal properties which have long been used by IPs and LCs in traditional disease management.[32] For example, for mangroves, *Sonneratia caseolaris* bark tissue is a source of bioactive compounds with antimicrobial properties, and polyisoprenoids from *Nypa fructicans* have high anticancer activity.[33] In North American forests, the bark of *Taxus brevifolia* contains paclitaxel, a bioactive compound that is considered to be one of the best natural anticancer agents.[34]
- **Non-food products:** Wood from mangrove and forests can be an important source of fuel, supporting both nutrition (e.g., through the ability to cook food) and hygiene (e.g., boiling water to prevent waterborne diseases). Studies have found that globally 10% of people use wood fuel to boil and sterilise water.[35] The sale of wood or other non-food products can also generate an income for IPs and LCs, who can use it to access medical products or services, and better control life circumstances.[36]

Psychological benefits: While the physical health benefits that natural spaces offer are well documented, the mental well-being benefits from access to healthy ecosystems can sometimes be overlooked. Natural ecosystems can play a crucial role for the mental and spiritual health of IPs and LCs, enabling social health, identity, and well-being. Forests can have strong cultural and/or spiritual significance for individuals and communities living in or nearby and the health of those forests can help protect those communities' well-being, identity and kinship.[37] Moreover, community access to forests has been found to enhance social interactions and cohesion, and to improve social health through the ability to form interpersonal relationships with others.[38] NCS project implementation can also improve social cohesion by promoting collaboration. Several studies have also found that being in a forest and/or viewing forest scenes can contribute to reducing stress and promoting more positive moods and feelings, which improves overall mental health. [39]

Regulating benefits: Nature plays a significant role in climate resilience and adaptation, which is becoming increasingly important as climate change can increase the frequency and severity of extreme weather events and chronic climate risks. It is estimated that climate change could cause around 250,000 additional deaths per year between 2030-2050.[40] However, nature conservation and restoration can provide solutions to increase resilience against these impacts. For example, while the severity of hurricanes and cyclones can increase with climate change,[41] mangroves can act as bio-buffers to reduce wave action from the resulting sea surges. Studies have found that mangroves forests expanding over 100m could reduce wave height by up to almost 70%.[42] Furthermore, to address increasing temperatures and heat-related mortality and morbidity, forests can also regulate microclimates as trees reduce heat locally through evapotranspiration.[43] Natural ecosystems can also contribute to climate resilience through more

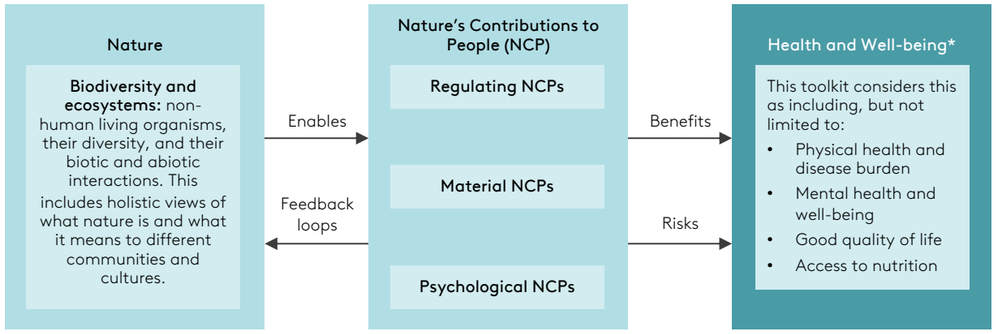
specific channels, for example through planting fire-tolerant species of trees, forests can reduce the intensity and risks of wildfires.[44] In addition, forests can filter and regulate the flow of water by intercepting and absorbing rainfall,[45] which reduces the risk of flooding during high precipitation.

Regulating benefits: In addition to climate resilience, nature also supports local health by maintaining ecosystem processes which are key to preventing disease spread, mediating pollution, and providing access to clean water. Mangrove ecosystems play a key role in natural disease control. For example, healthy mangrove ecosystems provide natural biological controls for mosquitoes, which can reduce the prevalence of mosquito-related illnesses such as malaria and dengue fever.[46] Mangroves also support bioremediation, where they have been observed as effective pollutant attenuators for trace metals (however, they have been found as less effective attenuators for hydrocarbon pollutants).[47] Mangrove and forest ecosystems also support water purification and water cycle regulation processes, which are important for access to clean water and water security, and in turn, health. For example, forests have been found to influence atmospheric water cycles and rainfall, which can provide water security to local communities, and also support the provision of water to communities that live further away from forest ecosystems.[48]

1.2. Potential health risks from nature, trade-offs, and synergies to consider

Although mangrove and forest ecosystems are critical to health, exposure to these natural ecosystems can also pose potential health risks that need to be managed and mitigated. Potential health risks that are naturally associated with the ecosystems include risks of pathogen transmission, wild animal attacks, and exposure to potentially toxic products. Forest ecosystems host many animals that can harm or kill people. For example, in India, conflicts between humans and elephants cause the death of ~400 people and ~100 elephants each year.[49] Furthermore, natural ecosystems can also have many non-edible plants and resources that can be toxic for humans. Degraded ecosystems can pose an additional set of risks. For example, degraded mangrove ecosystems can provide habitats to mosquito larvae, which can create risks of malaria for mangrove restoration projects.[50] These interactions are outlined in Figure 5.

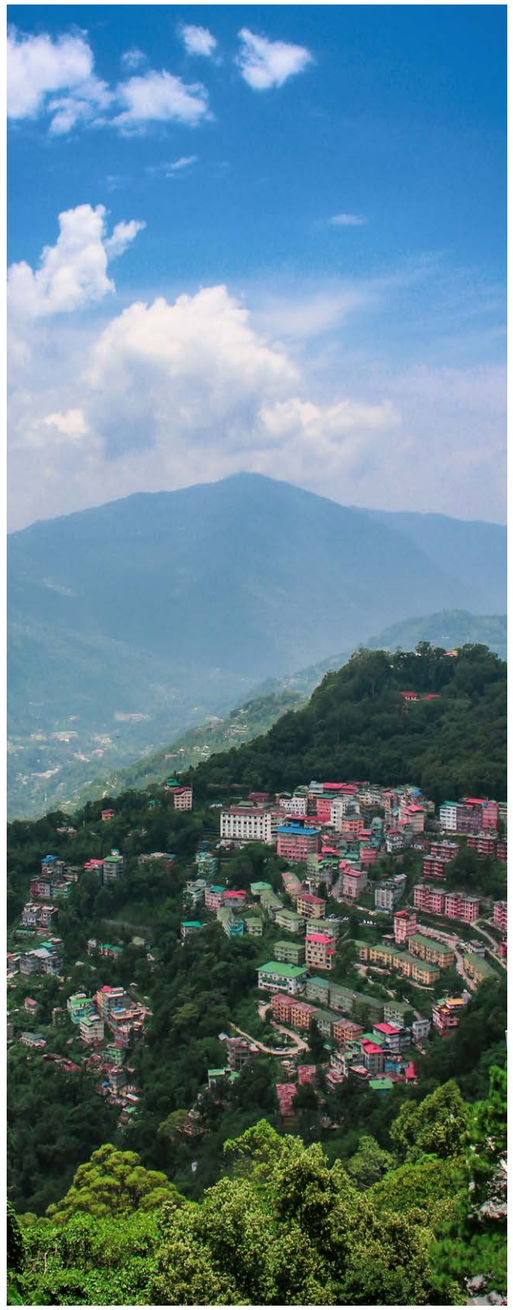
Figure 5: An overview of the links between nature, NCPs, and health.



*Different visions of health and well-being are highly diverse and dependent on cultural roots and geographical application. This toolkit encompasses a broad definition of health to be as inclusive as possible to diverse definitions.

NCS projects can deliver health outcomes through enhancing potential health benefits and mitigating potential health risks from NCPs, whether they be in a process of restoration, semi-intact, or intact. To address the health needs and priorities shared by IPs and LCs, project developers can identify the relevant beneficial NCPs and design and implement projects in a way that enhances these. For example, if heat stroke has been identified as a key local health priority, then projects can plant tree species with high shade coverage in strategic locations to provide IPs and LCs with more shade. Furthermore, when designing projects, project developers should understand the potential risks that the project could create. For example, a restoration project, which requires increased exposure of humans to the forest, could lead to an increased risk of zoonotic disease transmission. This exposure may be a necessary risk to delivering health benefits.

In addition to considering trade-offs and risks, it is important to look at synergies between nature and health for the success of all types of NbS projects. NbS project developers and practitioners can try to find synergies among people's health, nature, and climate outcomes throughout project design. For example, a REDD+ activity can lead to positive outcomes for health, such as the preservation of certain medicinal plants that IPs



and LCs need to treat specific health conditions; for nature, such as the protection of a diversity of plant and wildlife species; and for climate, through carbon storage. Well-designed NbS projects can leverage opportunities and synergies to enhance and/or support local health needs and priorities, while mitigating potential risks and assessing potential trade-offs.

1.3. Variables and considerations to enable health outcomes from NbS projects

All NbS projects are unique and highly dependent on contextual factors, therefore it is critical to consider these factors when embedding health considerations in project design and implementation. It is key to scrutinise the health evidence base[xvi] within the local context, and to understand where potential trade-offs and unintended consequences may arise. Contextual factors include (i) project location, (ii) local socioeconomic context, (iii) local sociopolitical context, (iv) climate and nature future scenarios, and (v) NbS project type as shown in Table 1. NbS project stakeholders should carefully consider these factors to design projects that appropriately prioritise health, while preventing unintended consequences to the extent possible.

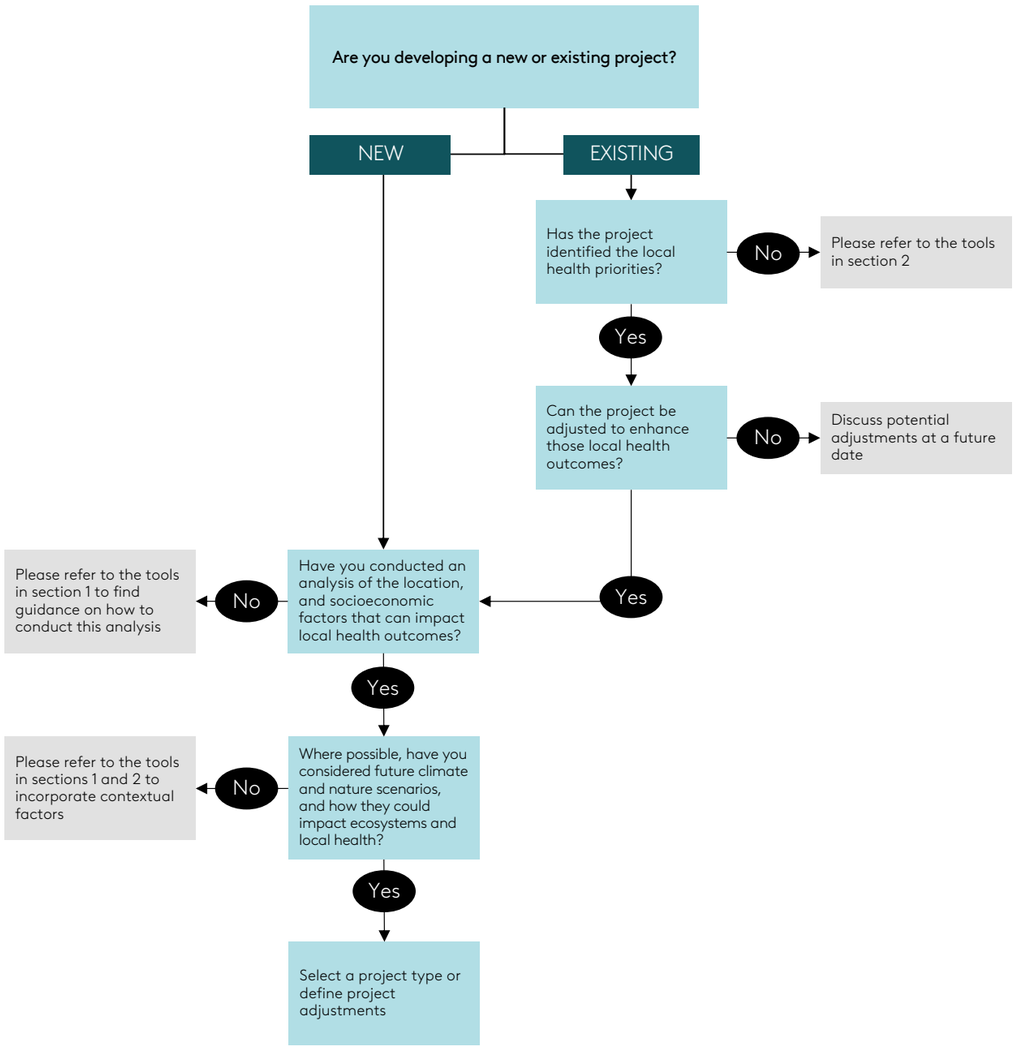
[xvi] The evidence base should include diverse knowledge types, including local and traditional knowledge.

Table 1: An overview of different contextual factors that can impact health-related NCPs.

CONTEXTUAL FACTOR	DEFINITION	EXAMPLES OF VARIABLES THAT CAN IMPACT HEALTH-RELATED NCPS	ILLUSTRATIVE EXAMPLES IN MANGROVE OR FOREST ECOSYSTEMS
Location	The location of the ecosystem can determine whether NCPs deliver beneficial contributions or potential risks.	• Proximity to other ecosystems • Proximity to other infrastructure • Proximity to communities and people • Ecological conditions • Endemic species • Invasive species	While in many contexts mangroves provide beneficial water quality regulation, mangroves in close proximity to pollution and oil spills can result in bioaccumulation of pollution, which can spread contamination onto humans.
Socioeconomic factors (current and future)	NbS projects can impact different people and parts of society in unequal ways.	• Gender • Income and employment structure • Wealth and equity • Education • Age	Benefits may be distributed to one group of stakeholders at the expense of another group. For example, a study in Ghana cited health experts' observations that fishermen (who gained more income from fisheries which benefited from mangrove restoration) engaging in transactional intercourse with younger women (who were not financially empowered), which at times resulted in unwanted teenage pregnancies.[51]
Sociopolitical factors (current and future)	NbS projects can reveal issues related to rights, ownership, and conflicts.	• Land tenure • Governmental enforcement or lack of governmental enforcement of rights • Formal conflict mediation mechanisms • Land management	Governmental and legal institutions may not recognise customary systems and rights. For example, colonial institutions clashed with customary land tenure systems in a reserve in Uganda. The top-down management of the project implementation led to IPs and LCs losing their lands and livelihoods because the customary land tenure system was not recognised.[52]
Futures	Over time the changing physical conditions (e.g., due to climate change and nature loss) can affect how ecosystems deliver NCPs.	• Climate change scenarios • Nature scenarios	The intensity of global warming could enhance the importance of forest NCPs (e.g., in a 3°C warming climate scenario, microclimate regulation from forests will be increasingly important),[53] and conversely, in more extreme climate scenarios, forests may also pose higher risks to health due to increased likelihood of wildfires in certain contexts.
NbS project type	Different NbS projects can enable different NCPs and local health outcomes.	• Project activities • Project employment • Level of human exposure required • Choice of species	Many regulating NCPs (e.g., water filtration) are delivered by high-functioning primary forests, so REDD+ could be more likely to deliver these outcomes rather than an ARR project. ARR projects could result in increased human exposure, for example; mangrove reforestation projects may require humans to be more embedded in the ecosystem, which could initially increase exposure to pathogens, such as malaria.

New and existing projects can take different elements into account when embedding health considerations into project design. New projects provide an opportunity to embed health considerations from the outset, whereas existing projects that have not been designed to embed health from the start may face some limitations when trying to enhance local health outcomes. Figure 6 provides a decision framework to assess how new and existing projects can embed local health.

Figure 6: Decision tree for project developers to embed health considerations in new and existing projects.



1.4. Mangroves

1.4.1. Ecosystem overview and its role in delivering climate, environmental, and socioeconomic outcomes

Mangroves are critical coastal ecosystems that provide a range of important benefits. Mangroves are salt-tolerant trees which thrive in intertidal zones (areas that are below water at high tide, and above water at low tide). Mangrove ecosystems (also known as mangrove forests or mangals) are tropical and subtropical ecosystems that are found globally. In 2020, there were more than 145,000km^2 mangrove coverage globally, of which Asia had the highest concentration (nearly 40% of all mangroves).[54] Mangrove forests are pivotal ecosystems that provide a range of significant benefits, for example, they provide coastal climate resilience through acting as a buffer to erosion and wave action from hazards such as storm surges; they support food production and local biodiversity – which is particularly important to juvenile fish and other species; and they have high carbon sequestration potential and can play a key role in climate change mitigation. Their role in delivering these benefits make mangroves an important ecosystem for conservation and restoration efforts.

Despite the evident importance of mangrove ecosystems, they are increasingly under threat from multiple drivers. By the end of the 1990s global mangrove cover had decreased by 35%, and a further 2.1% decrease has been observed between 2000-2016.[55] This is due to multiple drivers of mangrove loss, including agricultural land conversion, aquaculture, pollution, coastal development, and climate change causing local and regional extinctions.[56] The Atlantic and Pacific coasts of Central America are particularly at risk, where 40% of species found in the Pacific coasts of Colombia, Costa Rica, and Panama are listed in one of the International Union for Conservation of Nature (IUCN) Red List threatened categories (critically endangered, endangered, or vulnerable).[57] Mangrove losses threaten key ecological functions for other species and benefits to people; it has been estimated that the destruction of mangroves could cost up to USD$42 billion annually in damages.[58]

Protecting and restoring mangroves is important both for reducing physical risks and mitigating climate change.[59] Mangrove forests are known as 'blue carbon ecosystems' (coastal and marine ecosystems that sequester and store carbon) that have significant potential for carbon sequestration. Like forests, mangroves sequester carbon through photosynthesis and then store carbon throughout their biomass (roots and branches). Studies have estimated that mangroves and coastal wetlands have a carbon sequestration rate that is five times greater than tropical forests.[xviii,60,61] Their increased potential for carbon sequestration (in comparison to tropical forests) is due to their high productivity as well as slow soil decomposition rates.[62] Given this potential, there is increasing interest in investing in protecting and restoring mangroves to achieve climate goals.

1.4.2. The evidence links between mangroves and health

Table 2 outlines a summary of the evidence on the links that have been identified between mangroves and health. Recurring themes identified throughout the evidence-mapping included mangroves' role as a source of antibiotics, their role in promoting fisheries' productivity, as well as reducing the impact of physical hazards (including sea surges and tsunamis).

[xviii] There is variation in different mangrove forests' carbon sequestration potential due to contextual factors.

Mangroves evidence mapping[xix]

This evidence mapping can be used as a long list of potential health benefits and risks for project stakeholders to consider.

Table 2: Summary of evidence links between mangroves and health outcomes.[xx]

MATERIAL NCPS			REGULATING NCPS			PSYCHOLOGICAL NCPS	
Availability of medicinal products	**Access to food and nutrition**	**Access to non-food forest products**	**Exposure to pathogens**	**Regulation of water cycle**	**Physical hazards resilience**	**Knowledge**	**Access to blue and green spaces**
🟢 **Antimicrobial products** can be sourced from mangroves e.g., *Sonneratia caseolaris* bark tissue[63] 🟢 **Anticancer products** can be sourced from mangroves e.g., polyisoprenoids from *N.fruticans*[64] 🟢 **Antidiabetic products** can be sourced from mangrove-associated endophytes e.g., those of the genus *Zasmidium*[65] 🟢 **Antioxidant products** can be sourced from mangrove leaves e.g., *Rhizophora mucranata*[66] 🟢 **Anti-inflammatory products** can be sourced from mangrove leaves e.g., *Acanthus ilicifolius*[67] 🔴 Species selection for medicinal properties can result in **population skews** which risks the decline of species without medicinal properties, leading to loss of ecological functioning, which can impact other NCPs[68]	🟢 **Fish supply** mangroves provide habitats for a diversity of species, particularly juveniles[69] 🟢 **Shrimp productio**n can increase by up to 30-50% when located in mangroves[70] 🟢 **Oysters** can be found in mangrove ecosystems, which is a good habitat for juvenile oysters[71] 🔴 **Contaminated fisheries and enteric pathogen exposur**e in mangroves close to polluted sites (such as *E. coli*)[72]	🟢 **Fodder for livestock** can be derived from mangrove leaves[73] 🟢 **Wood fuel for cooking and sanitatio**n increases nutrition of food and reduces pathogen exposure[74] 🟢 **Income opportunities** from the sale of mangrove products enables more income for health spending[75] 🔴 **Indoor air pollution** from firewood smoke can cause adverse health outcomes	🟢 **Malarial risk reduction** as (i) organic matter promotes the proliferation of well-nourished mosquitoes who don't tend to bite humans, (ii) healthy ecosystems have biological control organisms, (iii) the cooling effect from vegetation reduces mosquito larvae growth[76] 🔴 **Vectors for pathogens** such as mosquitoes and tsetse flies are found in mangrove ecosystems[77] 🔴 **Listeria proliferate in coastal ecosystems** such as mangroves, and can contaminate local food sources[78]	🟢 **Improved water quality** as bioaccumulation and mangrove roots help to filter out pollution[79] 🔴 **Bioaccumulated pollutants can re-enter** the food system when mangroves decay[80]	🟢 **Resilience to natural hazards**, such as tsunamis or floods, as mangroves provide a buffer for wave action[81] 🟢 **Resilience to anthropogenic-induced hazards**, e.g., increased cyclones and sea surges[82]	🟢 **Medical practices** and properties of mangroves are transferred among IPs and LCs[83,84]	🟢 **Mental health and well-being** can be improved by providing IPs and LCs with access to blue space[85] 🟢 **Increased community engagement** among IPs and LCs and through eco-tourism[86] 🟢 **Physical health** as blue space access can allow populations to spend time outdoor on water (e.g., kayaking, fishing) 🔴 **NbS project employment-related risks** can create hazards such as over-exhaustion

🟢 Potential local health benefits 🔴 Potential local health risks

[xix] Project design can enhance or mitigate the risks listed in the chart. Project design may also create new risks.
[xx] These findings have been discussed as a part of the technical expert interviews conducted as a part of the toolkit development.

Protecting and restoring mangroves is important both for reducing physical risks and mitigating climate change.

1.5. Forests

1.5.1. Ecosystem overview and its role in delivering climate, environmental, and socioeconomic outcomes

Forests are large land areas of trees that deliver critical NCPs. Forest ecosystems cover almost a third of the global land area and are home to more than 80% of tree species,[87] 80% of amphibian species, 75% of bird species, and 65% of mammalian species.[88] They deliver a range of important material, psychological and regulating benefits; including food provision from trees, plants and animals, mental health improvements from access to green space and water cycle regulation through forest plants' evapotranspiration process. Therefore, the protection and restoration of forests are key to maintaining these critical NCPs.

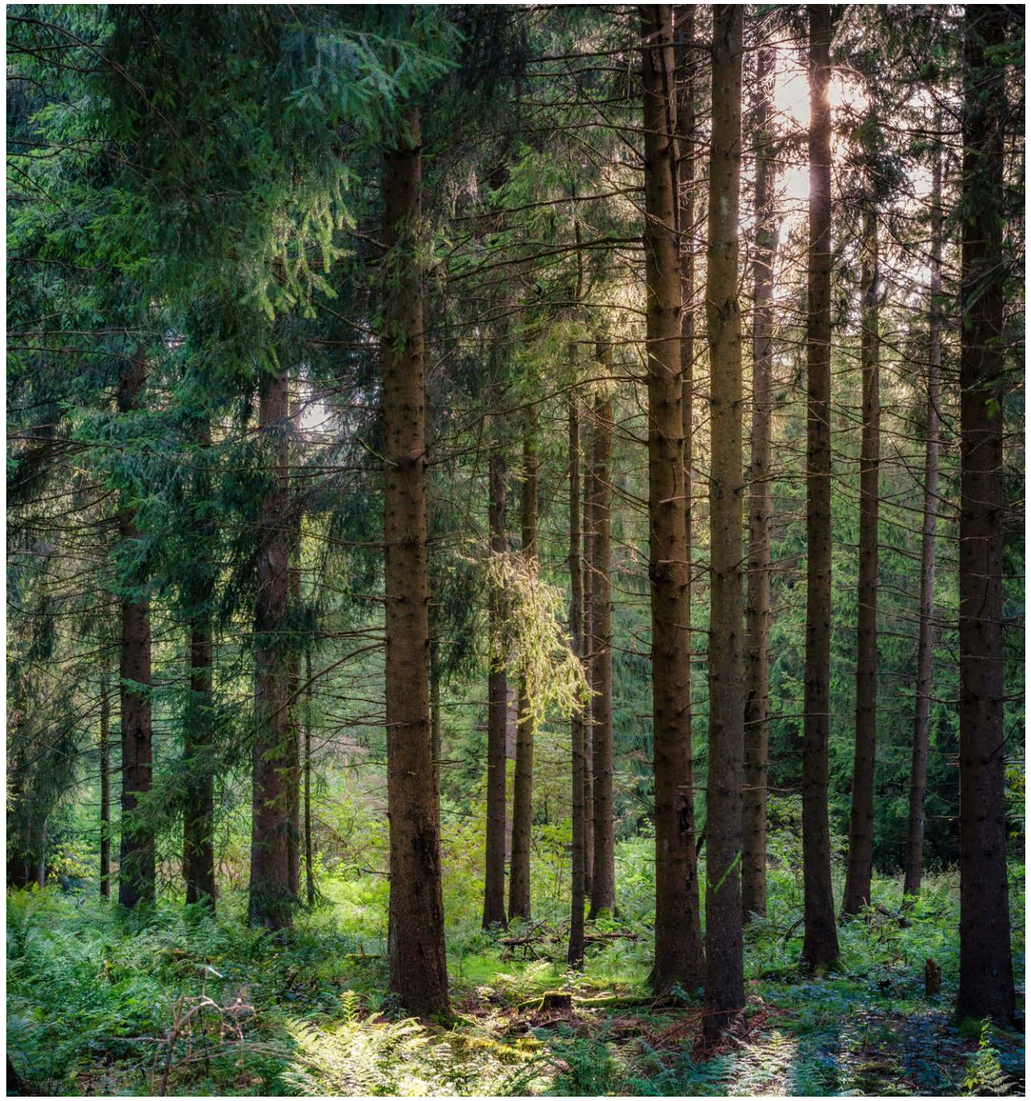
The types of NCPs that a forest can provide depends on its climatic domain, and on whether they are natural or planted forests. There are four types of forests: tropical, boreal, subtropical, and temperate, which are determined by different climates. These climatic domains can determine the forests' characteristics (i.e., what type of tree or animal species can be found) and therefore the NCPs that they can provide. For example, tropical forests experience a very wet climate, which allows for many different plants and animals to thrive, and therefore provides IPs and LCs with a great diversity of foods and medicinal plants.[89] Forests NCPs will also differ depending on whether forests are natural (i.e., naturally regenerating, such as the Amazonian tropical forest) or if they are planted (such as many South American plantation forests made of introduced tree species). Natural forests can provide specific local health NCPs that planted forests often lack, for example, natural forests hold cultural, spiritual and historical value that is crucial for IPs and LCs' sense of identity and mental health.[90] Forests in semi-arid topics provide crucial woodland vegetation and biodiversity on the rangeland, which are major livelihood sources in pastoral communities.[91]

Forests are one of the largest global carbon sinks, and therefore their protection and restoration is crucial for mitigating climate change and its impacts on health.[92] Forests store carbon in trees and soil via photosynthesis, decaying roots, and falling organic matter. The carbon sequestration potential of natural forests is found to be up to 40 times higher than that of planted forests,[93] as natural forests have developed complex stand structures and accumulated carbon belowground, characteristics that take centuries to develop.[94] However, planted forests also have an important role to play, as they could store a significant amount of anthropogenic emissions. By mitigating climate change, forests can play a role in reducing the likelihood and intensity of climate effects on health, such as air pollution, allergens, wildfires, or temperature extremes.[95]

However, deforestation continues therefore posing a threat to forests' ability to keep delivering beneficial NCPs and mitigating climate change and biodiversity loss. Deforestation is mainly driven by the demand for commercial agricultural products that require land for crops or livestock grazing.[96] As seen through the many wildfires across the globe in 2022 and 2023, another important cause of forest loss is wildfires, which have been increasing in severity and intensity over the years. Between 2003 and 2018 it was estimated that about one-third of global forests were lost due to fires.[97] Forest loss impacts health in many ways, they increase risks associated to altered ecosystems and tend to cut the access to beneficial NCPs provided by forests. Studies have found that the outbreak of vector-borne and zoonotic diseases are linked with deforestation, and reforestation can contribute to epidemics.[98] For example, a recent study showed that forest loss was associated with the spread of Ebola, a zoonotic disease, in Central and West Africa.[99]

1.5.2. The evidence links between forests and health

Table 3 provides a summary of the evidence on the links that have been identified between forests and health. Recurring themes identified throughout the evidence-mapping included forests as a source of medicinal plants and nutrition, their role in regulating the water cycle and microclimate, as well as supporting mental health and well-being (particularly for IPs who may derive a sense of identity and kinship for natural forests).



Forests evidence mapping[xxi]

This evidence mapping can be used as a long list of potential health benefits and risks for project stakeholders to consider.

Table 3: Summary of evidence links between forests and health outcomes.[xxii]

MATERIAL NCPS

Availability of medicinal

- **Antimalarial** products such as quinine and sweet wormwood extracts are sourced from forests[100]
- **Anticancer** compounds such as paclitaxel are sourced from forests[101]
- **Antimicrobials** from nuts and seeds can be found in forests[102]
- **Dermatological treatments** from topical antifungal drugs derived from forest plants[103]
- Species selection for medicinal properties can result in **population skews** which risks the decline of species without medicinal properties, leading to loss of ecological functioning, which can impact other NCPs[104]

Access to food and nutrition

- **Tree food** such as nuts, leaves, and fruits, are important for human nutrition[105]
- **Wild meat** from forests is often the main source of macronutrients for local populations[106]
- **Insects** have high nutritious value and economic value from the management of those insects[107]
- **Conflict with animals** and exposure to venomous animals in forests can injure and kill people[108]
- **Toxic fungi** from forests can be dangerous and deadly when consumed and/or touched[109]
- **Exposure to poisonous substances** can cause epidermic reactions, to death in extreme cases[110]
- **Allergen exposure** can lead to strong responses that can require rapid access to healthcare[111]

Access to non-food forest products

- **Wood fuel** for cooking and sanitation increases access to nutritious food and reduces pathogen exposure[112]
- **Income opportunities** from the sale of forests products enables more income for health spending[113]
- **Indoor pollution** from firewood smoke can cause adverse health impacts for local populations[114]
- **Nature crimes** can target forest products and animals, which can create health threats to locals[115]

REGULATING NCPS

Exposure to pathogens

- **Improved immunity** as the natural environment enriches the composition of human microbiota[116]
- **Zoonotic virus** transmission from human interactions in forests and/or consumption of wildmeat[117]
- **Waterborne pathogen** transmission as forest hydrological flow is altered[118]

Regulation of water cycle

- **Evapotrans-piration cooling effect** reduces heat locally and the related morbidity and mortality[119]
- **Flood and drought management** is facilitated by forests soil and root systems[120]
- **Increased water supply** as forest ecosystems can store water in the soil and in the plants[121]
- **Water quality and purification** is enabled by forests soils and water systems[122]
- **Hydrological regime alteration** due to certain forest type/planting can create risks for populations

Physical hazards resilience

- **Wildfire management** through promoting fire-tolerant species of vegetation[123]
- **Windstorms resilience** is enabled by forests of diverse tree heights, widths, and ages[124]
- **Landslide avoidance** from forest vegetation, which stabilises soil, and trees which provide a barrier to sliding soil, rock, or snow[125]
- **Exposure to forest fires** can cause air pollution, burns, and respiratory issues[126]
- **Exposure to windstorms** related accidents can be caused by falling trees[127]

Biodiversity

- **Infectious disease dilution** effect from the maintenance of species and genetic diversity[128]

Air quality

- **Improved air quality** from trees intercepting particulate matters and absorbing gaseous pollutants[129]
- **Reduced ambient temperature** as trees provide relief and shade, and reduce heat[130]

PSYCHOLOGICAL NCPS

Knowledge

- **Medicinal practices and knowledge** on medicinal plants contribute the health of IPs and LCs[131]

Cultural identity

- **Culture, identity and heritage** can be derived from forests by IPs and LCs[132]

Spirituality

- **Spiritual connection** to forest highly contributes to people's quality of life[133]

Access to blue and green spaces

- **Mental health and well-being** is derived from access and exposure to forests[134]
- **Physical health** as forests access is a way to spend time outdoor and do physical activity[135]
- **NbS project employment** can create hazards such as over-exhaustion[136]

Potential local health benefits

Potential local health risks

[xxi] Project design can enhance or mitigate the risks listed in the chart. Project design may also create new risks.

[xxii] These findings have been discussed as a part of the technical expert interviews conducted as a part of the toolkit development.

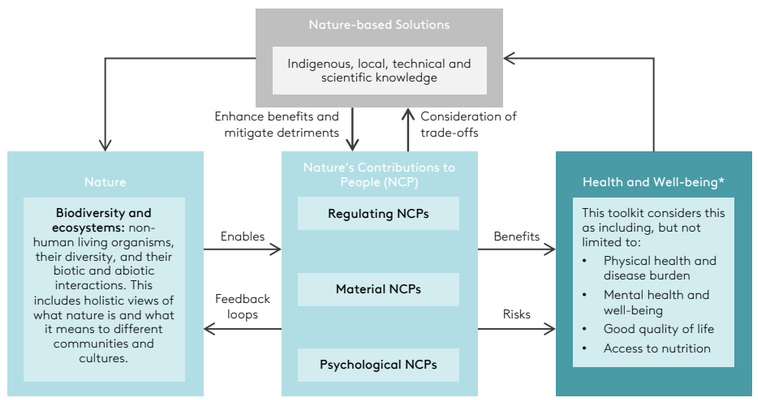
2

NCS PROJECT DEVELOPERS' TOOLS

2. NCS PROJECT DEVELOPERS' RESOURCES AND TOOLS

This section focuses on how NCS project developers can incorporate health considerations in the project development process. Key activities that are most relevant for enabling local health outcomes are outlined, with specific tools on how activities can be more focused on health outcomes. Although the focus of this section is on NCS projects, there are many elements that are applicable to the broader range of NbS projects, activities, programmes, and interventions. Case studies are included to demonstrate examples of where NCS project developers have been doing these activities.

Figure 7: Well-designed NbS projects consider both local health needs and priorities, and potential health and well-being trade-offs stemming from NCPs.[137]



*Different visions of health and well-being are highly diverse and dependent on cultural roots and geographical application. This toolkit encompasses a broad definition of health to be as inclusive as possible to diverse definitions.

2.1. Key considerations in project design and implementation

NCS projects can enhance health outcomes through the activities they support, as well as through the flow of funds from the sale of carbon credits. There are two main ways in which projects can deliver health benefits to the IPs and LCs:

- **Enhancing NCPs: Through the protection and restoration of ecosystems,** and therefore their ability to provide NCPs that flow from functional ecosystems and that can be derived from the protection and restoration of key elements (e.g., tree species) of the ecosystem. This also includes explicit focus on risk mitigation and avoiding any perverse outcomes from the project.
- **Project activities:** Including:
  - **Delivering health benefits through project finance:** as NCS projects receive finance from investors as well as revenues from carbon credits, finance can be directed at targeted local health initiatives that are designed in collaboration with local communities. These investments in health training, services, education, and facilities can be part of, or in addition to, benefit-sharing mechanisms agreements with local communities.
  - **Delivering health benefits through funding from revenue sharing:** as revenue sharing mechanisms from the sale of carbon credits are established with local communities participating in the project there can be a focus on the health needs and priorities, and interventions for and by the community in project design. Ultimately there will be decisions that the communities themselves make, but support with information and training can be provided by the project.

An important caveat is that a project can be designed with the intention of improving health outcomes, however the attribution of the health outcomes to project activities is a rigorous process that may be beyond the capability of NCS project developers. Determining the causal relationship between project activities and health outcomes requires a control group, and the ability to control various variables that go into health. That may not be possible given a project's limited resources. A project developer should ensure that if appropriate, they have an adequate budget set aside to conduct the technical processes for collecting and analysing health-related data.

The impacts of these interventions can be specific to a health priority, or broader where they support general community health. IPs and LCs engagement and involvement are critical throughout the design of these interventions to ensure that projects respond to their health needs and priorities. Table 4 provides illustrative examples of how NCS projects can influence local health outcomes.

Table 4: Illustrative examples of how projects can influence local health outcomes

	ADDRESSING SPECIFIC HEALTH NEEDS AND PRIORITIES	SUPPORTING GENERAL COMMUNITY HEALTH
Enhancing potential health benefits from NCPs	Selecting species of trees and plants with demonstrated antibiotic properties looked after by IPs and LCs	Preventing damage from sea surges and increasing climate resilience increasing mangrove coverage and buffer to wave action
Mitigating potential health risks from NCPs	In areas where there is malarial risk, providing mosquito nets and sprays	In projects that require high exposure to natural ecosystems, avoiding direct contact with certain animal species can help prevent the transmission of zoonotic diseases
Delivering health benefits through finance	Designing benefit-sharing mechanisms that target a specific health priority, e.g., financing the plantation of specific medicinal plants that are native to the project area requested by IPs and LCs	Building health infrastructure (such as health clinics and hospitals) and providing general health education

Standards and crediting organisations have started to embed health considerations, therefore creating a starting point for project developers to build on. Standards and certifications are still evolving as the VCM and other environmental markets grow, and health is one of the elements that is starting to emerge in those standards. Given this, project developers should not approach health outcomes as a completely new element to consider, but instead embed health considerations and design elements into the existing projects where possible. Table 5 provides a non-exhaustive list of the different standards and certifications that embed health outcomes, and the specific considerations and indicators that are included in them.

Table 5: Overview of how different NbS, including NCS, standards are considering health.

ORGANISATION AND STANDARD	HEALTH CONSIDERATIONS AND INDICATORS
Verra's Climate, Community, and Biodiversity Standard (CCB)	CCB 'Community' pillar embeds community well-being[xxiii] in all phases of the project: • **Without-project community scenario:** assessment of community well-being conditions and expected changes without the project. • **Community impacts over project lifetime:** aiming for net positive impact on community well-being. • **Other stakeholder impacts:** at least 'do no harm' to other stakeholders' well-being. • **Community impact monitoring:** monitoring plan to evaluate impacts on community groups, includes a phase of evaluation by the community group. Social and Biodiversity Impact Assessment (SBIA) Manual I's checklist for potential social development impact areas of REDD+ activities (also applicable to other NCS projects), includes two health-related impact areas[138] : • **'Access to Health and Sanitation'** including access to clean water and availability of sewage treatment. • **'Cultural Identity'** including respect for self-determination. SBIA Manual II also provides a range of social indicators from two institutions[139]: • **CARE Household Livelihoods Security Indicators** are closely related to health and well-being; nutrition, food, income, health. • **World Bank Core Welfare Indicators Questionnaire (CWIQ):** easy to monitor poverty indicators, three are related to health: access to and satisfaction with medical services, child nutrition(% stunted, wasted and overweight), and access (distance) to safe water sources.

Gold Standard Certified Sustainable Development Goal (SDG) 3	Gold Standard delivers SDG3 claims using a specific measurement method: • **Averted Disability-Adjusted Life Years (ADALYs):** metric used for public health reporting that quantifies the health benefits from different interventions. Gold Standard also delivers specific SDG3 target claims for cookstove projects[xxiv]: • **SDG 3.9 claims** to "substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination" can be delivered from cleaner cookstoves investments[140].
Plan Vivo Standard (PVS)	PVS requires projects to follow Environmental and Social Risk Management processes, which include health-related elements: • **Livelihood indicators:** factors relating to well-being, community cohesion, climate resilience, and other indicators. Those should follow the appropriate SDGs guidance. [141]
SOCIALCARBON Standard's	Identifies key sustainability components, which include:
SOCIALCARBON Livelihood Approach (SLA)	• **'Human' componen**t, defined as the measurable skills, knowledge, professional qualifications and health and welfare[142]. • **Health and well-being indicators** listed related to health include 'control of microorganisms', 'control of disease agents', 'community health', 'health and safety practices', 'housing conditions'.
WOCAN's W+ Standard	The standard measures six domains that are critical for women's empowerment which include: • **'Health' indicators:** improved health education, expanded access to health services and clinics, and improved staffing and supplies to existing health clinics. • **Additional measurable health improvement indicators:** infant and maternal mortality rates, rates of anaemia amongst women, vaccination rates, local disease rates (respiratory, gastrointestinal, etc.).[143]
Peoples Forests Partnership Principles	The health-related principles for working with forest communities are: [144] • **"Positive impact on livelihood and biodiversity":** aligned with UN SDGs, and includes delivering positive impacts on livelihoods, employment, food security, biodiversity protection and conservation, resilience and socioeconomic development of IPs and LCs.
Forest Carbon Partnership Facility – FCPF's **World Bank's Environmental and Social Standards**	FCPF follows the World Bank's Environmental and Social Standards requirements: [145] • **ESS4 "Community Health and Safety":** seven requirements for project activities, including (a) identification of projects' impacts on ecosystem services and how they may result in adverse health and safety risks for local communities, and (b) community exposure to health issues, requiring project developers to avoid or minimise the potential exposure of IPs and LCs to water-related and vector-borne diseases, and communicable and non-communicable diseases. • **ESS7 "Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities":** ensures that the development process fosters full respect for human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods.

2.2. Overview of NCS project development process

The development process for high-integrity NCS projects can be summarised in five major phases,[xxv] underpinned by ongoing community engagement. Although there are many ways of summarising the NCS project development phases (e.g., the IUCN Global Standard for Nature-Based Solutions[146]), this toolkit considers the five project phases to be:

- discovery of project area and stakeholders which involves finding a specific location for the project and preliminarily identifying interventions for the project;
- determination of the feasibility of the project by, among other steps, assessing the carbon potential for the project, obtaining government approvals, securing financing, and selecting carbon credit methodology and programme;
- design of project activities and other key project elements (e.g., grievance mechanisms, benefit-sharing mechanism);
- implementation of the project design and project activities with project stakeholders, and improving upon the project based on feedback;
- and monitoring, reporting, and verification (MRV) of project outcomes in accordance with carbon crediting programme requirements.

There are eight key NCS project activities that are relevant for developers to support local health outcomes that span across the NCS project development lifecycle. These activities across different phases of the project should already be part of project design, as they are consistent with best practice in project design. Hence, there is an opportunity for project developers to design and conduct each activity with a specific focus on embedding health needs and priorities of IPs and LCs, and potentially deliver health outcomes, as well as high-integrity project.

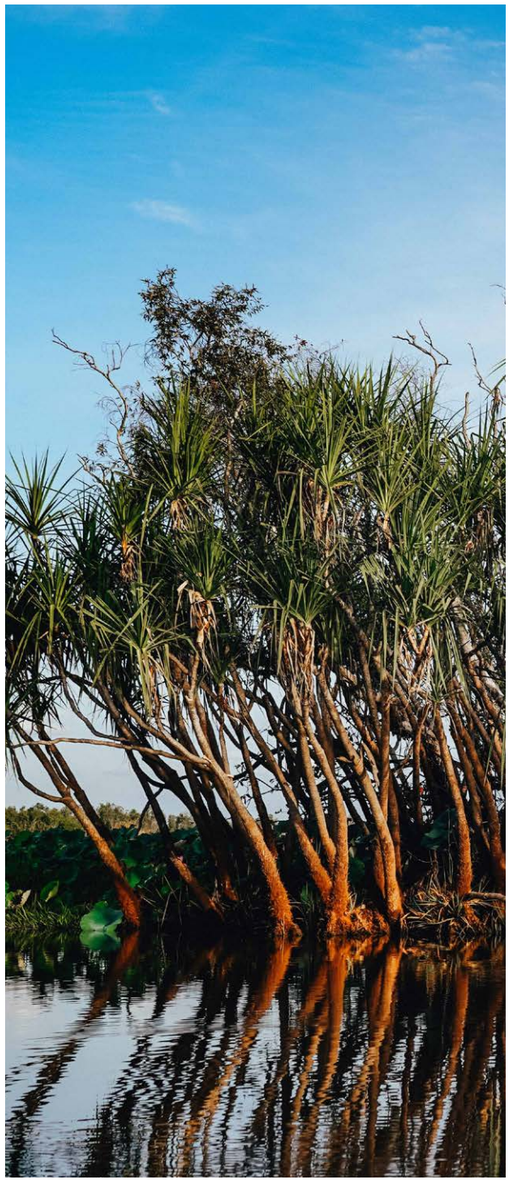


Figure 8: Across the five phases[xxvi] of project development, there are eight key NCS project development activities that are relevant for supporting health outcomes.

[xxv] The NCS phases of development will vary by project. This summary is adapted from the CEO Water Mandate (2022) and expert interviews.
[xxvi] The five phases are defined further in the glossary. The five phases are based on various sources including: The Carbon Project Development Curve · (n.d.) Abatable. [accessed 22/08/2023]; Project Life cycle. (n.d.) Climate Partner. [accessed 22/08/2023]; Jirka, S., et al. (2015) "Guide to Developing Agriculture, Forestry and Other Land-Use (AFOLU) Carbon Market Projects under Ethiopia's Productive Safety Net Programme (PSNP)." A World Bank Climate Smart Initiative (CSI) Report. Cornell University.

Throughout the project development phases, stakeholder groups play different roles with varying levels of involvement in shaping project outcomes.

- **IPs and LCs:** Can play a key role in all aspects of project design and implementation, including identifying local health needs and priorities. Their objectives may include sharing and facilitating the enhancement of the health benefits of the local community.
- **Project developers:** Can embed local health needs and priorities in the project design, including benefit-sharing mechanisms. Their objectives include incorporating the goals of all the different stakeholders, ensuring a successful implementation of those and project longevity. This will contribute to a foundation of trust and confidence with local stakeholders and ultimately successful implementation, project longevity and integrity of the carbon credits. In some cases, IPs and LCs are project developers.
- **Academics and researchers:** Leverage the best available evidence and conduct new research to guide and advise project development.
- **Carbon credit buyers:** Can incorporate health considerations by scoping appropriate projects from which to purchase carbon credits and reinforcing their need and/or desire for high-integrity credits that include measurable livelihood (health, socio-economic etc.) outcomes.
- **Investors:** Can invest selectively in projects and project developers that prioritise local health and can act as strategic partners to project developers to enable high-integrity projects and high-value carbon credits.
- **Governments:** Engage relevant government stakeholders to ensure proper approvals, registrations, and other legal requirements for the project are met. Government entities might wish to be involved as well and could lend authority to project activities that require enforcement.
- **Validation and Verification Bodies:** Conduct research on best practices to produce standards and frameworks and verify the integrity of projects.

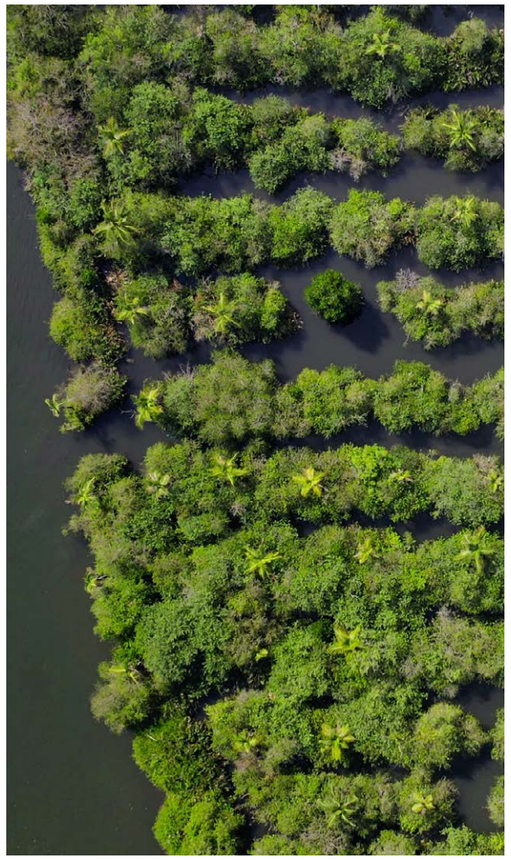
2.3. Deep dives into key NCS project development activities that could be relevant to delivering local health outcomes

This section will delve into the NCS project development activities and how a focus on health considerations and outcomes might be integrated into each NCS project development step. Each part of this section will:

- Provide an overview and define the health-related objective of each project development step.
- Illustrate the project development step with a relevant case study and extract the main takeaways from each case study.[xxvii]
- Provide tools related to both NCS project development and health outcomes.[xxviii]

2.3.1. Project development step: Stakeholder identification

Overview: Stakeholder identification is key to ensuring that the needs of the wide range of stakeholders involved in and impacted by NCS projects are captured. The process can also help to identify how stakeholders should engage with the rest of the project design and implementation process, for example some may take a more passive observer role, whereas others may be involved in co-designing the project activities. Project developers should take an inclusive view of stakeholders, where anyone with the potential to be impacted by the project should be considered as a stakeholder (regardless of legal right to the land or resources).



Health-related objective: Stakeholder mapping can ensure that health-specific stakeholders are engaged to accurately understand and reflect the local health context and priorities of IPs and LCs who are directly and indirectly impacted by the project.

Takeaways from **The Rimba Raya Biodiversity Reserve Process** (See Appendix)

The developers of the Rimba Raya project utilised a mix of stakeholder consultation, commission of a desktop research study and outreach to governmental entities aiming at forming a comprehensive understanding of the project area, the land rights within the project area, and the communities that resided near the project area.

Tools and guidance:

Tool: TeRRIFICA embedding health-centred considerations during stakeholder identification activities

The Rimba Raya project's process of stakeholder identification parallels the generalised process created by the European Union initiative TeRRIFICA (Territorial RRI Fostering Innovative Climate Action). Each of the steps must be considered in parallel for environmental outcomes and health outcomes. Table 6 describes the different steps and the potential health-related considerations.

[xxvii] **Note on case studies:** The information presented in each case study is drawn from project documentation which is almost entirely derived from information provided by the project developers. Project documentation may not accurately reflect the conditions on the ground or the progress of project implementation. Case studies were selected for illustrative purposes only.

[xxviii] **Note on additional resources and considerations:** As the NCS space, and carbon markets in general, is an evolving and decentralised sector we cannot guarantee that the resources and guidance provided in this section are currently best practice or will remain best practice.

Table 6: TeRRIFICA's stakeholder identification process and associated potential health-related considerations.[147]

STEP	ACTIVITIES	HEALTH-CENTRED CONSIDERATIONS
Identification	Find relevant groups and organisations through desktop research.	• Health-related stakeholders from inside (e.g., community organisations, local health entities) and outside (e.g., academics, researchers, and broader health systems) the immediate project area. • A review of projects with analogous geographies, climate solutions, and goals for health outcomes. • Elements of the project area's landscape that would confer health benefits or create health concerns.
Analysis	Conduct preliminary interviews to understand identified stakeholder views and interests.	• Development of a questionnaire, or interview questions that solicit honest and objective health needs and priorities of community members. • Local customs and cultural expectations that could influence community member responses. • Any potential conflicts or tension between community members and health providers.
Mapping	Create a visualisation of relationships between stakeholders to identify key stakeholders.	• The overlap of stakeholders that have the capacity to improve environmental outcomes and stakeholders that can improve health outcomes. • Potential differing visualisations of stakeholders for health and environmental outcomes.
Prioritising	Rank stakeholders by relevance to analyse drivers, barriers, and needs for stakeholder engagement. Categorise stakeholders by steps of project development and project implementation.	• Determine phases of project implementation and the capacity of each stakeholder to engage with a particular project phase. • Identification of the main health barriers that the project needs to solve.

An additional consideration a project developer needs to be mindful during the stakeholder identification phase is cultural competence to engage more effectively with community stakeholders. The 'Stakeholder Engagement Guide for Nature-Based Solutions' co-authored by the Pacific Institute and UN Global Compact's CEO Water Mandate recommends that NCS project development teams become acquainted with "how communities think and talk about nature and human relationships with the natural world."[148] This is accomplished by, at the minimum, research and training and ideally by collaborating with social scientists who are experts in cultural understanding, members of IPs and LCs affected by the project, or a local cultural expert in the project development process.

Tool: Stakeholder identification checklist

This particular checklist is adapted from the TeRRIFICA's stakeholder identification process. It is only for illustrative purposes and should be customised for project specifics.

- ☐ Has the project conducted desktop research to identify relevant groups of health-related stakeholders? Throughout the desktop research, has the project understood the cultural context and known health issues within and around the project area?
- ☐ Has the project conducted preliminary interviews with stakeholders to understand health needs and any potential conflicts or tensions?
- ☐ Has the project visually mapped stakeholders and their relationships to each other? Does the visualisation capture all of the input from the community workshops?
- ☐ Has the project categorised stakeholders by steps of project development and implementation?

2.3.2. Project development step: Stakeholder engagement

Overview: Effective stakeholder engagement is critical for the long-term sustainability of the project and helps define priorities in a project. Stakeholder engagement is the process by which projects involve and consult with the stakeholders they have mapped during NCS project development. Stakeholder engagement needs to be conducted in a careful and considerate way, from the outset of the project in the Discovery Phase. This step is key to facilitating the co-design and implementation of the project, which can reduce the likelihood of potential conflicts while improving project outcomes. In addition, effective stakeholder engagement can define the central priorities of a project and narrow down the issues to craft an effective and relevant baseline.

Equitable stakeholder engagement involves a diverse range of individuals and brings together different viewpoints and knowledge systems including scientific, technical, practical, cultural, and traditional knowledge. Building relationships and trust with stakeholders can take long periods of time, particularly where project developers do not already have existing relationships. In these contexts, project developers may choose to work with local organisations who have existing relationships and a deep understanding of the local culture and traditions. These organisations can also advise project developers throughout the design and implementation phases and facilitate stakeholder engagement on an ongoing basis.

As a part of building trust with stakeholders, project developers need to manage the expectations of IPs and LCs regarding the success and potential health benefits of the projects. Should the project developer overstate the effect and underestimate the time needed to experience health outcomes, stakeholders can become disenchanted with their participation in the project and decide to disengage from project activities. If a project developer manages project stakeholders' expectations well, project stakeholders may be more engaged with the project which will improve the project's long-term efficacy.

Tools and guidance:

Tool: UNICEF's Minimum Quality Standards and Indicators for Community Engagement

The UNICEF's Minimum Quality Standards and Indicators for Community Engagement (UNICEF Standards) provide guidance on how to engage IPs and LCs. UNICEF Standards were developed by an international consortium of health and development entities, and helps guide development and humanitarian action.[149] UNICEF Standards contain a part for "Core Community Engagement Standards" comprised of standards for participation; empowerment and ownership; inclusion, two-way communication; adaptability and localisation; and building on local capacity.[150] These considerations are oriented towards improving the stakeholder engagement process for community members and stakeholders who are receiving the health benefits, and not stakeholders who are outside the community or the stakeholders carrying out the health interventions. Table 7 highlights some activities that would fulfil the UNICEF standards and may be relevant to integrating a focus on health outcomes into an NCS project's stakeholder engagement process.[151]

Applying the listed considerations to the stakeholder engagement process could help stakeholders align on the project's goals, be comfortable in voicing feedback, and engage the stakeholders for the design process. Some of the considerations are not directly related to health, but making the stakeholders feel comfortable with the project's presence, and emphasising transparency and feedback, could help the stakeholders give valuable input into their health needs which are personal and private matters.

Table 7: UNICEF Core Community Engagement Standards and relevant activities.

UNICEF CONSIDERATION	RELEVANT ACTIVITIES
Participation	• Ensure that community engagement approaches are locally and culturally relevant and are communicated in languages and formats understood by all members in the community. • Identify community health needs and the resources/solutions needed to address the health needs and ensure they are integrated into project activities.
Empowerment and ownership	• Identify leaders, representatives, and key community stakeholders both within and outside formal community power structures. Give those key stakeholders decision-making capability in the project. • Ensure communities are involved in the planning and implementation of activities. • Give community stakeholders an option to opt-out of the project at any time. This is especially important in a health context because care is individualised.
Inclusion	• Define the challenges and objectives of the project to ensure that the needs of underrepresented and vulnerable populations are met. • Assess whether the community engagement approaches are effective in soliciting needs and priorities of all community members • Identify barriers to accessing the project benefits for marginalised community members and create measures to resolve them.
Two-way communication	• Establish transparent feedback mechanisms for stakeholders to voice dissent and criticism. • Ensure communities receive clear information about the project's methods and objectives.
Adaptability and localisation	• Use various methods of research to develop a cultural understanding of the project area. • Ensure that there is enough capacity and budget to adjust stakeholder engagement processes if necessary.
Building on local capacity	• Evaluate local capacity to carry out project activities. • Build long-term relationships and trust within communities. • Plan realistic timeframes for community engagement to accommodate the need for capacity building or further local buy-in.

Health-related objective: Stakeholder engagement can help the project developer specifically define any health needs and priorities of the IPs and LCs and establish a working relationship with project stakeholders

Takeaways from **Health in Harmony's Radical Listening Stakeholder Engagement Approach** (See Appendix for full case study)

- The Radical Listening stakeholder engagement process heavily focused on being receptive to the local community members and thus was able to gather a critical need that all community members shared. The proof of its success was that 21 out of 23 districts in the project area decided to participate in the project and access healthcare through the project's healthcare centre.
- The Radical Listening approach is atypical for NCS project development, but has instructive elements, such as the centering of IPs and LCs as decision-makers and problem-solvers for their own issues.

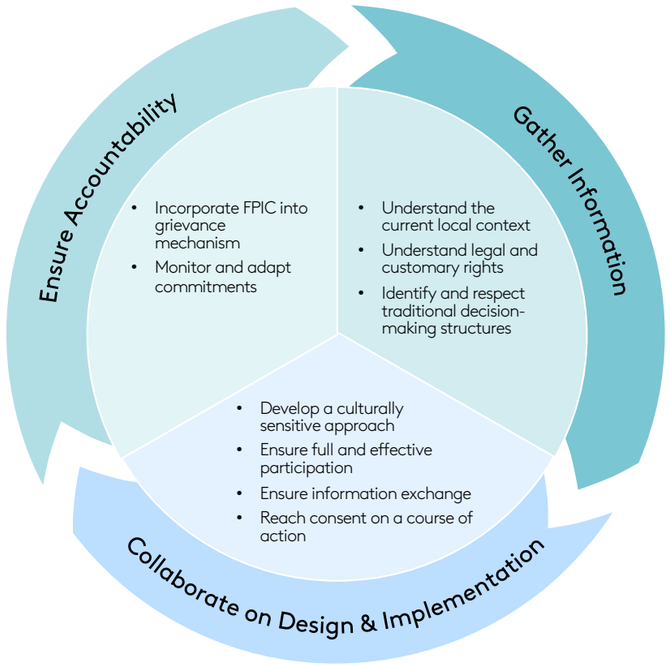
SPOTLIGHT: ENGAGEMENT WITH IPS – FPIC[152]

IPs exercise customary rights to over 50% of the world's lands, yet less than 20% of that land is formally recognised as belonging to IPs. Some NCS projects have dispossessed and displaced IPs from their land without adequate compensation. This is partly due to a project's engagement with only national or regional governments and neglecting IPs interests.

The principle of FPIC refers to IPs' and LCs' right to give or withhold their consent for actions that would affect their land or rights.

- Free: IPs and LCs must give their consent without coercion or force.
- Prior: IPs and LCs must be given full information on an activity or project and should have sufficient time to review the information because agreeing to an activity or project.
- Informed: The information provided is detailed and presents both positive and negative impacts of the activity or project. In addition, the information provided must be accessible to the IPs and LCs.
- Consent: IPs and LCs have a right to agree or not agree to the project.

Conservation International has created the following chart to detail certain steps to take to ensure an NCS project respects the FPIC rights of IPs and LCs[153]:



Tool: Stakeholder engagement checklist

This checklist is a list of considerations for project developers designing a stakeholder engagement process. It incorporates elements of the UNICEF Standards.

- ☐ Do project activities consider the local capacity to carry out the project activities?
- ☐ What type of technical assistance or education can be provided to stakeholders to enable them to make an informed choice about their health-specific needs?
- ☐ Are stakeholder consultation activities aligned with cultural norms of IPs and LCs in the project areas?
- ☐ Can IPs and LCs opt-out of participating in project activities or health treatments? Is there a penalty for opting out?
- ☐ Is participation consistent beyond the initial stages of stakeholder engagement?
- ☐ Has project outreach encouraged stakeholder feedback? What has the project done with stakeholder feedback once it is received?
- ☐ What are barriers to building long-term relationships and trust within communities? Do vulnerable populations require additional outreach measures to gauge their needs?
- ☐ What are the opportunities and/or mechanisms for stakeholder engagement and participation after the design stage (i.e. during implementation and monitoring)?

Intermediary step: Secondary health data collection

Secondary data collection provides essential background for baseline establishment and health intervention design. The health data collected from projects can be categorised into primary data and secondary data. Primary data is data collected through "surveys, listening sessions, interviews, and observations." [154] Secondary data is data collected by an external body, sometimes for another purpose.[155] Secondary health data is usually at the population level and can be sourced from publicly available sources including health agency data, published censuses, and disease registries.[156]

A combination of primary and secondary should be used to develop the project baselines, and the methods utilised for data collection can be repeated in the monitoring phases to ensure consistency of data collection. Primary data collection is an important step to solicit information directly from IPs and LCs on key issues, priorities, and solutions. Integrating local healthcare treatments and knowledge into the project's health interventions demonstrates cultural understanding of IPs and LCs in the project area and may encourage greater uptake of the project's health interventions.

However, primary data collection is not always a feasible option due to time and resource constraints in project development. Further, IPs and LCs may not be willing to share their private health data. Therefore, a project developer may need to rely on secondary data to establish a health baseline for their health interventions. Project developers can utilise secondary data in the following ways to construct a baseline:

- Census and household survey data at a population level can be used to form a comparison group against project participants that undergo the health intervention. The project developer can compare the statistics of a broader population (e.g., rural population health statistics in the same country as the project is taking place in) against the health data of project participants that have engaged in the health intervention.
- Records from nearby health centres in areas similar to the project area may be used to establish the counterfactual situation for the project. Usage rates of project supported health facilities can be compared to usage rates in similarly situated areas.
- A meta-analysis of comparable projects or interventions can inform project design and impact evaluation techniques. [157]

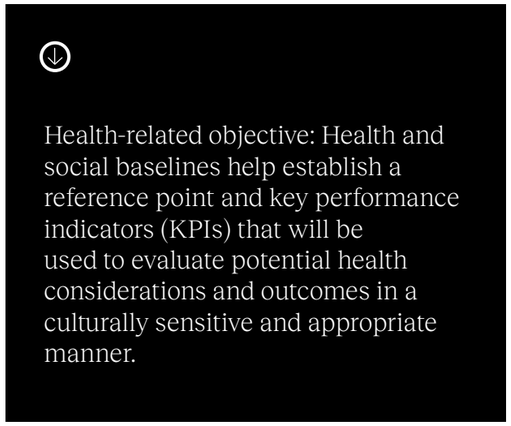
2.3.3. Project development step: Establishing health and social baselines

Overview: Conducting a baseline assessment of the socioeconomic and health characteristics of the project location establishes a fixed point of reference for the project (i.e., a 'without project' or a 'business as usual' scenario), allowing for the measurement of progress and project performance. A baseline provides project developers with the ability to troubleshoot problems, adjust approaches, understand trends, and improve on future projects.

Tools and guidance: Potential health and social indicators that can be used for baselines

Project developers can develop health baselines based on output/reach indicators (e.g., number of individuals who have received health checks) or outcome/impact (e.g., mortality or morbidity) indicators. Output/reach indicators measure the project's outputs and the project participants' engagement with the project.[158] Outcome/impact indicators gauge the programme's effect over a certain period of time and should be measured at the project baseline and at the project end if possible. A change in outcome/impact indicators for health may require decades of time for the impact to appear. Further, attributing outcome/impact indicators to project inputs requires rigorous and controlled statistical evaluation. Measuring output/reach indicators may be a more convenient and accessible starting point because the project's inputs are directly within the project developer's purview. Therefore, a project's baseline could be based on the project's output/reach indicators to evaluate a project's success.

Furthermore, in alignment with the Race to Resilience's approach to metrics, project developers can also consider baselines that aim to measure health outcomes through understanding 'quantitative' or 'magnitude', and 'qualitative' or 'depth' metrics. 'Quantitative' or 'magnitude' metrics aim to estimate the size and scale of the health outcomes, whereas 'qualitative' or 'depth' metrics aim to understand how the outcome is being created.[160] The 'qualitative' and 'depth' metrics can be understood through different resilient attributes that have been identified by



Health-related objective: Health and social baselines help establish a reference point and key performance indicators (KPIs) that will be used to evaluate potential health considerations and outcomes in a culturally sensitive and appropriate manner.

Takeaways from **The Rimba Raya Biodiversity** Reserve Project's Baseline Survey (See Appendix for full case study):

- The Rimba Raya's informational interviews with IPs and LCs were effective at establishing baselines partly due to the diversity of stakeholders that were interviewed. The lack of midwives in the community might not have surfaced without interviews and discussions with women leaders and elder members of the communities.
- The interviews were also effective because the project developers maintained consistency in the questions asked during one on one interviews, so common responses could be drawn out from interviewees. The group interviews also created opportunities for interviewees to surface issues through discussions with each other. These interviewing choices gave the project developers sufficient information to create a baseline reflective of reality.
- The Rimba Raya project's baseline measures are effective because they are measurable and directly relevant to the independent variables of the project. The indicators directly related to the need to improve the potable water supply in communities and the need for greater healthcare access.

the Race to Resilience, many of which touch on elements of health as described by this toolkit.[161]

The indicators utilised to measure progress and determine the health impacts of project activities should contain the following characteristics:

- **Methodological soundness** - the indicators accurately reflect what the indicator should be measuring and the data is collected over time to inform the indicator;
- **Feasibility** – the data for the indicators is available and collectable;
- **Meaningful** – the indicator is relevant to the project and linked to the project activities;
- **Important** – the indicator is relevant to a significant health need of the community. [162]

Table 8 is a compendium of various health and social indicators used by various carbon project standards:

Table 8: Potential health and social indicators that can be used for baselining (not exhaustive).

EXISTING RESOURCE GUIDANCE	HEALTH INDICATORS	SOCIAL INDICATORS
The Millennium Ecosystem Assessment [163]	• Food and nutrition levels • Water quality • Air quality • Disease avoidance	• Recreation opportunities • Nature security (exposure to heat, drought, floods, and erosion) • Social Capital development
CARE [164]	Access to: • Healthcare • Sanitation • Water	Access to: • Education • Food
WWF Gold Standard [165]	• Poverty	• Literacy levels • Equity distribution • Gender equality
NHS Forest [166]	• Temperature regulation • Stress and mental health	• Stress and mental health
Social Carbon Methodology [167]	• Disease incidence	• Civil participation
Landscape Outcomes Assessment Methodology [168]	• Mortality rate/life expectancy	• Total household income
World Bank [169]	• Air quality	• Housing quality
SEEP Network [170]	• % of births attended by skilled personnel	• Land ownership • Social and political empowerment
W Plus Standard [171]	• Food security	• Reading and writing, numeracy levels

TOOLS: HEALTH IMPACT ASSESSMENT

The case studies throughout this toolkit illustrate the use of household surveys and other qualitative methods to establish the baseline health status of a community, and as covered later, monitor the potential health benefits of a project. This section will discuss a useful tool to evaluate the potential health effect of a project, the Health Impact Assessment.

Health Impact Assessments [172]:

A Health Impact Assessment (HIA) helps scope the potential health effects of a project before it is implemented. The aim of the HIA is to maximise the project's positive health effects and minimise its negative health effects. An HIA can be applied to quantitative, qualitative, and participatory techniques and is designed for use in the non-health sector. The main steps of an HIA involve:

- **Screening:** Determines if an HIA would be beneficial for the project. Potential effects on the population groups within the project are identified. Screening results in three types of decisions: that HIA is necessary; the effects are known so HIA is not necessary; the effects are negligible so HIA is not necessary.
- **Scoping:** Planning how to conduct the HIA and identifying health risks and benefits to consider. The project creates a steering group of major stakeholders to develop the HIA and consider the scope of the HIA.
- **Assessment:** The core of the HIA activity. The HIA executors gather and analyse data, identify affected populations and estimates health impacts.
- **Reporting/Recommendations:** A report is composed of the HIA results, recommendations are made regarding the HIA results, and the report is delivered and discussed with stakeholders and decision-makers.
- **Monitoring and Evaluation:** The executors of the HIA evaluate the processes and effectiveness of the HIA and monitor if the project implements the recommendations from the HIA.

NCS project developers can adapt this process to determine if their planned project activities will have a beneficial impact on community stakeholders. The stakeholder mapping, stakeholder engagement, and project co-design steps may already provide the necessary data to evaluate the health effects of a project and the affected populations in a community. The collected results from those processes would need to be analysed through a health lens and then formalised into reports and recommendations for decision-makers in the project. An external third-party evaluation of the project developer's HIA would improve the legitimacy and objectivity of the HIA.

Tool: Long list of health-related considerations

Long list of health-related considerations for project developers:

The below long list of considerations is not exhaustive and intends to be a starting point to support project developers in thinking through different considerations of where and how they might be able to address the health conditions and concerns of particular IPs and LCs, categorised into physiological and psychological considerations. The long list is also not intended to be a set of solutions, as each health concern will require different measures and actions to be addressed.

1. **Physiological**
   a. **Access to medicine:** What are the common acute and chronic health problems that the IPs and LCs are most at risk of, and how do the IPs and LCs access medicine for the treatment and prevention of these illnesses? Can the project facilitate and/or augment this?
   b. **Air quality:** Do the IPs and LCs face respiratory illnesses related to the air quality (e.g., cooking smoke) in and around their location, and can the project a) improve air quality and b) provide treatment for respiratory illnesses?
   c. **Dental care:** Do the IPs and LCs have access to dental care and/or oral hygiene provisions and can the project improve access?
   d. **Food security:** Do the IPs and LCs have reliable access to food and can the project improve their access to food resources and bolster food resilience?
   e. **Movement and function:** Do the IPs and LCs experience pain in joints, back and/or neck and can the project provide support services to the IPs and LCs?
   f. **Nutrition:** What does a common diet look like for the IPs and LCs, and can the project work with IPs and LCs to improve diets through education on nutrition? Is there a prevalence of malnutrition amongst the IPs and LCs?
   g. **Obesity and diabetes:** Do the IPs and LCs face illnesses such as obesity or Type II diabetes and can the project work to prevent and treat these illnesses?
   h. **Reproductive and maternal health:** What are the common causes of infant and maternal mortality amongst the IPs and LCs and can the project help tackle these?
   i. **Sanitation and hygiene:** Can the IPs and LCs access sanitation facilities, and can the project improve access?
   j. **Sexual health:** Do the IPs and LCs have access to contraception and/or family planning resources, and can the project provide these?
   k. **Vaccinations:** What are the common infectious diseases faced by the IPs and LCs, and does the project provide vaccinations against these diseases?
   l. **Vision:** Do the IPs and LCs suffer from eye-related issues and can the project provide equipment to improve sight?
   m. **Water access:** Do the IPs and LCS have reliable access to water and, how far is the water source from the IPs and LCs? Can the project improve this?
   n. **Water quality:** Do the IPs and LCs have access to clean water and can the project provide water purification support?

2. **Psychological**
   a. **Mental health:** What are the common causes of low mental health and well-being levels amongst the IPs and LCs and can the project improve these?
   b. **Mental illnesses:** Do the IPs and LCs have access to counselling and therapy and can the project provide these?
   c. **Cultural identity:** Do the IPs and LCs have a strong cultural identity associated with the natural ecosystems that form part of their cultural identity, and can the project strengthen these connections?
   d. **Spiritual identity:** Do the IPs and LCs have strong spiritual connections associated with their surrounding natural ecosystems, and can the project strengthen the spiritual connections amongst IPs and LCs?
   e. **Country:**[xxix] Do the IPs and LCs have the opportunity and freedom to be on and care for Country, and can the project improve their connection to Country?
   f. **Social health:** Do IPs and LCs have opportunities to socialise, and can the project improve interpersonal relationships within the IPs and LCs?

Tool: Baseline establishment checklist

The following checklist can support project developers in creating a health baseline for their project participants.

- ☐ Has the project conducted a Health-Related Quality of Life Questionnaire (or equivalent, example included in the Appendix) to analyse key health needs and priorities? Does the questionnaire reflect knowledge of local customs and cultural expectations, and is it well suited for all populations in a community stakeholder group?
- ☐ Do the baseline indicators link directly to project activities?
- ☐ Are the baseline indicators used in analogous NCS or healthcare projects?
- ☐ Do the health baseline indicators connect back to identified health needs in the previous project development steps?
- ☐ Can the monitoring capabilities of the project accurately measure changes in the baseline indicator?

[xxix] According to the Australian Institute of Aboriginal and Torres Strait Islander Studies "Country is the term often used by Aboriginal peoples to describe the lands, waterways and seas to which they are connected. The term contains complex ideas about law, place, custom, language, spiritual belief, cultural practice, material sustenance, family and identity."

2.3.4. Project development step: Co-designing project activities

Overview: Project co-design is an approach that utilises the opportunities created by NCS to bring together the real-life experiences, views, and skills of different perspectives to construct creative solutions to local problems.[173] Project co-design strategies are effective approaches to include stakeholders on the same platform as professional actors in all types of NbS projects. For example, a nature restoration project without effective co-design might create the opportunity for carbon sequestration.[174] However, the project with effective co-design could also attempt to meet the needs of the local community, by rectifying a deficit of medicinal plants, providing shade to sun-exposed locations, creating recreational opportunities, reducing flood risk, or improving air and water quality.

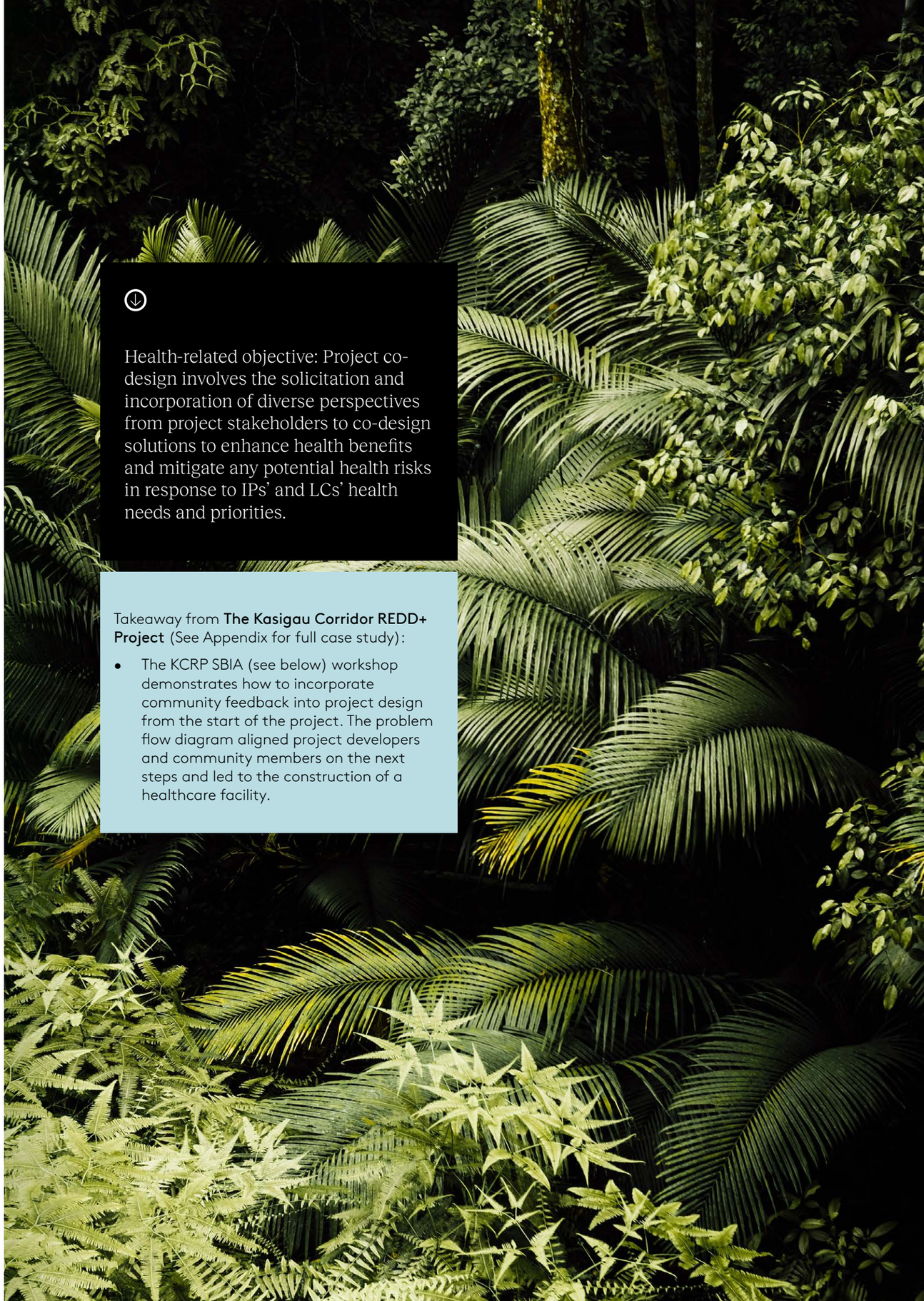
The scope of co-design encompasses both overarching health improvements (such as water and air quality) and tailored responses to specific communal requirements (such as a floating clinic). Ultimately, co-design within NCS ensures the investment and support of local leaders and communities whilst simultaneously protecting the longevity of the project.

Tools and guidance

Co-design in health is similar to project co-design in the NCS because it "actively involves multiple stakeholders (internal and external) in the planning to improve systems and services... It is a participatory, reflective, and adaptive process centring on participants as experts. It decentralises decision-making and power to facilitate transformation..."[175] The co-design approach in healthcare, as described by the Alberta Health Service, is elucidated in a five-step process: [176]

1. Commit to collaborate: Make the choice to begin a collaborative journey.
2. Co-define the dilemma: Work together to understand and agree on the problem to be solved by taking all perspectives into consideration.
3. Co-design the process: Allow multiple stakeholders to contribute to the design process and find a best solution for all. Everyone has input into the process of working together.
4. Co-create the solution: Stakeholders interact within a creative process to develop solutions to the problem.
5. Co-deliver actions: Collaborate on the delivery and implementation of the solution.

The core principle underlying the steps above is the need to be "appreciative, informative, deliberative and iterative in your work with stakeholders."[177]



Health-related objective: Project co-design involves the solicitation and incorporation of diverse perspectives from project stakeholders to co-design solutions to enhance health benefits and mitigate any potential health risks in response to IPs' and LCs' health needs and priorities.

Takeaway from **The Kasigau Corridor REDD+ Project** (See Appendix for full case study):

- The KCRP SBIA (see below) workshop demonstrates how to incorporate community feedback into project design from the start of the project. The problem flow diagram aligned project developers and community members on the next steps and led to the construction of a healthcare facility.

Tool: SBIA and problem flow diagrams:

A commonly used tool in Verra REDD+ projects is the SBIA.[xxx] SBIA is intended to help design projects with social and biodiversity improvement goals, along with REDD+ aims. [178] Social Impact is inclusive of health and well-being for SBIA. At the core of the SBIA is the Theory of Change which is "a hypothesis about how a project intends to achieve its intended goals and objectives" and in practice it comprises of "a roadmap drawn up by the project proponents and stakeholders of how the project plans to get from Point A (project strategy and activities) to Point Z (project impacts)."[179] There can be several theories of change within a project.

A problem flow diagram is defined as "a flow diagram of the 'without-project' situation that shows how different causal factors affect the main focal issue (expressed as a problem)."[180] From the project flow diagram, the project developer and community stakeholders are aligned on the factors that lead to the main issues the project can address, and both parties can utilise the problem flow diagram to create solutions because the problem factors are specified with granularity. The steps to create a problem flow diagram, in a workshop context, are:

1. Divide workshop participants in focal issue working groups.
2. Ask each working group to express the focal issue as a problem (e.g., lack of healthcare access).
3. The focal issue problem is at the right of the diagram, participants then discuss and arrange causal factors to the left of the focal issue.
4. Ask each working group to consider the 'without project scenario' and what that situation will be in the short term (3-6 years) and long term (10-15 years). Working groups should be asked to focus on processes, consequences, impacts of change, and existing opportunities to address the focal issue problems.

Project Opportunities can then be appended to various areas of the problem flow diagram, and solutions development can begin.

Tool: Project co-design checklist

This checklist is a list of considerations for project developers that could ensure that their project activities reflect the involvement and input of project stakeholders.

- ☐ Have IPs and LCs stakeholders been involved in the planning, designing, and implementation stages of project activities? Have formal participatory design approaches been considered for use?
- ☐ What are the priority needs of IPs and LCs and are project activities meeting those needs? If not, why?
- ☐ Do project participants have sufficient technical expertise to deliver the project activities? If not, are there plans to build their capacity?
- ☐ Are the needs of underrepresented populations being served by project activities?
- ☐ Do project activities reflect IPs' and LCs' understanding and engagement with their landscape?
- ☐ Have IPs and LCs signed off on the final set of project activities?
- ☐ Have the different stakeholders participating in co-design shared their perspectives on potential synergies and/or trade-offs that could emerge from the project?

[xxx] SBIA can cover other elements of project design such as stakeholder identification, stakeholder engagement, baseline creation, and monitoring. This section will focus on the project co-design elements of SBIA. Please note that despite the fact that this manual was initially developed for REDD+ projects, the concepts described in the SBIA Manual are relevant to a wide range of carbon activities, whether designed for compliance or voluntary markets.

2.3.5. Project development step: Developing a governance structure

Overview: NCS project governance is the framework that defines how various stakeholders in NCS projects engage in project activities throughout a project's lifecycle and the feedback mechanisms available for stakeholders to use. Key considerations for project governance include the project's goals, especially if there are social goals included in the project benchmarks over time, and how to ensure that long-term interests are protected. [181] Project governance also outlines the decision-making process in a project, the parties responsible for the day-to-day operations, and how revenue from the project will be distributed or reinvested into the project.

Stakeholder engagement, stakeholder identification, and project co-design inform how the governance of a project should be structured or amended. Stakeholder identification and engagement will inform the project developer of the power dynamics between project stakeholders which will help determine which project stakeholders are best positioned to wield their influence and hold others accountable. [182]

Health-related objective: A governance structure should provide efficient channels for stakeholder engagement to ensure that stakeholders remain engaged throughout the project lifecycle. Adaptive management and risk escalation ensure that the project continuously meets the changing health needs and priorities, of IPs and LCs, and that unintended health consequences are reported and managed.

Takeaways from **The Rimba Raya Biodiversity Reserve Process** (See Appendix for full case study)

- The Rimba Raya project developers used an iterative process to come to mutually satisfactory village agreements. This gives the villages a voice in the project design process and gives the village some degree of autonomy and decision-making.
- The Rimba Raya project developers used the common stakeholder feedback mechanisms of appointing village representatives and placing suggestion boxes in villages. However, they are only as effective as the project developer's willingness to make actual changes in response to the feedback.
- Having separate systems for feedback and grievances originating from villages and Early Warning Early Response should encourage stakeholder feedback and participation. The former system can be used to express issues with how the project is affecting the daily livelihood of villagers, whereas the Early Warning Early Response mechanism is well suited for emergencies and issues that arise in implementing and conducting project activities. Having both systems encourages a wider variety of feedback and grievances to be discussed and resolved.

Tools and guidance:

Tool: Adaptive management in a healthcare context: Plan-Do-Study-Act

Governance structures and feedback mechanisms for NCS projects and health-oriented project should be designed to allow for adaptive management. Adaptive management is defined as "an intentional approach to making decisions and adjustments in response to new information and changes in context." [183] Adaptive management is not simply changing the trajectory of the project based on failure, an adaptive management approach requires the active exploration of alternative methods to reach objectives, predicting the outcomes of alternatives, implementing the alternative methods for experimentation and using the monitored results to update knowledge and adjust project actions.[184] To ensure that health outcomes are considered in the adaptive management of NCS projects, project developers should evaluate whether their touchpoints with stakeholders are sufficient to allow feedback and dialogue on health outcomes. Furthermore, project developers should consider whether their choice of health indicators allows them to identify issues in the near term and short term.

An analogous problem-solving model in health care is Plan-Do-Study-Act (PDSA) which is also called Rapid cycle improvement or Plan-do-check-act.[185] It is an iterative cycle that operates as follows:

Table 9: Description of the Plan-Do-Study-Act iterative cycle.

STEP	DESCRIPTION
Plan	Plan a test by considering: • Objectives of the test • Predictions of what will happen • Logistics of the test including data collection
Do	Try the test on a small scale and document any problems and unintended effects.
Study	Analyse the data gathered and compare the data to the predictions. Extract lessons learned.
Act	Refine the test based on lessons learned and prepare a plan for the next test.

Tool: Governance mechanisms checklist

The following checklist can be used to evaluate the usefulness of a project's feedback mechanisms for healthcare outcomes:

- ☐ Does the project have regular meetings with stakeholders ensure that evolving health needs and priorities of IPs and LCs are captured in the project design and implementation?
- ☐ What is the plan if health outcomes are not improving from project activities?
- ☐ What is the plan if healthcare facilities created by the project are not being used?
- ☐ Are community stakeholders empowered to report feedback or grievances within healthcare facilities? If not, are stakeholders empowered to give feedback on healthcare facilities in another venue?
- ☐ Is the existing grievance mechanism capable of separating or tracking grievances related to health?
- ☐ What happens once the project developer receives feedback or grievances? What is the turnaround time for a response to feedback?
- ☐ Are all members of community stakeholders able to provide feedback or grievances? What is being done to ensure that historically underrepresented or marginalised members of the community are heard?

2.3.6. Project development step: Designing and implementing benefit-sharing mechanisms

Overview: A robust benefit-sharing mechanism (BSM) is necessary to ensure legitimate outcomes to project stakeholders and is an indicator of a high-integrity project. [186] A BSM transfers monetary and nonmonetary benefits to stakeholders in the project that generate the environmental results of an NCS project and should be updated through the lifecycle of the project. Nonmonetary benefits, also known as in-kind benefits, include stable food and water sources and improved environmental resilience. [187] The stakeholders that generate the environmental results in a project do not have to take an active role in project activities, benefits may also be transferred to landowners in the project area or the holders of the carbon rights. In addition, stakeholders will likely include local governmental entities who may require compensation for participation in the project.

An equitable, transparent, and adaptive BSM incentivises and empowers project stakeholders to continue to participate in the project and gives them a tangible stake in the project's success. High-integrity NCS projects require long time periods for project activities to be sustained, and project developers need reliable project participants to ensure project activities continue to be carried out. Further, project participants should be incentivised to not disrupt the project for economic gain.

BSMs are an appropriate avenue through which to achieve positive health outcomes. The participatory processes that lead to a well-crafted BSM can help identify health goals and health gaps in the project area's communities. The achievement of health outcomes is also a measurable way to judge the success of the BSM.

Benefit sharing compensates project participants for their engagement in the project with benefits (monetary or nonmonetary) that can help resolve identified health needs.

Takeaway from **Burapha Agroforestry Project: Nonmonetary Benefit-Sharing through UXO removal** (See Appendix for full case study)

The large-scale UXO clearing exemplifies how NCS projects can be a strong force for benefiting underrepresented communities. Given the widespread poverty in the Burapha Project's area, and the remaining UXO being a significant obstacle to economic mobility, local communities required support to undertake the necessary project, especially in the timeframe that the Burapha project is able to accomplish it in. Even if a community member does not use the plantation space for subsistence or income, that community member benefits.

Takeaway from **Gunung Palung National Park: Healthcare discounts tied to environmental outcomes** (See Appendix for full case study)

This case study displays a monetary benefit-sharing scheme that is centred around discounts for healthcare in exchange for reducing logging and taking part in sustainable agriculture training. Unlike a more straightforward scheme where a project would directly pay participants for a change in behaviour, the hospital is an enduring benefit that will last longer than the project's life. In addition, the financial incentive is directly tied to a legitimate community need which increases the willingness of the community to use the service and therefore participate in the project.

Guidance: Benefit-Sharing for NCS projects

There are a multitude of resources regarding benefit-sharing for NCS projects given the importance of providing adequate compensation to communities that projects are being implemented in. Table 10 highlights some guidance from a variety of sources:

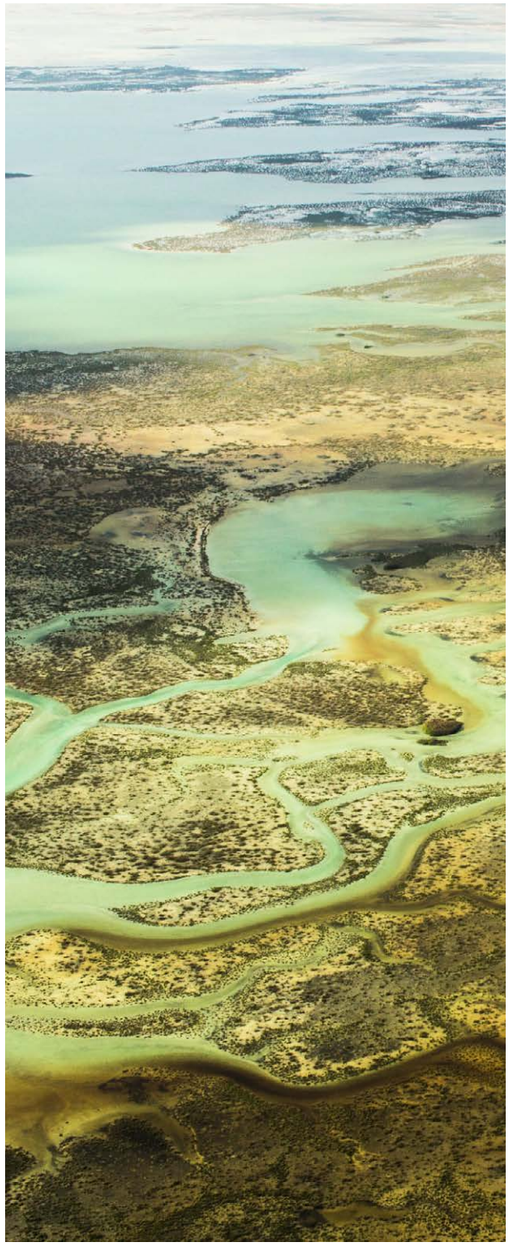
Table 10: Examples of guidance on benefit-sharing for NCS projects.

TITLE AND SOURCE	DESCRIPTION
Title: Benefit sharing and REDD+: Considerations and options For effective design and Operation (2015) [188] *Source: USAID Forest Carbon, Markets and Communities Programme*	• The guide is geared towards REDD+ activities. • Provides a concise taxonomy of benefit-sharing arrangements, crosscutting principles to follow and general steps for designing and managing benefit-sharing agreements.
Title: Benefit sharing at scale: Good Practices for Results-Based Land Use Programmes (2019) [189] *Source: The World Bank*	• Guide to support government and programme staff in developing jurisdictional-level results-based land use programmes which are distinct from projects that generate carbon credits. • This guidance identifies best practices from 13 cases across the world and extracts practices across four key themes: beneficiaries and benefits; institutional, financial, and governance arrangements; and monitoring, evaluation and adaptive management.
Title: Designing REDD+ benefit-sharing mechanisms: From policy to practice (2022) [190] *Source: Centre for International Forestry Research (CIFOR)*	• The guidance is designed for REDD+ implementation. • Describes the policy context of REDD+ activities, provides specific steps and considerations for designing REDD+, and presents criteria for assessing outcomes of the benefit-sharing.
Title: Who reaps the benefits? Integrity principles for benefit sharing in forest NbS for climate mitigation (2022) [191] *Source: World Wildlife Fund and USAID*	• The title states it is for forest NbS projects, but it can apply more broadly to other types of NbS. • There are 12 principles in this guidance that emanate from the belief that benefit-sharing mechanisms should be fair, accountable, rights-based, and effective.
Title: Corruption risks and anti-corruption responses in sustainable livelihood interventions [192] *Source: World Wildlife Fund + partners*	• This guide focuses on anti-corruption measures that project developers can take in three sustainable livelihood interventions: payment for ecosystem services; carbon compensation co-benefits; protected area and other effective area-based conservation benefit-sharing.
Title: Convention on Biological Diversity: Access and Benefit Sharing [193] *Source: Secretariat of the Convention on Biological Diversity*	• This factsheet helps users understand and implement Article 15 of the Convention on Biological Diversity which sets out rules that govern access and benefit-sharing of genetic resources. The factsheet details two key agreements: prior informed consent and mutually agreed terms to help transparently outline and help parties consent to the use of genetic resources.

Tool: Benefit-sharing mechanism checklist

This checklist incorporates principles and guidance from the sources in the prior section.

- ☐ Once the project's lifecycle is over, how will community stakeholders continue to access healthcare facilities?
- ☐ Has the project conducted a participatory identification of benefits? And have the benefits been designed by IPs and LCs having inputs into deciding what benefits are received, and how?
- ☐ How is revenue generated from the project, if there is revenue from the project, utilised to reinvest into community stakeholders?
    - ☐ What percentage of revenue from the project is for the project developer and for the community stakeholders? Is this allocation percentage known to all project participants?
    - ☐ What is the timing, duration, and consistency of revenues being shared?
    - ☐ Are there project trust funds for project revenue?
    - ☐ Is there a third-party auditor ensuring the revenue split is carried out?
    - ☐ Does the project record proofs of payment digitally to ensure transparency?
- ☐ Is there a mechanism for community stakeholders to voice complaints about benefit-sharing?
- ☐ If a project provides only nonmonetary benefits for benefit-sharing, what is the quantified value of those benefits?
- ☐ How does the project's BSM compare to similar projects that aim to provide healthcare outcomes?



2.3.7. Project development step: Monitoring, Reporting, and Verification

Overview: MRV of project outcomes is a necessary step to ensure projects deliver any benefits through the project's life cycle. Monitoring (sometimes known as measurement in certain contexts) refers to the quantification of impact, reporting refers to the need to communicate findings to third parties, and verification is done by the reporting entities to ensure the reported measurements are accurate.[194]

Measurement and monitoring of health varies depending on how health needs and priorities are tracked. On the one hand, 'health drivers' can be tracked by measuring environmental indicators (e.g., water quality) throughout the project lifetime. On the other hand, local 'health status' can be tracked by measuring health indicators (e.g., infant mortality) evolving throughout the project lifetime. Once the health needs and priorities have been identified in the discovery phase, a monitoring methodology should be chosen in the feasibility phase, using the 'health drivers' or 'health status' indicators, or a combination of both. The validation and verification of social co-benefits, which includes health outcomes, is not currently standardised and is dependent on self-reporting done by the project developer. [195] UN SDGs include social goals such as Good Health and Well-Being, and project developers often use UN SDGs to outline the benefits from their projects.[196]

Tools and guidance: Considerations for monitoring and evaluating health outcomes

The following section will discuss various challenges and potential solutions to measuring health outcomes in NCS projects.

Community-based participatory evaluation versus outside experts:

Project developers should ensure an adequate budget is set aside for comprehensive evaluations, especially for outside experts and specialist health evaluation advice. Outside experts include both local and international experts. Project developers could also reach out to local academic institutions for collaboration opportunities.

Monitoring of health outcomes can also be led by community members. Community-led health monitoring improves community engagement because they have a vested interest in seeing the project's health interventions progress. In addition, this would save on project costs. However, the monitoring team within the community would need to be taught the necessary skills and a standardised monitoring procedure would need to be established to ensure that measurements are reliable. To augment the community's ability to reliably measure health outcomes, it is recommended that the evaluations are of a small scale and a limited number of programme activities would be eligible for community assessment. [197]

The MRV process can collect data on health outcomes and uses the data to adjust project activities as needed. The MRV process also verifies and validates the project's outcome to ensure it is making a measurable health impact.

Takeaway from table 15 of **assorted case studies: health key performance indicators (KPIs) and monitoring methods** (See Appendix).

In all of the case studies, personal health data is gathered by the front-line health professionals.

In the case studies, surveys are the preferred method to determine community-level health changes over time.

Outside experts would have the capability to assess health outcomes but there are necessary precautions to undertake that are similar to the considerations for effective stakeholder engagement:

- The evaluations must be planned, at an accessible time for community members to attend, and during a time of year when the community is at normal stress levels and in normal weather conditions.
- The outside experts need to be culturally competent and the terms of engagement must be clear and adhered to by the evaluator. The outside expert needs to "know exactly what they are meant to be doing, and also what they are not meant to be doing." [198]

To evaluate whether to use outside experts to evaluate health outcomes depends on the availability of competent experts, the available resources of the NCS project, and the consent of the community.

Other considerations:[199]

- **Monitoring too little:** It is convenient to perform annual measurements of health outcomes and report the headline numbers, but it is important to also regularly solicit experiential data from community members.
- **Monitoring too much:** Measuring too many health indicators at a high frequency may be onerous and disruptive for community members who have to undergo multiple phases of assessments.
- **Ignoring the needs and opinions of vulnerable populations:** While it may be possible that the overall health of the community improves, there may be stagnation amongst certain vulnerable and underrepresented populations such as those living with disability. The project developer should identify solutions to ensure all community members experience benefits.

Using both quantitative and qualitative data:

Project developers need to consider both quantitative and qualitative data to evaluate health interventions and identify areas for improvement. Quantitative data "express quantity, amount, or range and can be measured numerically" and are visualised as a trend over time.[200] Qualitative data is "virtually any type of information that can be observed and recorded that is not numerical in nature."[201]

The value of quantitative data is that is an expression of progress over time, and it is easy to measure the magnitude of impact or effect. Further, there are established methodologies for evaluating quantitative data that has been tested and standardised. Qualitative data is helpful for observers to "gain deeper insight into an issue, and to understand meaning, opinion, and feelings."[202] This deeper insight helps support hypotheses about what to focus on and how to better support the person. Qualitative methods seek open-ended answers and gathers data aim to explain the 'how' and 'why' of decision-making.[203]

Project developers can hire companies like the International Initiative for Impact Evaluation (3ie) for specialised impact evaluation expertise.[204] 3ie offers direct consultancy services that help projects find the best methodology to measure their project's impacts and conducts research into evidence gaps in various development areas. 3ie's Development Evidence Portal is an invaluable tool, containing more than 5,000 impact evaluations and systematic reviews of health-related development projects that outline methods of measuring health outcomes.[205]

Tool: MRV checklist

This checklist might help to ensure that the health outcomes generated from project activities are appropriately monitored.

- ☐ Is there an adequate budget set aside for monitoring and evaluation?
- ☐ Do the indicators align with the indicators used in the baseline? And do those indicators align with the theory of change?
- ☐ Are there an adequate number of data points to gauge the effect of project activities on health outcomes?
- ☐ Is there a way to create a control group to compare against?
- ☐ Are the people collecting data on health outcomes appropriately trained to receive and process the data? If not, are outside experts required or is there an ability to train existing project stakeholders to collect the data?
- ☐ Is collecting health data disruptive to community stakeholders?
- ☐ Has adequate consent been given to gather and compile the health data?
- ☐ Is the data collected in a secure location (physically or digitally)?

2.3.8. Project development step: Communicating health outcomes

Overview: Communicating the overall outcomes of a project is essential to accurately report its impact on project participants and ensuring project stakeholders stay engaged. Externally, project developers need to communicate outcomes to standards bodies that verify the project's results, investors of the project, and to the general public. Accurate communication of a project's results to external stakeholders is essential to validating the project. In addition, the various outcomes of the project should be communicated separately (e.g., climate mitigation and health impacts should be communicated through different measures and in clearly delineated sections) so as to not confound the different contributions from the project.

With regard to communicating health, project developers need to discuss health outcomes with project participants and their team to evaluate the effectiveness of the project's solutions. It is a critical part of stakeholder engagement and adaptive management of the project. The guidance from section 5.3.2 is relevant to communicating health outcomes to IPs and LCs: communicate health outcomes in a culturally sensitive manner, in an easily accessible venue, and give them all available and relevant information to make an informed decision. In addition, it is a critical part of the FPIC process for IPs and LCs to understand that a project may use their data or likeness to report the health of the project or advertise the project to external parties. Obtaining the consent of IPs and LCs to communicate the health outcomes of the project externally is necessary.

For external stakeholders, communicating health considerations of a project accurately and with evidentiary support is vital. For internal project participants, communicate health outcomes in a culturally appropriate manner to enable them to make informed decisions about their project participation.

Takeaway from **Academic Communication of Health in Harmony's GPNP project** (See Appendix for full case study)

The statements utilised by researchers to describe the impact of the projects demonstrate effective and concise ways to discuss the health impacts of a project. The statements include the relevant time periods, are specific in the description of the statistics (e.g., unique patient, unique doctor visits), and succinctly tie the source of the data with the conclusion reached.

Guidance: ISEAL impact and outcomes claims and communications

The ISEAL Alliance (ISEAL), of which Gold Standard is a member, establishes common codes of practice for sustainability-related standards. [206] Verra follows ISEAL's Codes of Good Practice to develop its SD Vista programme. [207] As a part of ISEAL's Codes of Good Practice, ISEAL has released guidance on "Impact and outcomes claims and communications" which is designed for use by "staff working within standard systems who work in monitoring and evaluation (M&E) and communications teams, as well as other staff who might be involved in making impact claims."[208] Even though it is designed for staff working within standards system, project developers must first report their outcomes to standards bodies for verification, so it is relevant to project developers making claims about health outcomes. The following questions can be considered by standards bodies when creating impact claims, and should also be top of mind for project developers when communicating their work[209]:

- What evidence is the statement based on?
- What context does the impact statement apply to?
- Who is creating the results that the impact claim is referring to?
- How should a reduction in negative impact be communicated vs. impact that leads to additional positive impacts?
- How long will the impact hold for and is it only for a specific period of time?

ISEAL also provides a checklist to ensure that sustainability claims are "clear, accurate and relevant, and are backed up by systems that are transparent and robust."[210]

Tool: Communicating outcomes checklist

The checklist below is altered from the ISEAL guidance with the aim to make it more applicable to project developers:

- ☐ Are the communications of health outcomes in clear, plain language, that is not vague or ambiguous?
- ☐ Are the scope and boundary of the claims clear?
- ☐ Are all imagery presented with the impact claim directly relevant to the claim?
- ☐ Is the claim sourced adequately with references?
- ☐ Are the health claims fully supported by the evidence gained from the project activities?
- ☐ Do the health claims adequately capture the magnitude of the impact?
- ☐ Revise claims over time.

3. INVESTORS' AND BUYERS' RESOURCES AND TOOLS

This section of the toolkit summarises the key considerations that NCS investors and carbon credit buyers can evaluate when assessing a project. This builds on the work of the Natural Climate Solutions Alliance (NCSA)'s Buyer's Guide, and adds additional human-health specific due diligence questions.

Investors and buyers are two stakeholders in NCS projects who can play key roles in enabling health outcomes (see Table 11). Investors include corporations, financial institutions (including private equity firms) or individuals who engage with projects to provide initial financing, which can take place in the form of equity investment, co-investment, and capital investments. Buyers are corporations, financial institutions or individuals who purchase NCS carbon credits through single spot purchase agreements or multi-year agreements for regular purchases across a project's life cycle. Both of these key stakeholders can play important roles in enabling NCS projects to deliver health outcomes. For example, investors can provide additional resourcing to support collecting and monitoring health data, and buyers can create the demand signals for projects that have health as a key focus. In certain instances, investors and buyers can have overlapping roles and requirements. For example, buyers purchasing carbon credits through multi-year agreements can act like investors as they are involved in shaping the projects, whereas buyers purchasing through single spot purchase agreements are likely to be focused on the carbon credit standard and the outcomes they certify.

Investors and buyers should focus on high quality and integrity projects and carbon credits. As new standards, project types, and methodologies are being developed, investors and buyers need to navigate the dynamic and fast-evolving landscape of the NCS market. As a priority, investors and buyers should prioritise high-integrity projects and carbon credits. As an example of high-integrity principles, the Integrity Council for the Voluntary Carbon Market (ICVCM)'s Core Carbon Principles (CCPs) includes 10 principles: effective governance, tracking, transparency, robust independent third-party validation and verification, additionality, permanence, robust quantification of emission reductions and removals, no double counting, sustainable development and safeguards, contribution toward net zero transition.[211] Current ICVCM guidance is for carbon crediting programmes, and in the third fiscal quarter of 2023, the ICVCM will announce how the CCPs apply at the carbon credit level.[212] Investors may also seek to compare a project's activities and objectives against the IUCN Global Standard for

Table 11: Overview of investors and buyers, their entry points and key considerations for embedding health considerations in projects.

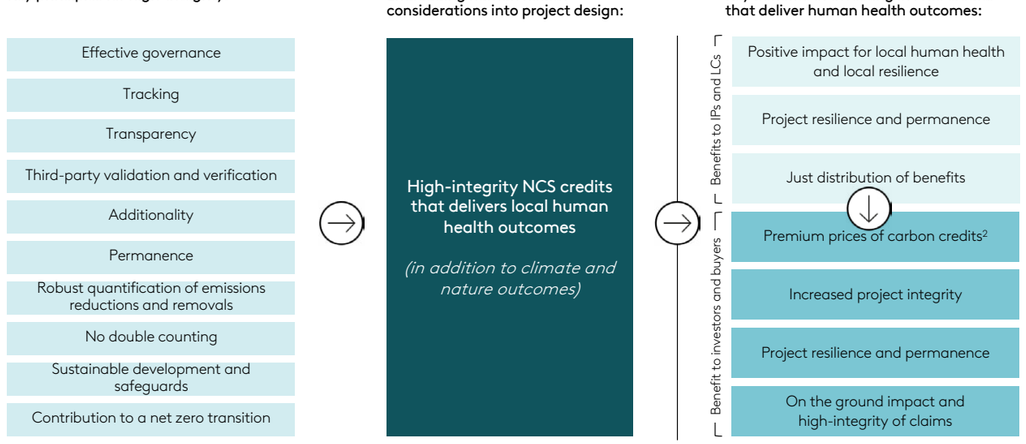
	INVESTORS	BUYERS
Overview	Early investment (often catalytic) provides the initial financing for project development: • **Equity investment:** Equity financing and relationship-building with project developers. • **Co-investing models:** Joining funds that co-invest in NCS projects. • **Capital investments:** Partner with and invest in conservation organisations.	Purchasing credits from the market or project developers. • **Single spot purchase:** Carbon credits bought once projects have successfully been implemented. • **Multi-year purchase agreements:** Purchase or agreed purchase of credits during early project development.
Potential Health Entry Points	• Support project resourcing and the delivery of health outcomes – for example, through the additional technology for MRV, increased budget for research and development. • Decrease the perceived risk profile to future investors enabling further potential health outcomes.	• Creation of short- and long-term demand signals attracting additional health-related investors. • Secure a supply of high-quality NCS that deliver health outcomes. • Provide ROI for investors increasing the attractiveness of future NCS with similar health objectives.
Considerations	• Robust due diligence is required to ensure projects are feasible, best practice is prioritised, and health outcomes are verifiable and aligned with IPs and LCs' needs. • Delivery of credits can occur significantly later than the purchase date therefore contract expectations should be clearly defined, and investors should monitor projects.	• Robust due diligence on the integrity of credits bought. • Be aware of whether the health outcomes are estimated or achieved. • Multi-year purchase agreements delivery can occur after are purchase date; therefore, investor considerations apply.

Nature Based Solutions to see if the project is "delivering anticipated social benefits without compromising nature and vice versa." [213]

Investing in, and buying from, high-integrity NCS projects that deliver health outcomes can enable investors and buyers to make high-integrity claims while also realising potential premium prices associated with the credits. Projects embedding health considerations create opportunities to deliver health outcomes, in addition to the nature and climate outcomes that should be inherent in all NCS projects. Through enabling health benefits for IPs and LCs, projects can also reduce non-permanence risks and increase project resilience as the projects aim to actively support and contribute to IPs' and LCs' well-being. Furthermore, enabling health outcomes for IPs and LCs could create a price premium for the associated carbon credits. [214]

Embedding health considerations in NCS projects can enable a just transition through an equitable and appropriate distribution of benefits. By ensuring that health considerations are embedded in projects, investors and buyers can help create positive outcomes for IPs and LCs. In turn, investors and buyers can make high-integrity claims. Figure 9 outlines a list of potential positive outcomes from investing in NCS credits delivering health outcomes.

Figure 9: Investing in high-integrity NCS projects with health outcomes might have multiple benefits for both IPs and LCs and investors and buyers (principles for high-integrity adopted from the ICVCM).



Sources: 1. IC-VCM (2022) The Core Carbon Principles; 2. Lou et al. (2002) Integrating sustainability into climate finance by quantifying the co-benefits and market of carbon projects

However, identifying NCS projects that have an explicit focus on health is currently difficult in the VCM. Existing NCS standards do not have a specific methodology or certification for health; instead, currently there are elements of health incorporated in different standards (as highlighted in the Table 5). Given this scenario, both investors and buyers who have a specific interest in health outcomes should closely screen and conduct robust due diligence on projects for their specific health considerations and outcomes.

To navigate the fast-evolving NCS landscape, this toolkit aims to provide practical guidance for investors and buyers to consider when investing in NCS projects to meet health-specific objectives. This toolkit builds on the existing work done by the NCSA, which provides further details and guidance on the process for procuring high quality NCS carbon credits. This toolkit does not aim to provide any guidance on purchasing high quality or high-integrity NCS carbon credits more generally, but it is recommended that buyers first ensure that the carbon credits meet the guidance provided by the NCSA and others before considering additional positive contribution criteria.

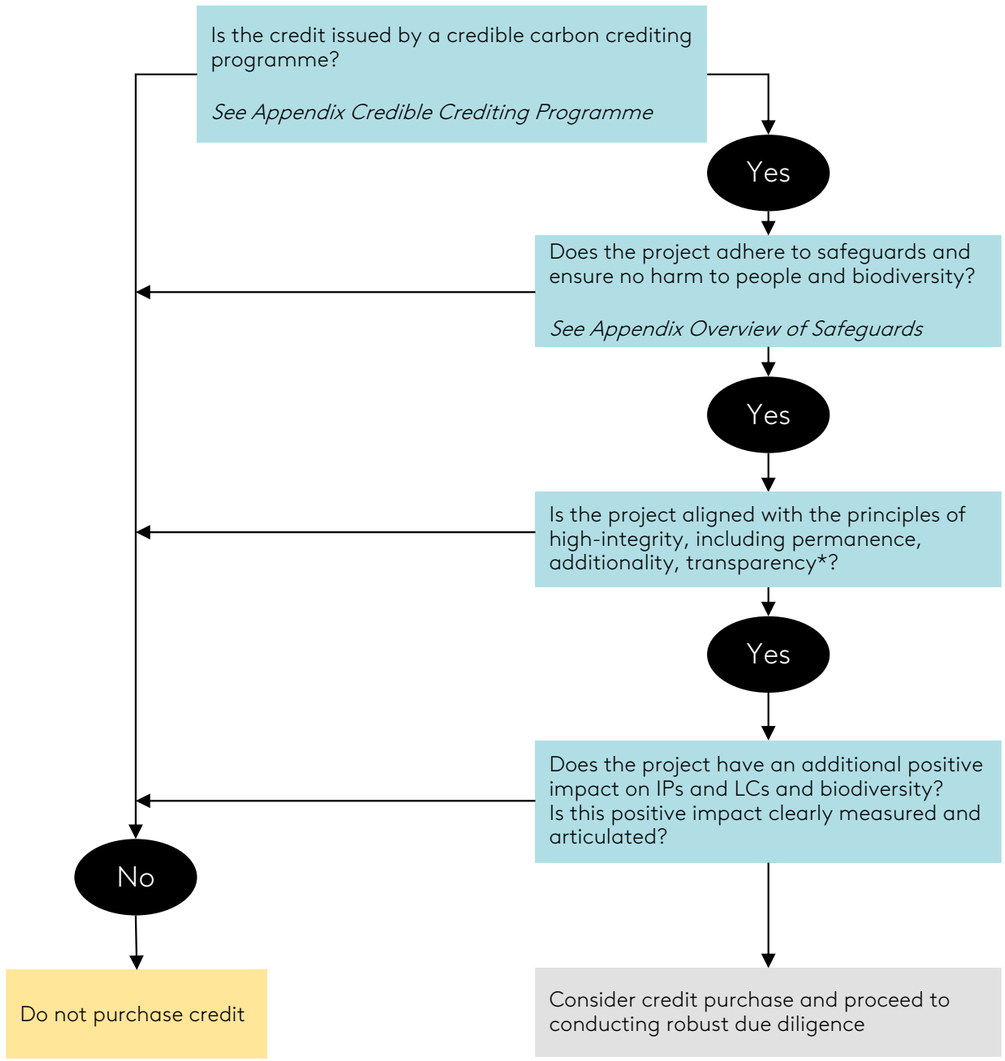
3.1. Key due diligence considerations for investors and buyers

Investors and buyers should confirm that the NCS project is issued by a credible carbon crediting programme and that the project has appropriate safeguards in place. Credible carbon crediting programmes can help to indicate that 'do no harm' principles and safeguards are in place, but investors and buyers should do further assessment to ensure integrity. Environmental and social safeguards have been developed over time by the World Bank, United Nations Framework Convention on Climate Change (UNFCCC), and Convention on Biological Diversity (CBD), and should form the foundations of all NCS projects. Guidelines were developed by the CBD in 2018 on biodiversity financing mechanisms (BFMs) and include key principles (outlined in the Appendix). This builds on the UNFCCC REDD+ safeguards that were adopted at the Conference of the Parties (COP) 16 in Cancún in 2010 (outlined in the Appendix), and provides advice on the application of relevant safeguards with regard to REDD+ as well as other ecosystems beyond forests.[215] Credible carbon crediting programmes can also reduce the risk that the project's impacts will be overstated. If a project's health impacts are overstated, it can harm the project's integrity as the permanence of the health claims will not endure.

In parallel to ensuring that 'do no harm' principles and safeguards have been met, buyers should analyse additional positive contribution criteria for health. Buyers should define the additional health criteria in alignment with their broader ESG (or social or health) and NCS strategies. Given the existing gap in standards that verify health outcomes explicitly, investors and buyers should do further due diligence on these criteria when evaluating a project or programme. This toolkit provides examples of health-specific due diligence questions that buyers could use when engaging with NCS project developers.

Decision tree to identify when robust due diligence is needed

Figure 10: Decision tree to identify when a robust due diligence is needed, adapted from NCSA's A Buyer's Guide to Natural Climate Solutions Carbon Credits [216] (Start at the top).



*For example, the ICVCM Core Carbon Principles

Due diligence criteria, questions, and example answers

The eight criteria below are aligned with the project development steps outlined in Figure 8. The questions are designed to evaluate if a project developer's actions and decisions have taken 'do no harm' and proper safeguards into consideration. The following due diligence questions can be used in multiple ways. For buyers and investors putting funds in at the outset of projects, it is important that the project developers have plans to incorporate the considerations in future project design. The due diligence questions can also be used retrospectively to evaluate the various qualities of the project as the project is being implemented. Finally, for buyers and investors who have limited resources for due diligence, the due diligence questions can be compared against project documentation to evaluate a project that has already generated offsets.

Criterion 1: The project has identified health-focused stakeholders to understand the health context, priorities, and needs of IPs and LCs who are directly and indirectly impacted by the NCS.

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
Does the project have impacts on IPs and LCs, and if so, how far are IPs and LCs from the project area and buffer zone?	Yes, the project is located in an area that will have an impact on IPs and LCs. Indigenous People live within the project area, and the closest local communities live 10km away from the project area.
Has the project identified the ways in which stakeholders rely/depend on the ecosystem (including stakeholders in the project's buffer zone, as well as those beyond the project's buffer zone)? Has the project considered potential negative health impacts?	The project has provided a stakeholder identification visualisation and a description of all key stakeholders, including an overview of how each stakeholder depends on the ecosystem (e.g., use of natural medicines from plants), where possible. Potential negative health impacts of the project have been considered and evaluated as a part of the project's stakeholder engagement, co-design, and health impact assessment.
Has the project mapped out health-related stakeholders (including health authorities, community leaders, health-focused community members, academics, NGOs, researchers, health clinics and hospitals) and understood how they have engaged with the project and IPs and LCs to date?	The stakeholder identification included health-related stakeholders, where in this specific project there were health clinics and NGOs who were engaged in other health-related projects in the project area. These health-related projects were associated with Water, Sanitation and Hygiene (WASH) and reproductive health.
Has the project identified all the relevant contextual factors (such as location and socioeconomic structure) that can impact health outcomes?	The project developers have understood the contextual factors that are relevant to this ecosystem, which includes being geographically close to a sewage treatment plant that has had incidents of accidental leaks.

Criterion 2: The project understands IPs' and LCs' health needs priorities, and to the extent possible, avoids/minimises unintended consequences for communities.

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
Did the project conduct interviews to understand how stakeholders (particularly IPs and LCs) define health? What are their specific health needs, priorities, challenges and concerns?	IPs and LCs impacted by the project define health as both physiological health and their cultural identity in relation to the ecosystem. Specific priorities highlighted by IPs and LCs include food and nutrition, where they have faced challenges with food security given frequent droughts in recent years, and concerns of lack of diversity of species for food sources which has impacts on nutrition.
Are the roles and responsibilities of all mapped stakeholders in relation to supporting health needs, priorities, and objectives clearly outlined?	The project developer has summarised [ten] health needs and priorities and has identified and consulted with stakeholders to understand their existing roles and responsibilities with regard to these priorities. For example, one of the priorities is food and nutrition, where smallholder farmers and health clinics play a key role in producing food and monitoring the local population's nutrition.

Criterion 3: The project has established a reference point (i.e., baseline) for health that can be used to measure health impacts, select KPIs, and identify further health challenges and risks (in a sensitive and appropriate manner).

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
Has the project developer identified the key health needs and priorities KPIs of IPs and LCs, and what health data (quantitative and qualitative) should be collected, how, and why?	Based on the [10] health needs and priorities highlighted by IPs and LCs, projects have identified the key health KPIs that would be required to monitor progress. For example, iron deficiency was identified as a key concern, therefore the project is monitoring blood iron levels to monitor nutrition. For each KPI, the project developer has a clear rationale for why it needs to be collected.
How has health data been collected? Did the project collect health data in an equitable and sensitive way, being mindful of how much data is needed and the appropriateness and privacy required for collecting any personal or sensitive data? Has the data been managed in alignment with data privacy principles?	Health data was collected via the health clinic. The project developer has consulted with health experts on how health data should be collected, and has ensured that the data is assessed in aggregate (i.e., not individual data), by health professionals with medical knowledge, and is collected at a frequency that is not burdensome but allows for accurate tracking.
What are the potential adverse health impacts of the project and what KPIs are being used to baseline those?	The project is measuring some wider determinants of health, such as water access and quality, to understand IPs' and LCs' health beyond the specific health needs and priorities. The project is also looking at other health-related data, including life expectancy, infant mortality rate, and maternal mortality ratio.
Has the project conducted a health impact assessment for the project to inform how the project could be designed to meet IPs' and LCs' health needs and priorities?	Yes, the project has conducted a health impact assessment and identified potential ways for the project to be designed to meet IPs' and LCs' health needs and priorities.

Criterion 4: The project was designed in a participatory manner to enable opportunities for co-design to enhance the health benefits of the NCS and mitigate any potential health risks.

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
Has the project defined its health-specific theory of change and impact goals based on IPs' and LCs' health needs and the relevant contextual factors? What is the project's theory of change?	To meet the IPs' and LC's priorities for nutrition, and more specifically, the iron deficiency challenge that was previously highlighted, the project has identified three potential pre-conditions: • Access to plant-based vitamin A and iron sources (e.g., *Eru or Gnetum africanum*)[217] • Avoiding food with anti-nutrients that reduce iron absorption (e.g., tannins) • Adequate financing support to buy iron-rich foods (e.g., fish and meat) The project has developed a theory of change for all [10] health needs and priorities highlighted by IPs and LCs.
Has the project developer consulted with health authorities, academics and researchers to understand the evidence between the respective ecosystem and health? Has this been incorporated into the project design to enhance potential health benefits and mitigate potential health risks in relation to the needs and priorities highlighted by IPs and LCs?	Yes, the project developer has connected with researchers from academic institutions to understand the potential links between the ecosystem and health. These insights have been factored into the design of the project, including planting mangroves in specific locations to provide shade, and providing mosquito repellent to project employees, IPs and LCs.
Did the project have a participatory design approach to ensure that the health needs and priorities of different stakeholders are addressed in the project design? If so, what was the project's approach to participatory design?	The project developer has involved the mapped stakeholders in the design of the project and has leveraged co-creation tools that could be designed with IPs and LCs and/or could be done online to co-design projects. The project's process documents were also submitted to relevant stakeholders for review and approval.
Does the project developer have the technical expertise to deliver on the health impact objectives? Have they previously delivered projects embedding health considerations? If so, how successful were these projects?	No, the project developer does not have technical expertise and has not previously delivered projects with health considerations.
If the project does not have health specific expertise, and there are no existing health expert partners, does the project have a clear mitigating plan to address this capacity gap?	The project developer has identified the skills requirements for the project to meet its health impact objectives, e.g., local nutritionists.
Has the project identified partnerships (e.g., health authorities, academics, health-specific NGOs) to support implementation? Which health technical partners are already engaged with the project?	Based on the skills assessment, the project developer has shortlisted [five] potential local nutritionists to engage with in order to help with the communities' iron deficiency.

Criterion 5: The project governance provides efficient channels for stakeholder engagement to ensure that stakeholders remain involved throughout the project lifecycle, which supports with adaptive management and risk escalation to ensure that the project continuously meets the changing health needs and priorities of IPs and LCs, and that unintended health consequences are reported and managed.

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
What is the project's governance structure? Is this a polycentric governance structure that considers complex relationships and autonomous decision-making?	The project has a tripartite governance structure with three centres for decision-making (project developer, communities, investors). No one party has the authority to make collective decisions, and the project has an overarching mechanism to solve conflicts and come to an agreement.
Does the project continue to host structured and inclusive meetings with key stakeholders? [xxxi] ***And is health a key topic on the agenda of these meetings?***	Yes, the project hosts fortnightly meetings with representatives from all stakeholder groups, and health is included as a key topic for progress updates and knowledge sharing.
Do health-related community members and experts continue to engage in the project, and are they invited to regular meetings?	Yes, health-related community members and experts (including health nutritionists) are regularly consulted and invited to project meetings.
Does the project have a clear adaptive management approach, with a clear framework for continuous learning and improvements for health-related aspects of the project, allowing for priorities/actions to influence and update benefit-sharing arrangements as needed?	Yes, the project has an adaptive management process which includes regular health impact assessments and consultations with IPs and LCs to identify evolving health needs and priorities, which are incorporated into the project activities. This includes adjustments to benefit-sharing arrangements as required.
Does the project have a clear health risk management approach? Can the project describe this risk management approach?	The project tracks potential adverse health consequences through metrics such as mortality rate and infant mortality, and when metrics indicate that there are negative health impacts, the project is able to bring together stakeholders to evaluate the risk and adapt the project to mitigate these health risks.
Does the project have a clear grievance mechanism in place that is accessible, predictable, equitable, transparent, and rights-compatible based on engagement? Does this mechanism clearly include health-related grievances?	The project has designed the grievance mechanism with IPs and LCs, which has formal processes for acknowledging, registering, reviewing and resolving complaints. Health-related grievances are mediated amongst those impacted and health-related community members.

[xxxi] Please note that governance approaches and structures should be appropriate for the local context, and including where appropriate, vulnerable or marginalised groups in the project area or buffer zone.

Criterion 6: IPs and LCs who are impacted by the project are involved in the project's financial planning processes and empowered to make decisions about benefit-sharing, which occurs in a transparent and equitable manner with ongoing consultations with IPs and LCs.

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
Has the project developer conducted a participatory identification of benefits, whereby IPs and LCs and beneficiaries have input into deciding the benefits that they receive?	Yes, the monetary and non-monetary benefits of the projects have been identified in collaboration with IPs and LCs and other beneficiaries, and their views on which benefits they would like to receive has been incorporated into the benefit-sharing mechanism.
Does the project have an equitable benefit-sharing mechanism in place? What is the structure of the arrangement?	The project has a benefit-sharing scheme predicated on monetary benefits: USD $x earned by forest communities through carbon credits in 2023. Of this, x% is invested in education and health initiatives, including a Food and Nutrition Fund, to support food security and nutritional diversity.
How do monetary and non-monetary benefits flow through to the intended beneficiary groups? Are there conditionalities associated with the benefits?	The monetary benefits of this project are shared through a community trust, which was set up in collaboration with IPs and LCs, who have appointed the trustees and beneficiaries. For non-monetary benefits, such as eru (*Gnetum africanum*) crops, the rights to harvest are clearly outlined to ensure that IPs and LCs have first right of access if desired.
How transparent is the benefit-sharing process, and can the project provide a proof of payment and receipt (if applicable)?	Proof of payment is recorded digitally and the information is made transparent to all relevant stakeholders.
Does the benefit-sharing arrangement clearly describe the timing, duration, and consistency of expected benefits?	Yes, the project benefits sharing arrangement outlines for non-monetary benefits such as *Gnetum africanum* are dependent on natural growth cycles for *Gnetum africanum* ~2 kg of leaves can be produced every six months.

Criterion 7: The project incorporates health as a core component of its broader MRV processes, continuously gathers information and tracks KPIs in relation to the health baseline to understand the impact that the project is making.

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
Is the project tracking and monitoring health outcomes in relation to the health baseline established and health KPIs identified? If so, what are the sources of data for MRV and how credible are these sources of data?	Yes, for each health KPI identified, the measurement methodology has been defined with a health expert. Health data is being tracked, monitored and validated by health experts. For example, the levels of blood iron in IPs and LCs populations are measured regularly in health clinics using medical methods with high levels of confidence.
Is the project tracking against potential adverse health impacts?	The project is tracking the wider determinants of health to understand IPs' and LCs' health beyond the specific health needs and priorities, including life expectancy and malaria incidence. The project is also identifying additional KPIs that may need to be tracked.
In response to potential adverse health impacts, what are the mitigation strategies that will be put in place to address these potential risks?	The project found that there was a relatively high malaria incidence, so it co-developed a plan with community members to provide mosquito nets and malaria medication.
How frequently does health-specific monitoring occur? Are there project milestones that relate to health outcomes?	Health KPIs are measured regularly, with different cadences depending on the KPI measured. Health drivers (e.g., water quality) are typically monitored more frequently than health impacts (e.g., malaria cases per year).

Criterion 8: The project appropriately and credibly communicates the health outcomes of the project, checking with IPs and LCs before communicating, and not making any claims on benefits before they have happened, nor claiming responsibility for those health outcomes.

DUE DILIGENCE EXAMPLE QUESTIONS	EXAMPLE ANSWERS
Has the project developer engaged with, and received approval from IPs, LCs and other beneficiaries to communicate the health outcomes of the project?	Yes, the project developer has approval from IPs, LCs and other beneficiaries that they are able to communicate the health outcomes of the project, and the communication has been co-developed with the beneficiaries to ensure appropriateness.
Is the project making claims on potential outcomes before they have happened, or on actual outcomes after they have been achieved?	The project claims that it could enable a number of health outcomes, and is providing regular and transparent progress updates on each outcome, and adjusting communication on health outcomes progress and potential.

APPENDIX AND REFERENCES

APPENDIX FROM INTRODUCTION SECTION

Table 12: Overview of different NCS project categories.[219]

TYPE	OVERVIEW	EXAMPLES
Removals	Activities that remove ('take out', sequester or capture) greenhouse gases from the atmosphere.	ARR
Reductions	Activities that reduce GHGs that would have occurred but for the activity.	Reducing Emissions from Deforestation and avoided Degradation (REDD)
Avoidance	Activities to avoid GHGs from something that is not currently an emissions source but will become one without intervention.	High Forest, Low Deforestation (HFLD)

Table 13: A summary of different global carbon-related methodologies that are applicable to mangrove ecosystems and endorsed by the International Carbon Reduction and Offset Alliance (ICROA). In addition to these, there are also region-specific methodologies that can be applied.

STANDARD	METHODOLOGY	PROJECT TYPE	STATUS
VCS	VM0007 REDD+ Methodology Framework (REDD-MF)	Peatland and Tidal Wetland Conservation	Active
VCS	VM0015: Methodology for Avoided Unplanned Deforestation	REDD	Active
VCS	VM0033 Methodology for Tidal Wetland and Seagrass Protection	Wetland and Seagrass Conservation	Active
CDM	AR-AM0014 Afforestation and Reforestation of Degraded Mangrove Habitats	Mangrove Restoration	Active
Gold Standard	Afforestation/Restoration GHG Emissions Reduction and Sequestration Methodology	Reforestation (Riparian/Coastal)	Active
Plan Vivo	PM001 Agriculture and Forestry Carbon Benefit Methodology [xxxiii]	Reforestation (Riparian/Coastal)	Active
Social Carbon	SCM0008 Methodology for the Restoration of Mangroves	Mangrove Restoration	Under development

[xxxiii] Note: non-carbon (benefit measurement) methodology.

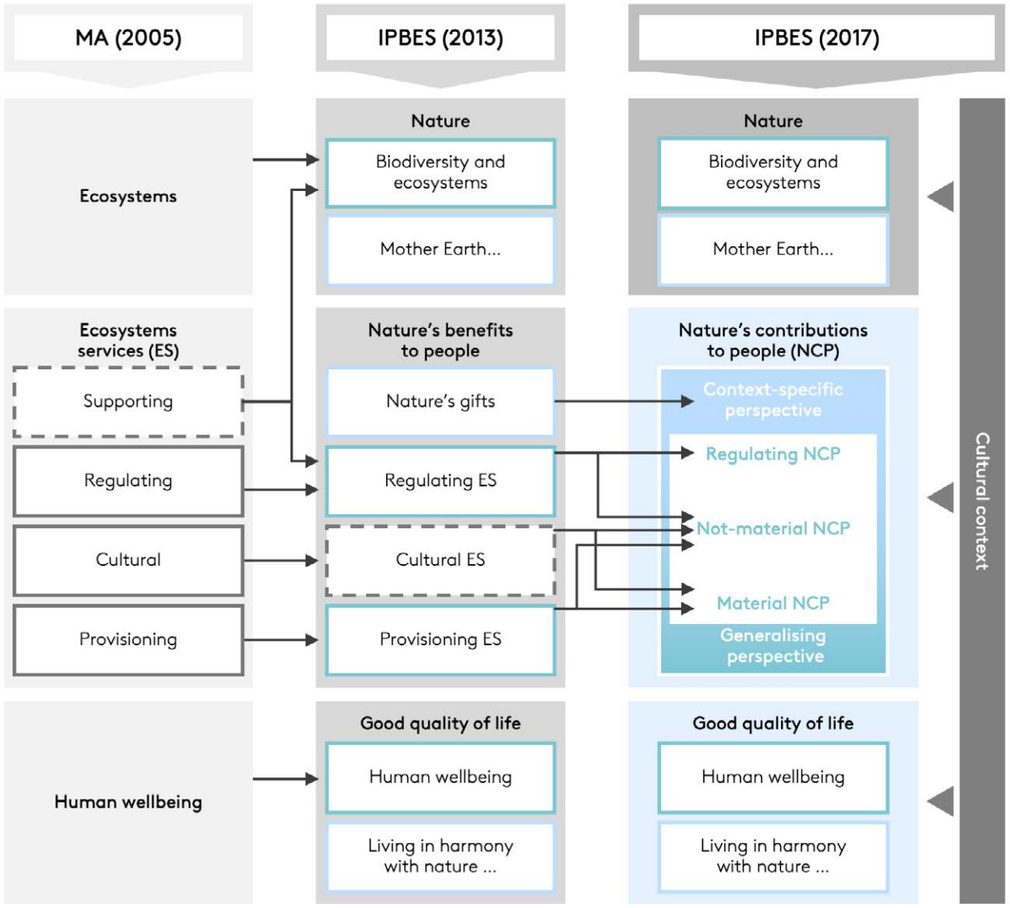
Table 14: A summary of different global carbon-related projects that are applicable to forest ecosystems.

PROJECT TYPE	DESCRIPTION	EXAMPLE OF METHODOLOGY
REDD+	Finance avoided and reduced carbon emissions from avoided deforestation and forest protection.	VCS VM0006 – Mosaic and landscape-scale REDD+ activities
ALM	Finance avoided and removed carbon from the atmosphere from regenerative agricultural farming practices, such as regenerative agriculture.	VCS AMS-III.AU – Methane emission reduction by adjusted water management practices in rice cultivation
ARR	Finance removed carbon from the expansion of tree coverage in areas that would otherwise be used for other practices.	VCS AR-ACM0003 – Afforestation and reforestation of lands except wetlands Gold Standard Afforestation/Reforestation (A/R) GHG emissions reduction & sequestration methodology
IFM	Finance avoided and removed carbon emissions from forestry practices that increase carbon stocks within forests compared to business as usual, such as regenerative management of forest products like timber.	VCS VM0010 – Improved Forest Management through conversion from logged to protected forest

APPENDIX FROM SECTION 1: LINKS BETWEEN NATURE AND LOCAL HEALTH

Evolution from Ecosystem Services to Nature's Contributions to People

Figure 11: A schematic view of the evolution of the NCP framing from the Millennium Ecosystem Assessment framing of ecosystem services (from IPBES). [220]



Areas for future research efforts

Mangroves

Research on mangroves (and other coastal ecosystems) is more limited than research on terrestrial ecosystems, and where the research does exist, it is often fragmented across multiple disciplines.[221] The research on mangroves to date has been focused on its economic value rather than its links to health,[222] and where there is existing research it has focused on food, nutrition, and livelihoods. Based on this research, one of the stronger evidence links has been observed for mangrove support services for fisheries.[223] Academics have highlighted notable research gaps, in particular, on the efficacy of medicines from mangroves, the role of mangroves in pollution remediation, and the role of mangroves in disease regulation.[224] Knowledge gaps still exist across multiple other potential benefits and risks, for example, it is hypothesised that mangroves can enable mental health benefits through exposure to green and blue spaces, but the evidence in these ecosystems is limited and existing research has focused on urban environments. [225]

Forests

Research on forests has extensively focused on the material NCPs, which have tangible benefits that make them easier to verify, however regulating and material NCPs would benefit from further research.[226] Academics have highlighted notable research gaps on the links between degraded forest ecosystems and the potential for zoonotic virus transmission, to help understand the contexts in which forest loss leads to the spread of infectious diseases. [227] Other notable research gaps include the study of traditional uses of medicinal plants, the health impacts of deforestation and forest degradation, and the role of forests in regulating air quality in different local conditions.[228] Knowledge gaps still exist across multiple other potential benefits and risks, including on the links between forests and air pollution in different local conditions, as well as the impacts of forests on heat-related morbidity. [229] Research currently shows that it is not clear what role forests play in managing landscape humidity and temperatures. [230]

APPENDIX FROM SECTION 2: NCS PROJECT DEVELOPERS' RESOURCES AND TOOLS

Overview of the safeguards

UNFCCC REDD+ Safeguards (Cancún Safeguards)

The REDD+ safeguards were adopted at COP16 in Cancún in 2010, and in at COP17 in Durban in 2011. Parties agreed that countries should provide the information on how the safeguards are addressed under each national circumstance and international obligation.[231] Safeguards from the UNFCCC for REDD+ include:

- "That actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements;
- Transparent and effective national forest governance structures, taking into account national legislation and sovereignty;
- Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;
- The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision;
- That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions referred to in paragraph 70 of this decision are not used for the conversion of natural forests, but are instead used to incentivise the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits, taking into account the need for sustainable livelihoods of indigenous peoples and local communities and their interdependence on forests in most countries, reflected in the United Nations Declaration on the Rights of Indigenous Peoples, as well as the International Mother Earth Day;
- Actions to address the risks of reversals;
- Actions to reduce displacement of emissions."[232]

CBD Safeguards

The CBD has outlined voluntary guidelines for safeguards that "maximise the protection of biodiversity and people's livelihoods while minimising negative impacts". Guidelines from the CBD include:

- **"Biodiversity underpins local livelihoods and resilience:** The role of biodiversity and ecosystem functions for local livelihoods and resilience, as well as biodiversity's intrinsic values, should be recognised in the selection, design, and implementation of biodiversity financing mechanisms.
- **People's rights, responsibilities, and effective participation:** Rights and responsibilities of actors and stakeholders in biodiversity financing mechanisms should be carefully defined at national level, in a fair and equitable manner, with the effective participation of all actors concerned, including the prior informed consent or approval and involvement of indigenous and local communities, taking into account the Convention on Biological Diversity and its relevant decisions, guidance and principles and, as appropriate, the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP).
- **Local and country-driven/specific processes linked to the international level:** Safeguards in biodiversity financing mechanisms for biodiversity should be grounded in local circumstances, be developed consistent with country-driven/specific processes as well as national legislation and priorities, and take into account relevant international agreements, declarations and guidance, developed under the Convention on Biological Diversity and as appropriate, the United Nations Framework Convention on Climate Change, international human rights treaties and United Nations Declaration of the Rights of Indigenous Peoples, among others.
- **Governance, institutional frameworks, transparency, accountability, and compliance:** Appropriate institutional frameworks are of utmost importance for safeguards to be operational and should be put in place, including enforcement and evaluation mechanisms that will ensure transparency and accountability, as well as compliance with relevant safeguards." [233]

Example of an HRQOL questionnaire[234]:

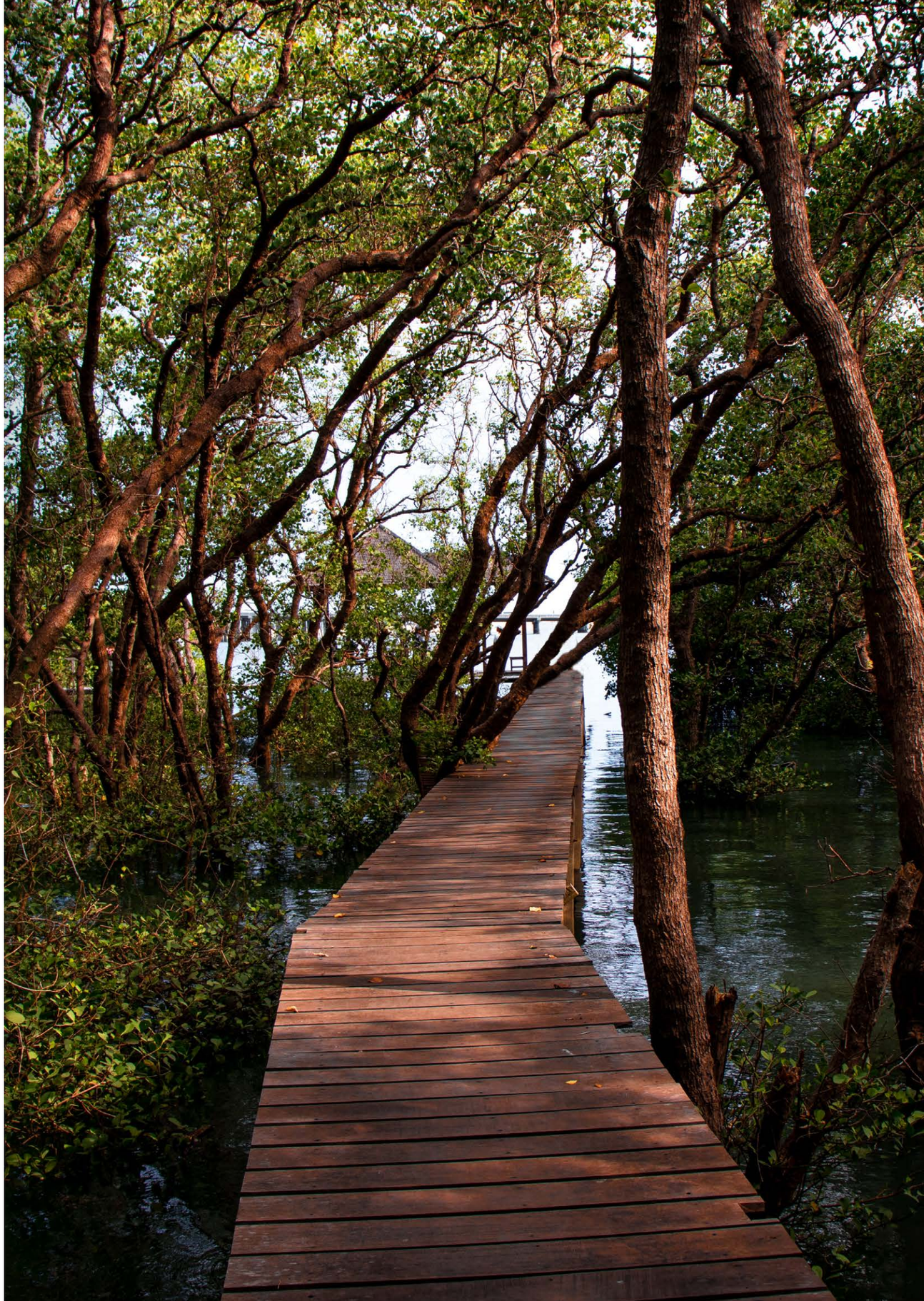
NCS project developers can play a key role in supporting the health of IPs and LCs that live in and around project sites and landscapes. They can do this by understanding the key health concerns of the IPs and LCs and designing the project in such a way as to address at least some, if not all of these needs. Projects and IPs and LCs will have specific and varying concerns based on their physical environment, access to health education and services etc.

As a first step to understanding the local context and issues of IPs and LCs, we have developed a 'long list' of questions and an example Health-Related Quality of Life questionnaire as part of the enquiry that developers should undertake to inform the design and development of NCS projects.

Projects will need to identify, measure and assess the health concerns of the IPs and LCs, and this can be done using the Health-Related Quality of Life concept. HRQOL is self-reported and requires individuals to assess their perceived physical, mental, and social functioning and well-being. Carrying out an HRQOL questionnaire can enable project developers to design appropriate solutions based on the concerns perceived by the IPs and LCs (example questionnaire shared below). The HRQOL questions in the Appendix are written to facilitate yes or no responses because the questionnaire is designed to create a composite measure of health. If a project developer seeks more qualitative and descriptive information, the questions can be modified to solicit more open-ended responses.

Section 1: Healthy Days[235] Core Module (CDC HRQOL–4)

QUESTION	OPTIONS	SCORE	NOTES
1. Would you say that your general health is: N.B. Tick the relevant option in the answer box	Excellent	1	
	Very good	2	
	Good	3	
	Fair	4	
	Poor	5	
	Don't know/not sure	7	
	Refused	9	
2. Thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good? N.B. Insert the number of days, if relevant, in the answer box	Number of days	__	
	None	8 8	
3. Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good? N.B. Insert the number of days, if relevant, in the answer box	Number of days	__	
	None	8 8	If both Q2 AND Q3 = "None," skip next question
	Don't know/not sure	7 7	
	Refused	9 9	
4. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation? N.B. insert the number of days, if relevant, in the answer box	Number of days	__	
	None	8 8	
	Don't know/not sure	7 7	
	Refused	9 9	



Section 2: Activity Limitations Module

These next questions are about physical, mental, or emotional problems or limitations you may have in your daily life.

QUESTION	OPTIONS	SCORE	NOTES
1. Are you LIMITED in any way in activities because of any impairment or health problem?: N.B. Tick the relevant option in the answer box	Yes	1	
	No	2	Go to Q1 of Healthy Days Symptoms Module
	Don't know/not sure	7	Go to Q1 of Healthy Days Symptoms Module
	Refused	9	Go to Q1 of Healthy Days Symptoms Module
2. What is the MAJOR impairment or health problem that limits your activities? Do Not Read. Code Only One Category.	Arthritis/rheumatism	01	
	Back of neck problem	02	
	Fractures, bone/joint injury	03	
	Walking problem	04	
	Lung/breathing problem	05	
	Hearing problem	06	
	Eye/vision problem	07	
	Heart problem	08	
	Stroke problem	09	
	Hypertension/high blood pressure	10	
	Diabetes	11	
	Cancer	12	
	Depression/anxiety/ emotional problem	13	
	Other impairment/ problem	14	
	Don't know/not sure	77	
	Refused	99	
3. For how long have your activities been limited because of your major impairment or health problem?	Days	1__	
	Weeks	2__	
	Months	3__	
	Years	4__	
	Don't know/not sure	777	
	Refused	999	

QUESTION	OPTIONS	SCORE	NOTES
4. Because of any impairment or health problem, do you need the help of other persons with your personal care needs, such as eating, bathing, dressing, or getting around the house?	Yes	1	
	No	2	
	Don't know/not sure	7	
	Refused	9	
5. Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?	Yes	1	
	No	2	
	Don't know/not sure	7	
	Refused	9	

Detailed case studies

The Rimba Raya Biodiversity Reserve Project: Stakeholder identification process [xxxiv]

The Rimba Raya Biodiversity Reserve Project (Rimba Raya Project) is a REDD+ project, based in Borneo in Indonesia, aiming to halt deforestation originally slated for palm oil plantation conversion.[236] In addition to climate and biodiversity goals, the Rimba Raya Project has been certified by Verra under the SD VISta programme for contributing to all 17 UNSDGs.[237] The project contributes to SDG 3 by (a) implementing programmes to increase healthy food choices, (b) building a floating health clinic, (c) reducing overall pollution through fire-fighting, (d) cleaning up litter and reforestation; and (e) initiate education programmes about waste disposal and litter clean-up, and its effects on the Seruyan River.[283]

The Rimba Raya Project's stakeholder identification process began with consultations with project partners, government officials at the national and regional levels, and commissioning a desktop study of project area. The desktop review was followed by a legal analysis of rights in the project area by the local branch of the Indonesian National Forestry department. Concurrent to the legal analysis, the Rimba Raya project developers met with Chiefs of the local villages in the project area to evaluate the level of support for the project and discern community needs.[239]

Health in Harmony's 'Radical Listening' stakeholder engagement approach

Despite government protections, and due to poor enforcement efforts, more than 60% of lowland forests in protected areas in Borneo's West Kalimantan region were lost due to illegal logging between 1985 and 2001.[240] The non-profit organisation Health in Harmony initiated a listening process in 2007 in the communities living in and around the forest area. The listening tour spanned 400 hours of meetings with nearly 500 community representatives, and the question posed to all community members was: "You all are guardians of the precious rainforest that is valuable to the whole world. What would you need as a thank you from the world community so that you could protect it, and thrive yourselves?"[241] The consensus among communities was that they could stop the logging practices if they had access to high-quality affordable healthcare in the area and training in sustainable livelihoods.[242] The nearest hospital to many villages was between 2 and 12 hours away. The uptake of the project was extremely positive, with 21 of 23 districts signing formal agreement to participate in the project.

[xxxiv] The following case study illustrates how a project developer conducts a robust, and highly participative stakeholder identification process that sets up the project design process to be inclusive and reflective of reality. The case study is purely illustrative and is not the only way to properly conduct a stakeholder identification exercise.

Radical Listening is not a typical process for stakeholder engagement. It is characterized by:

- An understanding that the IPs and LCs a project developer is engaging with are the experts in their problems and experts at developing their solutions.
- Radical Listening is always done in a group and seeks consensus and shared understanding from the conversation.
- Radical listening identifies the key fulcrums of change in a community.
- Radical Listening commits and seeks to implement the community's solutions by continuing to hold meetings with smaller groups to hone in on key issues and solutions.[243]

The Rimba Raya Biodiversity Reserve project's baseline survey

The Rimba Raya project developer partnered with World Education, which has been working with communities in the Rimba Raya area since 2003, and Daemeter Consulting to conduct a baseline survey to assess "community development needs, local uses of the surrounding forests, and community land use."[244] The survey was conducted through individual interviews and group discussions, and the various village leaders, including leaders outside of formal structures and woman leaders, elder and youth community members were the respondents. Individual interviews allowed for the repetition of questions to gauge the consistency of information among interviewees, and the small group interviews facilitated discussion about community needs. There were certain standard topics chosen, in adherence to CCB standards, but otherwise, community members chose the topics of discussion. [245]

The survey results established the baseline scenario for health outcomes. The surveys showed that:

- Only a few communities had healthcare facilities and villagers would go to other communities for treatment,[246]
- The communities lacked resources to effectively treat diseases, and
- Most community members relied on the Seruyan River for their basic needs, income, and transportation.[247]

These findings prompted the Rimba Raya developers to arrange for the development, construction, and deployment of a floating medical clinic.[248] The floating clinic was decided on versus a community clinic because of its "mobility and the resulting ability to deliver medical services up and down the Seruyan River, effectively servicing all of the communities in the Project Zone."[249]

The initial survey took place in 2008, and a follow-up study was conducted in 2017, which did a review of the stakeholders in the project area based on "physical, financial, social and natural capital indicators."[250] The 2017 study was utilised to further refine project activities and focus on specific project activities in certain villages.

The health-related indicators that the Rimba Raya project is monitoring are:

- Incidences of diarrhoea and typhoid;
- Households and individuals with knowledge and information on hygiene;
- Mortality rates;
- Existence of medical centres, including number of doctors, nurses and patient visits; and
- Prevalence of acute and chronic malnutrition and disease.[251]

Monitoring of these outcomes will be performed by teams of local community members that are hired by the Rimba Raya developers.[252]

The Kasigau Corridor REDD+ Project: Problem flow diagram

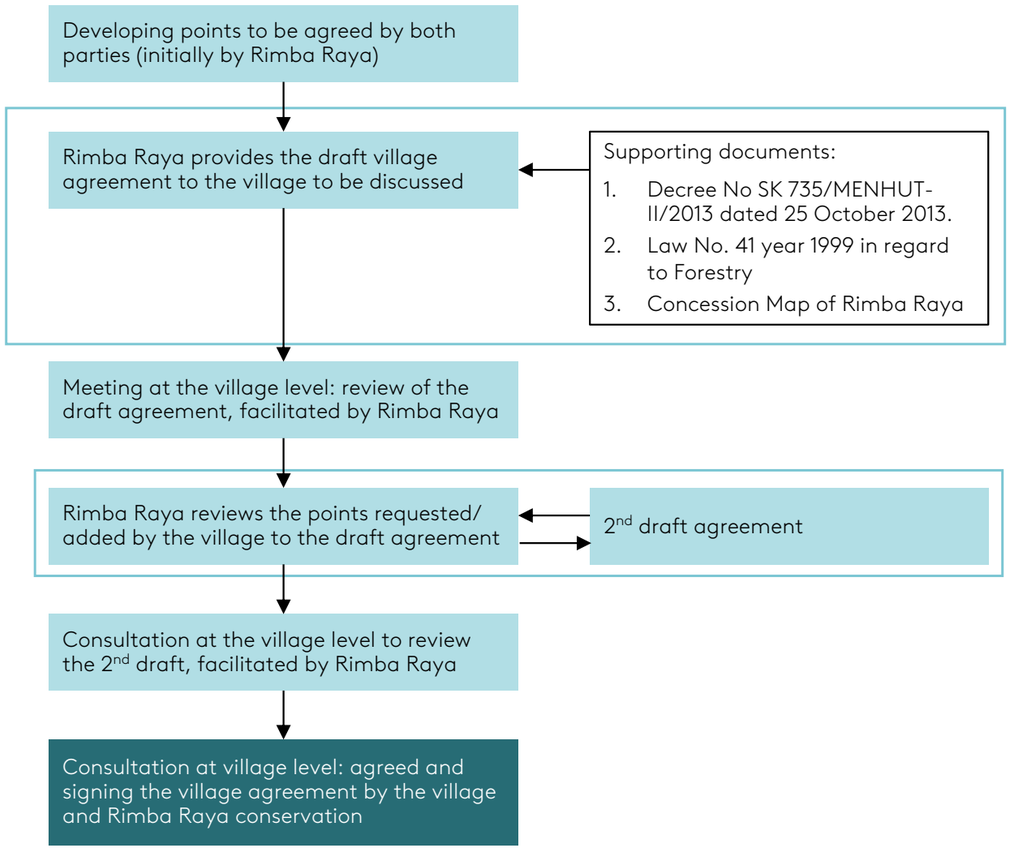
The Kasigau Corridor REDD+ Project (KCRP) is the world's first VCS and CCB accredited REDD+ project. Since 2005, the KCRP has been partnering with local community members to protect endangered wildlife and forests by co-creating sustainable economic opportunities. KCRP covers 200,000 hectares of dryland forest in Southeast Kenya and is home to over 100,000 people living adjacent to the Project Accounting Area (PAA).[253]

Community members at the KCRP determined which local development goals to finance through Social and Biodiversity Impact Assessment (SBIA) workshops, where democratically elected representatives from the community worked through a cause-and-effect logic model (i.e., theory of change) for key challenges pertinent to their sustainable local development and well-being. Through these workshops, participants deliberated on how key issues would continue if the REDD+ project was not implemented, how they could positively change with the project, and any potential risks or negative impacts of the project.[254]

In addition to clean water, the SBIA workshops identified other health-related challenges such as the high cost of healthcare and their associated activities for improvement. This led to the construction of a state-of-the-art blood testing and diagnostic laboratory in the nearest major town, Voi.[255]

The Rimba Raya Biodiversity Reserve project's feedback and grievance mechanisms

The Rimba Raya project has established a formal and transparent process for receiving feedback and addressing grievances. The process began with the use of village agreements between the project and affected communities. Each of the village agreements contained mutually agreed upon objectives and points to ensure that benefit-sharing is implemented in each village. The process by which each village approves of the village agreement is depicted in the following flow chart[256]:



In addition to village agreements, community members are encouraged to report any issues, concerns, suggestions or advice to a member of the project's community development staff, their designated village representative or a representative from any of the three NGOs working on the Rimba Raya project. The designated village representative has been trained to report concerns from community members directly to Rimba Raya project developers.[257] The Rimba Raya project developers also installed 30 suggestion boxes in 9 villages that can be used by community members to submit comments and grievances.[258]

The Rimba Raya project has a formal grievance and conflict resolution process that can be initiated by community members. These processes are posted publicly in all villages in the project area, and communities receive periodic training regarding the grievance and conflict resolution procedures. Once a grievance is lodged with a third-party intermediary, which is usually World Education, discussions are held between the complainant and a designated Indonesian representative of World Education to discuss potential solutions. If a significant grievance is brought forward, this can be escalated to the Rimba Raya project developers for discussion and resolution. World Education presents a range of possible solutions to the community member until an appropriate solution is determined and the whole process is designed to be resolved in 30 days and a public report is created that can be accessed by all stakeholders.[259]

In addition, Rimba Raya has an Early Warning Early Response community conflict resolution process. In general, Early Warning Early Response systems are designed to detect and prevent conflict before it is escalated.[260] The process allows project field staff or community members to bring issues to Unit Managers, which are managers on the project site. The Unit Manager analyses whether they have the capacity or authority to resolve the issue and must report the issue to the General Manager. The General Manager may intervene if necessary and may call in additional resources to resolve it. Through project field staff and designated Unit Managers that can either resolve the situation if they have the authority to resolve it or escalate the issue to the project's General Manager.[261]

Burapha Agroforestry Project: nonmonetary benefit-sharing through UXO removal

The Burapha Agroforestry Project (Burapha Project) aims to revitalise degraded land on former slash-and-burn territories by developing agroforestry plantations in the project area.[262] Agroforestry is defined by the Burapha Project as "a land-use system in which crops or pastures are grown amongst trees."[263] There are 53 partner villages with the Burapha Project, and farmers from these villages benefit through "cash income from forestry work, access to land to grow crops, and benefit from the Company's Village Development Fund."[264] The access to land is the nonmonetary benefit this section will focus on.

The Burapha project area was amongst the most heavily bombed areas in Laos during the Indochina War and was also subject to spraying of the toxin Agent Orange.[265] The remaining unexploded ordnances (UXO) have been a major hindrance for land use in the area and is a major driver of poverty. The clearing of UXO is a prerequisite for the Burapha Project's plantation development.[266] The Burapha Project has contracted an accredited entity to conduct large-scale UXO clearing, which will create long-term benefits for the project and the surrounding communities.

Gunung Palung National Park's healthcare discounts tied to environmental outcomes

In response to LCs' needs for greater healthcare access, Health in Harmony and its sister organisation Alam Sehat Lestari (ASRI) constructed a medical centre that offered non-cash payment options such as rainforest seedlings and manure used in conservation activities, and progressive discounts to villages that increased as they reduced their rates of logging. Memorandums of understanding agreements were signed by Health in Harmony and 21 of the 23 districts in the project area, representing 73 villages near GPNP, to participate in the new health care programme.[267]

The improvements were significant, with 1350 logging households at the baseline measurement in 2007 decreasing to 450 households in 2012 and 150 in 2017. In addition, there was a stabilisation of primary forest loss and an increase in secondary forest growth throughout the same time period. Health outcomes also improved. From 2007 to 2012, infant mortality declined from 3.4 to 1.1 deaths per 100 households and the health centre has treated nearly 70,000 patients, distributing more than 100 eyeglasses and 4,000 mosquito nets.[268]

Assorted case studies: health KPIs and monitoring methods

Table 15 shows the various methods that projects use to monitor and quantify the health of their project activities:

Table 15: Assorted case studies displaying various examples of health KPIs.

PROJECT NAME	DESIRED HEALTH OUTCOMES AND PROJECT ACTIVITIES	HEALTH KPIS	MONITORING METHOD
Amazon Rio REDD+ IFM[xxxv] (Rio IFM Project)	The Rio IFM project aims to improve access to healthcare. The project launched an Amazon Health Programme in 2016.[269]	• Incidence of disease and malnutrition in the community; [270] • Personal health indicators such as blood pressure and glucose levels[271]	• A survey will be performed to determine the incidence of disease and malnutrition • The project will distribute medical kits to Community Health Agents to help monitor personal health indicators[272]
Health in Harmony and ASRI Gunung Palung National Park (GPNP) Project (GPNP Project)	The GPNP Project is interested in examining whether discounted medical care can lead to reduced illegal logging and improved healthcare access and participation.[273]	• Infant Mortality • Patient dropout rate for tuberculosis treatment • Clinic Visits and type of diagnosis[274]	• A survey was done to monitor infant mortality rates[275] • The other data is collected by ASRI and the clinics that service the communities[276]
Rimba Raya	The Rimba Raya project seeks to improve healthcare access in the area by constructing a floating clinic.[277]	• Number of individuals that received medical treatment • Number of women that received medical treatment [278,xxxvi]	• This data will be reported by the floating clinic staff reports, and the registration list for the clinic. The community development team will also prepare a staff report[279]

Academic communication of health in Harmony's GPNP project

This case study represents a nonconventional form of communicating health outcomes from the perspective of a project developer: the academic study. Since it is in an academic article, subject to different requirements than a carbon crediting programme or similar standard, it should not be considered the minimum standard for how NCS projects communicate health outcomes. In addition, a project developer likely does not have the capacity to engage in the statistical methods necessary to draw out findings like the article in this case study can. However, the case study is instructive in describing how healthcare access outcomes and disease outcomes can be discussed in an academically rigorous manner. For comparison, the Health in Harmony's 2022 impact report describes the project as accomplishing the following in 2022:

- 11,572 patient visits conducted
- 75 hectares reforested
- 1,424 vaccines provided
- 731 individuals supported in alternative livelihoods[280]

[xxxv] The three main goals of this project are the conservation of the project area's forest ecosystem and biodiversity; sustainable development of communities through ecotourism; and emission reduction through the reduction of deforestation and forest degradation. Hdom Environmental Consultancy. (2017, November 13). MONITORING REPORT OF THE AMAZON RIO REDD+ IFM-LTPF PROJECT., 6. https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=46555&IDKEY=m903q4jsafkasjfu90amnmasdfkaidflnmdf9348r09dmfasdf464199345.

[xxxvi] The indicators actually monitored differed from the health indicators presented in the project description.

While these measures reflect the impact of the project, and how Health in Harmony is achieving its goals of providing healthcare to communities in GPNP forest, it does not delve into the actual changing health of the project participants.

Stanford researchers measured and documented the impact of the GPNP project in a journal article entitled "Improving rural health care reduces illegal logging and conserves carbon in a tropical forest."[281] The health outcomes reported in the paper were[282]:

- "28,462 unique patients visited the clinic at least once over the study period from 2008 to 2018."
- "Overall, the clinic usage statistics confirm that, controlling for distance effects on clinic usage, signing an MOU to participate in the intervention incentivised increased use of health care services at the clinic."
- "De-identified diagnosis records from more than 61,000 unique doctor visits recorded during 2008 to 2018 showed improvements in many health outcomes...We found significant declines over time in diagnosed cases of malaria, tuberculosis, childhood-cluster diseases, neglected tropical diseases (NTDs), chronic obstructive pulmonary disease (COPD), and diabetes"
- Based on household surveys conducted in 2007, 2012, and 2017 "Between 2007 and 2017, annual birth rates and infant death rates declined significantly..."
- "Among the subset of households that interacted with intervention programmes, roughly half identified health care discounts alone or in combination with other intervention activities (representing a plurality of responses) as the most important incentive to reduce illegal logging in the park..."

Additional case studies

Living walls:

WWF works with the environmental nonprofit African People and Wildlife (APW). One of APW's approaches is to support living walls, which are livestock corrals for securing their cattle, goats and sheep at night. The living walls are based around planting thorn trees in a circle, using chain link fencing to make a barrier that lions cannot penetrate.

The results of this are (i) human well-being through reduced losses in livestock (the traditional "bank" for Maasai and other herding groups) and increased safety for family members who no longer have to guard their livestock against predators at night; and (ii) for nature – less killing of lions and less deforestation in cutting thorn trees to transport for use as temporary corral boundaries.

Biogas stoves:

Across rural communities in many countries, the distribution of biogas stoves has been a game-changer for families, especially women, in terms of reduced time spent in fuel collection, reduced forest destruction, improvements to health and to income. Stall feeding of cattle and buffalo in Nepal is traditional, when this is coupled with a household pit latrine with all manure landing in a biogas digester the resulting methane is then piped to a simple gas burner making food preparation easier and cleaner. Ceasing to cook for hours over a smoky stove improves lung and eye health for women and children; increased use of pit latrines has reduced the incidences of faecal-borne disease.

The dung residue from biogas digestion is used as organic fertiliser for crop production, increasing household income. An average-sized biogas unit saves nearly 5 tonnes of firewood a year and reduces the emission of 4Mt of carbon dioxide - the equivalent credits are paid to the communities. In some communities, terrace edges or land borders are planted with fodder grasses and trees for feeding the livestock, further sequestering carbon, reducing women's labour in sourcing the fodder and protecting the hillsides against erosion.

Amazon RIO REDD+ (IFM)

The Amazon RIO REDD+ project aims at conserving a group of private areas consisting of over 18,000 hectares of mature tropical forests located in the Amazonas state in Brazil. The three main goals of this project are the conservation of the project area's forest ecosystem and biodiversity; sustainable development of communities through ecotourism; and emission reduction through the reduction of deforestation and forest degradation.

A couple social projects for clean water and health were implemented in the communities as a part of the project. The clean water project installed water filters in every school in the communities and water filters are also being disseminated to households. The health component of the project trains local community members to become "Community Local Health Agents" to monitor the health of people in the project community and to perform first aid.[283]

Table 16: IUCN Global Standards criteria and indicators.

IUCN Global Standard for Nature-based Solutions (IUCN Global Standards)

The IUCN developed the IUCN Global Standards as a "robust framework for designing and verifying NbS that yield the outcomes desired, in solving one or several societal challenge(s)."[284] The global standards is made up of eight criteria and 28 indicators. The criteria and indicators are contained in the following table:

CRITERIA	NbS effectively address societal challenges	Design of NbS is informed by scale	NbS result in a net gain to biodiversity and ecosystem integrity	NbS are economically viable	NbS are based on inclusive, transparent and empowering governance processes	NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits	NbS are managed adaptively, based on evidence	NbS are sustainable and mainstreamed within an appropriate jurisdictional context
INDICATORS	• The most pressing societal challenge(s) for rights-holders and beneficiaries are prioritised • The societal challenge(s) addressed are clearly understood and documented • Human well-being outcomes arising from the NbS are identified, benchmarked and periodically assessed	• The design of the NbS recognises and responds to interactions between the economy, society and ecosystems • The design of the NbS is integrated with other complementary interventions and seeks synergies across sectors • The design of the NbS incorporates risk identification and risk management beyond the intervention site	• The NbS actions directly respond to evidence-based assessment of the current state of the ecosystem and prevailing drivers of degradation and loss • Clear and measurable biodiversity conservation outcomes are identified, benchmarked and periodically assessed • Monitoring includes periodic assessments of unintended adverse consequences on nature arising from the NbS • Opportunities to enhance ecosystem integrity and connectivity are identified and incorporated into the NbS strategy	• The direct and indirect benefits and costs associated with the NbS, who pays and who benefits, are identified and documented • A cost-effectiveness study is provided to support the choice of NbS including the likely impact of any relevant regulations and subsidies • The effectiveness of the NbS design is justified against available alternative solutions, taking into account any associated externalities • NbS design considers a portfolio of resourcing options such as market-based, public sector, voluntary commitments and actions to support regulatory compliance	• A defined and fully agreed upon feedback and grievance resolution mechanism is available to all stakeholders before an NbS intervention is initiated • Participation is based on mutual respect and equality, regardless of gender, age or social status, and upholds the right of IPs to FPIC • Stakeholders who are directly and indirectly affected by the NbS have been identified and involved in all processes of the NbS intervention • Decision-making processes document and respond to the rights and interests of all participating and affected stakeholders • Where the scale of the NbS extends beyond jurisdictional boundaries, mechanisms are established to enable joint decisionmaking of the stakeholders in the affected jurisdictions	• The potential costs and benefits of associated trade-offs of the NbS intervention are explicitly acknowledged and inform safeguards and any appropriate corrective actions • The rights, usage of and access to land and resources, along with the responsibilities of different stakeholders, are acknowledged and respected • The established safeguards are periodically reviewed to ensure that mutually-agreed trade-off limits are respected and do not destabilise the entire NbS	• A NbS strategy is established and used as a basis for regular monitoring and evaluation of the intervention • A monitoring and evaluation plan is developed and implemented throughout the intervention lifecycle • A framework for iterative learning that enables adaptive management is applied throughout the intervention lifecycle	• The NbS design, implementation and lessons learnt are shared to trigger transformative change • The NbS informs and enhances facilitating policy and regulation frameworks to support its uptake and mainstreaming • Where relevant, the NbS contributes to national and global targets for human well-being, climate change, biodiversity and human rights, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)

APPENDIX FROM SECTION 3: INVESTORS' AND BUYERS' RESOURCES AND TOOLS

Examples of credible carbon crediting programmes

Table 17: Overview of examples of credible carbon crediting programmes

CARBON CREDITING PROGRAMME	STANDARD	NAME OF THE UNIT*
Climate Action Reserve (CAR)	Climate Action Reserve	Climate Reserve Tonnes (CRT)
Verra	Verified Carbon Standard (VCS)	Verified Carbon Units (VCUs)
The Gold Standard Foundation	Gold Standard for Global Goals	Gold Standard Verified Emissions Reductions (VERs)
American Carbon Registry (ACR)	ACR Standard	Emission Reduction Ton (ERT)
Architecture for REDD+ (ACR)	TREES – The REDD+ Environmental Excellence Standard	TREES Credits
Plan Vivo	Plan Vivo Standard	Plan Vivo Certificates (PVCs)

**Although the units have different names, they are all equal to 1tCO_2 reduced or removed.*

Table 17 was adapted from NCSA's 'A Buyer's Guide to Natural Climate Solutions Carbon Credits'

Abbreviations

ACRONYM	LONG-FORM
ALM	Agricultural Land Management
ARR	Afforestation, Reforestation, and Revegetation
BSM	Benefit-Sharing Mechanism
CBD	Convention on Biological Diversity
CCP	Core Carbon Principles
CO_2	Carbon dioxide
FPIC	Free, Prior, and Informed Consent
GHG	Greenhouse Gas
HFLD	High Forest, Low Deforestation
HRQOL	Health-Related Quality of Life
ICROA	International Carbon Reduction and Offset Alliance
ICVCM	The Integrity Council for the Voluntary Carbon Market
IFM	Improved Forest Management
IPs	Indigenous Peoples
LCs	Local communities
KPIs	Key Performance Indicators
MRV	Monitoring, Reporting, and Verification
NbS	Nature-based Solutions
NCP	Nature's Contributions to People
NCS	Natural Climate Solutions
PDD	Project Design Document
REDD+	Reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries
SDG	Sustainable Development Goal
SBIA	Social and Biodiversity Impact Assessments
SBTi	Science Based Targets initiative
UNFCCC	United Nations Framework Convention on Climate Change
VCM	Voluntary Carbon Market
VCS	Verified Carbon Standard
VVB	Validation and Verification Body
WASH	Water Sanitation and Hygiene

Glossary of terms

TERM	DESCRIPTION
Additionality	"Emission reductions or removals from a mitigation activity are additional if the mitigation activity would not have taken place in the absence of the added incentive created by the carbon credits".[285]
Benefit-sharing	Benefit-sharing refers to the intentional transfer of monetary and non-monetary incentives to stakeholders for the generation of GHG emission reductions funded by revenues derived from those results.[286]
Biodiversity	"The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."[287]
Biodivesity credits	Instrument used to finance actions that result in measurable positive outcomes for biodiversity. Note, that this is nascent credit type and there is no globally accepted accounting mechanism yet.
Blue carbon	Coastal and marine ecosystems that sequester and store carbon.
Buyers	Buyers are corporations, financial institutions (including private equity firms), or individuals who purchase NCS carbon credits through single spot purchase agreements or multi-year agreements for regular purchases across a project's life cycle.[288]
Carbon credit	A unit representing an emission reduction, avoidance, or removal of greenhouse gases. These units are issued by regulated and voluntary carbon crediting programmes and are uniquely serialised, issued, tracked, and cancelled by means of electronic registries. The term 'carbon offset' can be used synonymously with 'carbon credit'.
Carbon crediting programme	Organisations that "define the rules and methodologies for different types of mitigation activities and issue credits to the developers of mitigation activities once the activity has gone through validation and verification."[289]
Co-benefits	Non-carbon emissions benefits of the mitigation activities, e.g., preservation of culture, employment opportunities, poverty alleviation, watershed protection, soil and desertification avoidance, biodiversity protection, health etc.
Country	"Country is the term often used by Aboriginal peoples to describe the lands, waterways and seas to which they are connected. The term contains complex ideas about law, place, custom, language, spiritual belief, cultural practice, material sustenance, family and identity." (AIATSIS) [290]
Culturally sensitive communication	Throughout the toolkit, there are references to "sensitive and appropriate" communication or "culturally sensitive and appropriate" communication, that is equal to culturally sensitive communication. For the purposes of this toolkit, culturally sensitive communication is defined as "effective verbal and nonverbal interactions between individuals or groups, with a mutual understanding and respect of each other's values, beliefs, preferences and culture, to promote equity in healthcare with the goal of providing culturally sensitive care." (Brooks et. al.)[291]
Discovery	The project developer targets a specific location and identifies the appropriate intervention for the project.
Double counting	"A situation in which a single GHG emission reduction or removal is counted more than once towards achieving mitigation targets or goals. Double counting can occur through double issuance, double use, and double claiming."[292]
Ecosystems	"The quality of an ecosystem measured by its abiotic and biotic characteristics. Condition is assessed by an ecosystems composition, structure and function which, in turn, underpins the ecological integrity of the ecosystem, and supports its capacity to supply ecosystem services on an ongoing basis." [293]
Effective governance	"Transparency, accountability and continuous improvement to ensure the overall quality of the carbon project." [294]
Existing projects	Already initiated NCS projects that will have to adjust or incorporate (as needed) health considerations into project design during the implementation stage.
Feasibility	The project developer conducts research on the project area and initial stakeholder outreach, secures initial financing for the project, obtains government approvals if necessary, and assesses the carbon potential of the project.
Global health	"Focused on improving health and achieving health equity for all people worldwide – meaning working towards the absence of avoidable, unfair, or remediable differences among groups of people. Many health issues and concerns transcend national boundaries and require collaboration between countries to address them."[295]
Health	This toolkit follows the One Health approach, and refer to health as a state of well-being for individuals and their communities, it encompasses physical, mental, behavioural, cultural and spiritual health.
Health considerations	In the context of this toolkit, they are defined as the health needs and priorities of IPs and LCs.
Health outcomes	In the context of this toolkit, they are defined as the result of projects that embedded health considerations of IPs and LCs into project design. Health outcomes can be categorised in two categories: health benefits (i.e., positive health outcomes), and health risks (i.e., detrimental health outcomes).
High Forest, Low Deforestation	High Forest, Low Deforestation countries and jurisdictions are those with very extensive, ecologically intact forests and low past rates of deforestation.
Implementation	The project developer and project stakeholders collaborate on executing the project design and incorporating feedback as needed.
Indigenous Peoples	"Indigenous Peoples are inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic and political characteristics that are distinct from those of the dominant societies in which they live. Despite their cultural differences, Indigenous Peoples from around the world share common problems related to the protection of their rights as distinct peoples." [296]
Insetting	Evaluating, reducing and compensating for the climate and environmental footprint of an organisation or activity by developing positive impactful socio-environmental projects within its value chain.
Investors	Investors include corporations, financial institutions (including private equity firms), or individuals who engage with projects at an early stage to provide initial financing, which can take place in the form of equity investment, co-investment, and capital investments. [297]
Local communities	Local communities refer to "non-indigenous communities with historical linkages to places and livelihoods characterised by long- term relationships with the natural environment, often over generations."[298]
Local health	Health of people living in specific small areas. In the case of this toolkit, local health will refer to the health impacts and outcomes achieved by the people who live and/or work in the NbS project area, or in close proximity to the NbS project area.
Mangroves	Salt-tolerant trees which thrive in intertidal zones.
Monitoring, Validation and Verification	The project developer monitors project activities and its outcomes once implementation is complete. For validation and verification independent auditors examine and audit the project in accordance with the applicable carbon crediting standard rules, the project developer registers the project with a carbon crediting standard and continues the cycle of validation and verification until the project timeline is over.
Natural Climate Solutions	Type of NbS addressing climate change. (adapted from UNEP).
Nature	The natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment. [299]
Nature's Contributions to People NCP	"All the contributions, both positive and negative, of living nature (i.e., all organisms, ecosystems, and their associated ecological and evolutionary processes) to people's quality of life. Beneficial contributions include e.g., food provision, water purification, flood control, and artistic inspiration, whereas detrimental contributions include e.g., disease transmission and predation that damages people or their assets. NCP may be perceived as benefits or detriments depending on the cultural, temporal or spatial context."[300] (IPBES)
Nature-based Solutions	"Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."[301]
New projects	New NCS projects that can incorporate health outcomes at the outset of the project design and development. [301]
Offsetting	Any activity that compensates for the emission of carbon dioxide or other greenhouse gases (measured in carbon dioxide equivalents, tCO_2e) by providing for an emission reduction elsewhere.
One Health	"An integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals, and ecosystems. It recognises the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent. The approach mobilises multiple sectors, disciplines, and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for healthy food, water, energy, and air, taking action on climate change and contributing to sustainable development." [302]
Permanence	"The degree of risk of reversal for carbon sinks".[303]
Planetary Health	"A solutions-oriented, transdisciplinary field and social movement focused on analysing and addressing the impacts of human disruptions to Earth's natural systems on health and all life on Earth." [304]
Project Design	The project developer will select a carbon crediting standard to adhere to, and work with project stakeholders to outline all the basic information of the project including project area, timeline, project activities, project roles, and project budget.
Projects	"A set of activities to reduce emissions compared to the baseline and enhance removals tailored to a specific area and social context, commonly developed and implemented by local communities and Indigenous Peoples in partnership with government and non-government stakeholders." [305]
Project stakeholders	In this toolkit, they refer to IPs and LCs, rights holders, project developers, investors, carbon credit buyers, governments, academics and researchers.

Glossary of terms (cont.)

TERM	DESCRIPTION
Robust independent third-party validation and verification	Comprehensive and transparent information on all credited mitigation activities which can be publicly available in electronic format and accessible to nonspecialised audiences.[306]
Robust quantification of emission reductions and removals	"Quantification based on conservative approaches, completeness and sound scientific methods." [307]
SBTi Mitigation Hierarchy	"This hierarchy says that companies must prioritise value chain emission reductions ahead of actions or investments to mitigate emissions outside their value chains to achieve net -zero."[308]
Sustainable development benefits and safeguards	"Clear guidance, tools and compliance procedures to ensure mitigation activities conform with or go beyond widely established industry best practices on social and environmental safeguards while delivering positive sustainable development impacts." [309]
Tracking	"Operating or making use of a registry to uniquely identify, record and track mitigation activities and carbon credits issued to ensure credits can be identified securely and unambiguously." [310]
Transparency	"Comprehensive and transparent information on all credited mitigation activities" which is "publicly available in electronic format and can be accessible to nonspecialised audiences." [311]

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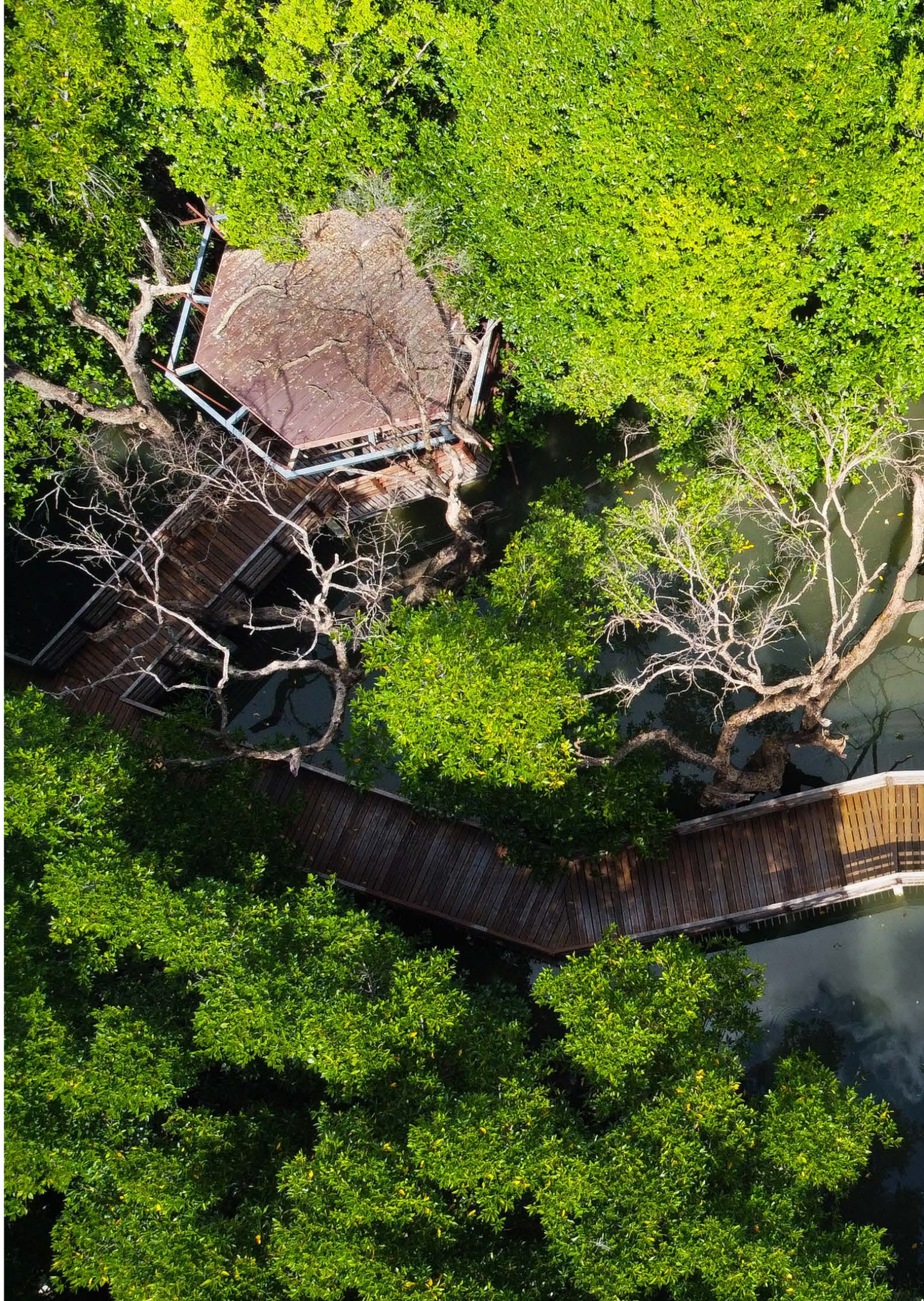

TOOLKIT

For more details visit:

the Pollination website

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