



TECHNICAL NOTE:

PRACTICAL APPLICATIONS OF NATURAL CAPITAL APPROACHES TO EVALUATING INVESTMENT PROJECTS IN AFRICA

2023

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Promotion of Green Economy and valuing natural capital in Africa



WCMC



GREEN GROWTH Knowledge Partnership

This technical note was prepared for the Mainstreaming Natural Capital in African Development Finance (NC4-ADF) initiative led by the African Development Bank (AfDB), Green Growth Knowledge Partnership (GGKP) and the World Wide Fund for Nature (WWF) by: Steven King (UNEP-WCMC), Qian Feng (UNEP-WCMC), Hashim Zaman (UNEP-WCMC), Kiruben Naicker (UNEP-WCMC) and James Vause (UNEP-WCMC).

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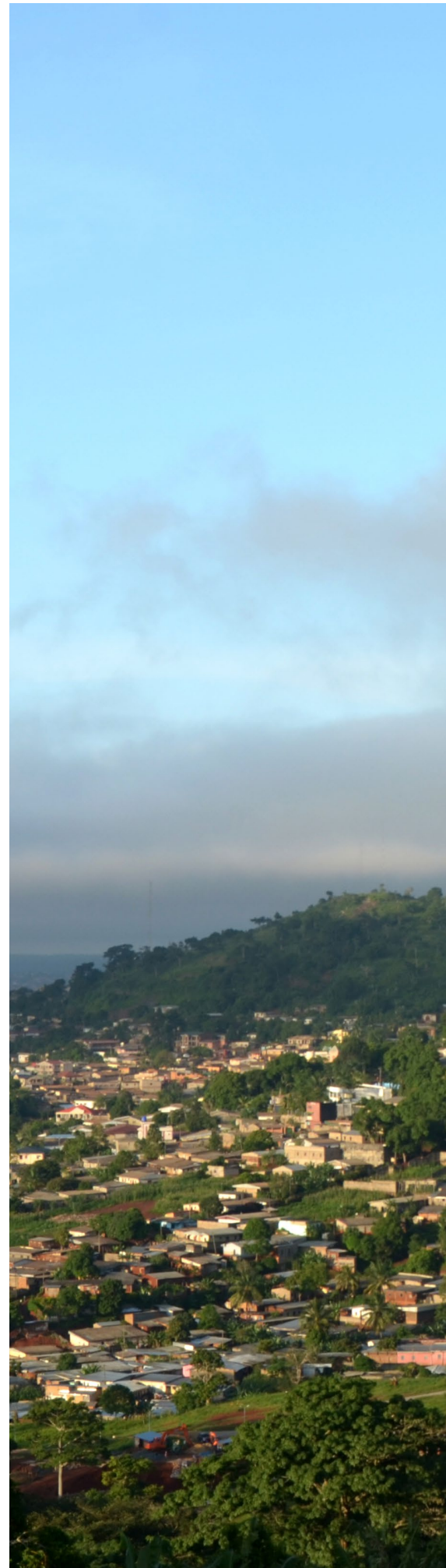
The NC4-ADF initiative was supervised under the leadership of the co-chairs, John Maughan, Acting Coordinator of Secretariat (GGKP) and Vanessa Ushie, Acting Director, African Natural Resources Management and Investment Centre (AfDB). Its vision was set up by Prof. Kevin Chika Urama, Chief Economist and Vice President of the Economic Governance and Knowledge Management Complex (AfDB) as a result of the GGKP Natural Capital Expert Group's collaborative work.

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Brief on NC4-ADF - Mainstreaming Natural Capital in African Development Finance

In 2020, the African Development Bank (AfDB) and the Green Growth Knowledge Partnership (GGKP) joined forces with the World Wide Fund for Nature (WWF) and the Economics for Nature (E4N) team to **launch** the Natural Capital for African Development Finance (NC4-ADF) initiative to lay the foundation for mainstreaming natural capital in African development finance. Throughout the last few years, we have worked through key activities, including generating evidence for integrating natural capital into AfDB's development finance operations, prioritizing the role of natural capital in Africa's post-COVID19 recovery, convening peer signatory MDBs to develop a common vision for mainstreaming nature-based solutions in support of the MDB Joint Nature Statement released at COP26 in 2021.





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KEY MESSAGES

Nature contributes in many ways to the economy, livelihoods, maintaining safe and comfortable environments for people and communities, as well as being important for cultural reasons. In Africa the need to mainstream these benefits from nature (or natural capital) into development planning is explicitly recognised in the aspirations of Agenda 2063 and the African Union Green Recovery Action Plan (2021 – 2027). Many African countries also recognise the need to sustainably manage and invest in natural capital in green economic development policies, action plans and strategies.

Natural capital approaches are processes that reveal the benefits that nature provides and mainstream them into decision-making. For finance institutions, governments and other investors to apply natural capital approaches to investment project planning, they need information on the multiple benefits that nature provides. As such, natural capital approaches require natural capital assessments or accounts to provide information on natural capital and the benefits it provides under different scenarios.

This report highlights how natural capital assessments can better inform natural capital approaches to investment project planning in Africa. This includes from a risk management perspective, where natural capital impacts that lead to unintended economic and social welfare losses are recognised, mitigated and avoided. It also includes from the opportunity perspective, where the possibilities for natural capital investments to deliver on different development objectives are revealed to decision-makers.

From this opportunities perspective, there is now a strong body of evidence that natural capital approaches can deliver Nature-based Solutions (NbS), based on the consideration of the broad values of natural capital to society. These NbS offer viable, sustainable solutions for a range of development issues, including green recovery following the COVID-19 crisis. The United Nations defines NbS as actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems to address social, economic and environmental challenges.

To demonstrate the practical applications of natural capital approaches, this report provides a range of case studies from Africa. They highlight the potential for mainstreaming natural capital to inform better investment project planning that delivers, inter alia, economic and inclusive social development, improved food and water security and disaster risk reduction. In this context, NbS projects in Africa are shown to deliver job opportunities for those who need them most, as well as additional long-term co-benefits (e.g., climate change adaptation and mitigation and for biodiversity).

To better inform natural capital approaches, natural capital assessments quantify, map and, sometimes, value benefits from natural capital under different investment project options or scenarios. This report, therefore, provides a series of case studies of ex-ante natural capital assessments for different investment project proposals in Africa. These assessments support mainstreaming natural capital approaches into investment project financing by highlighting:

- The wide range of economic and well-being benefits mainstreaming natural capital into development planning delivers.
- The potential economic and social welfare losses that inadequate consideration of natural capital impacts from investment projects may realise.
- The business case for NbS investment to a range of investors to secure funding.
- The wider benefits that can attract climate and conservation finance to support investment in natural capital.

Mainstreaming natural capital approaches into development project appraisals will foster more integrated development planning, which recognises the contribution of nature to different development objectives. This is not only crucial for sustainable economic development and post COVID-19 recovery, but also for creating livelihoods for the most vulnerable, addressing the climate crisis and delivering on conservation goals. Natural capital assessments directly contribute to informing this vision. In this way, they can help deliver much more effective development planning, with better long-term outcomes for people and nature.

PURPOSE OF THIS TECHNICAL NOTE

Natural capital represents the ‘stocks’ of nature that yield a flow of benefits to people and the economy. It includes soils, waters, forests, coastal seas, rangelands, farmlands, and the diversity of life that makes up the planet. The loss of natural capital is now recognised as a fundamental barrier to sustainable development. It is pushing nature towards ‘tipping points’, beyond which sharp declines are expected in the benefits the economy and society receive from nature. (WEF 2020; World Bank 2021).

In Africa, the need to mainstream sustainable management of natural capital into development planning is recognised in the aspirations of Agenda 2063. The African Union Green Recovery Action Plan (2021 – 2027) also highlights the continental vision of restoring and sustainably managing ecosystems for economic recovery and job creation. On a country-level, mainstreaming natural capital for green economic development is being recognised in multiple national green economy policies, action plans and strategies.

Transitioning to a green economic development pathway requires redirecting substantial financial flows into nature-positive investments (Dasgupta 2021; World Bank 2021), which can also generate many new business opportunities, jobs and wider well-being benefits. The World Economic Forum highlights that transitioning to nature-positive food, land and ocean use system may generate over USD 3.5 trillion in business opportunities and nearly 200 million jobs by 2030. Transitioning to nature positive infrastructure and built environments, including using Nature-based Solutions (NbS) rather than grey infrastructure, may generate over USD 3.0 trillion in business opportunities and over 100 million jobs by 2030 (WEF 2020). UNEP (2021a) also reports that investment in landscape restoration creates twice as many jobs as the oil and gas sector. Investments in natural capital in Africa in particular, may deliver nine times more in economic benefits than they cost, whilst also supporting long-term livelihoods (WWF, 2020).

Mainstreaming natural capital investment project planning is crucial to their long-term success and delivering social and environmental co-benefits. However, whilst Environmental Impact Assessments are widely insisted upon by governments to assess large-scale investment projects, positive and negative impacts on natural capital are very rarely considered (Juffe-Bignoli et al. 2021). This means the opportunities for better integration of nature and its benefits into project design are often missed. Natural capital approaches aim to address this by incorporating the values of the benefits nature provides into investment decisions (Ruckelshaus et al. 2022).

They use natural capital assessments and/or natural capital accounts to demonstrate the case for better integration of nature into decision-making. This includes highlighting the economic and social welfare consequences of natural capital impacts from investment projects, as well as the opportunities for implementing NbS to address social, economic and environmental challenges.

There is now an urgent need to support financial institutions and governments to understand and apply natural capital approaches in their planning of investment projects. Recognising this need, the World Wildlife Fund for Nature (WWF), Green Growth Knowledge Partnership (GGKP) and the African Development Bank (AfDB) launched the Natural Capital for African Development Finance (NC4-ADF) project in 2021¹. The NC4-ADF initiative aims to lay out the foundation for its principal arbiter, the AfDB and other relevant development actors in Africa to better integrate nature considerations into their policymaking, financing, and planning. Recognising the significance of coordinated and interactive efforts, it paves the way to natural capital mainstreaming using an applied, co-created approach.

Such an approach can be examined up close across the NC4-ADF four main pillars. They span the objectives of integrating natural capital into African infrastructure finance, developing a business case for natural capital in development finance institutions (DFIs), adopting natural capital approaches for green recovery, and building capacity for natural capital accounting and assessment in Africa. The NC4-ADF project holistically contributes to addressing the main actors (Multilateral Development Banks and other DFIs), the means (infrastructure finance), the frameworks (green recovery, natural capital assessment, etc.) and capacity building (natural capital training aimed at regional DFIs, AfDB regional member countries and beyond) within its action plan to systemically integrate natural capital into the African development and governance.

This technical note is relevant to all 4 pillars of the NC4-ADF project. It aims to build the capacity of those in finance institutions to apply natural capital approaches in project financing decisions. It introduces key concepts related to natural capital and natural capital investment for green growth and post COVID-19 recovery. It presents case studies of natural capital approaches and natural capital assessments applied in Africa, which demonstrate the business case for sustainable management and investment in natural capital. Whilst the note is aimed at those in financial institutions and national government in Africa, it is likely to be of interest to the wider audience concerned with green economy transition.

¹ <https://www.greengrowthknowledge.org/initiatives/mainstreaming-natural-capital-african-development-finance-o>

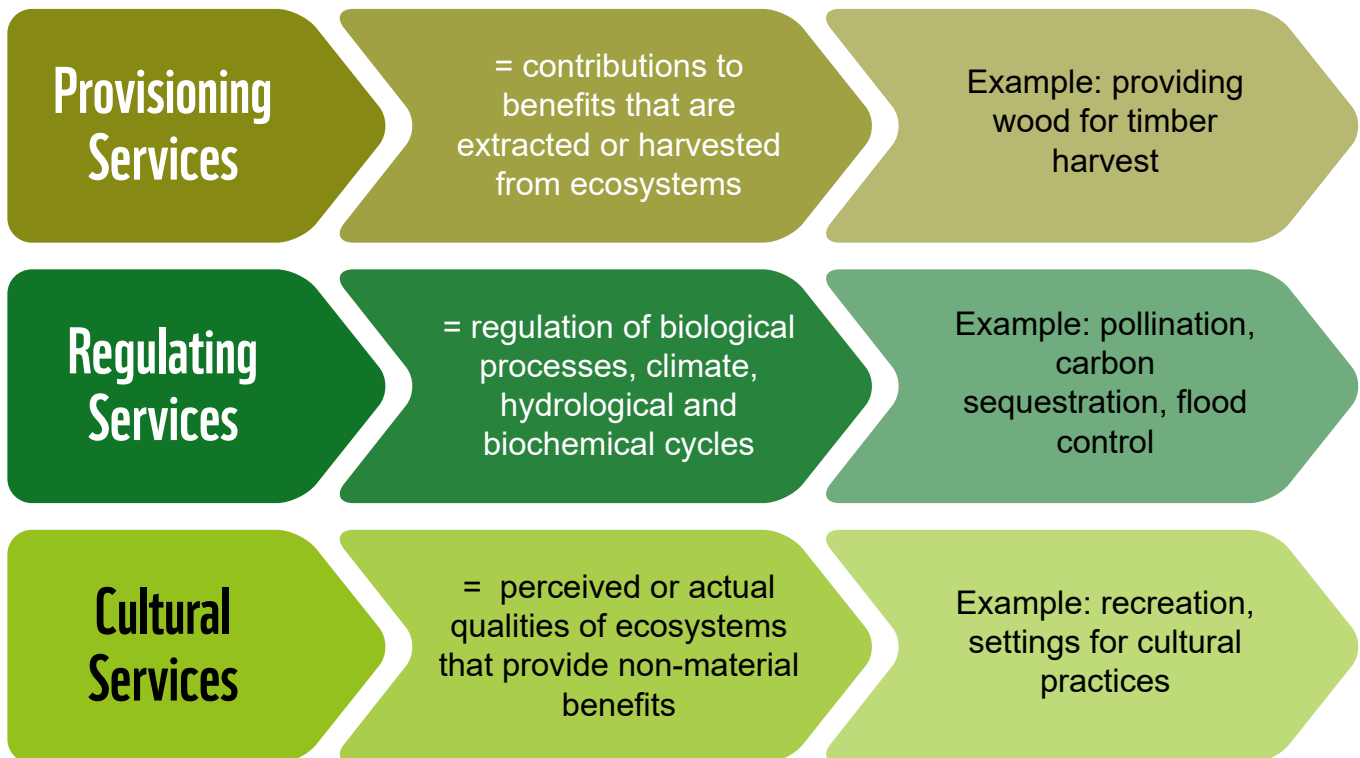
NATURAL CAPITAL CONCEPTS

Nature is at the heart of many economic activities, such as agriculture, forestry, fisheries and wildlife watching tourism. It also contributes in many ways to maintaining safe and comfortable environments for people and communities, as well as being important for recreation, relaxation and other cultural reasons. The need for governments to consider nature in development planning and economic management has been recognised for decades, notably via the Brundtland Commission report from the World Council on Environment and Development in 1987 (WCED 1987). The concepts of natural capital and ecosystem services have emerged to better operationalise integrating the value of nature into public and private planning.

Bateman & Mace (2020) describe natural capital as “those renewable and non-renewable natural resources (such as air, water, soils, and energy), stocks of which can benefit people both directly (for example, by delivering clean air) and indirectly (for example, by underpinning the economy)”. Ruckelshaus et al., (2022) provide a more ‘ecosystems’ focused description “The living and non-living components of ecosystems....that contribute to the generation of goods and services of value for people”. As can be inferred from this description, an ecosystem is a community of species and their non-living environment acting as a functional unit. These functions lead to the supply of ‘ecosystems services’ used by people and the economy. More specifically, ecosystem services are the contributions of ecosystems that lead to benefits for the economy and for human well-being (United Nations et al. 2021). These ecosystem services are categorised into provisioning, regulating and cultural services (see Figure 1). This technical note focuses on ecosystems as natural capital assets (i.e., communities of species interacting with their environment to deliver ecosystem services).

Figure 1. Categories for organising Ecosystem Services

(Adapted from: https://seea.un.org/sites/seea.un.org/files/s6_-_ecosystem_services_v3_clean_bram.pdf)



NATURAL CAPITAL APPROACHES

As described by Ruckelshaus et al. (2022), natural capital approaches drive changes in policy and/or investment decisions by incorporating the ecosystem service values into decision-making. To inform natural capital approaches, assessments of natural capital stocks and the flows of ecosystem services they deliver under different decision-based scenarios is needed.

These 'Natural Capital Assessments' quantify, map and, sometimes, value ecosystem assets and service flows. They demonstrate to decision-makers how configurations of ecosystems and flows of ecosystem services are expected to change under different development or project investment scenarios. This usually means contrasting a 'business as usual' scenario with a 'project scenario' that either negatively or positively impacts on ecosystems and the services they supply to different users. They can be used to guide more integrated policy, planning, investment, and management practices that recognise and capture the multiple benefits nature provides and mitigate unintended impacts on nature from development.

Natural capital assessments are inter-disciplinary, frequently integrating different data, methodologies and perspectives. There are now several models, platforms and applications for estimating ecosystem services, such as the InVEST suite of models from the Natural Capital Project², Co\$ting Nature and related policy support applications³ and ARIES⁴. GGKP (2020) highlights useful natural capital platforms and tools, although there is a large body of literature on natural capital and ecosystem assessments to draw on.

Natural capital accounting, essentially, comprises undertaking repeated natural capital assessments in a consistent fashion to generate a time series of information on the state of ecosystems and flows of ecosystem services for a geographical area. National statistical offices are now beginning to implement this at national and sub-national scales using the System of Environmental Economic Accounting- Ecosystem Accounting (SEEA EA) framework (United Nations et al. 2021). The SEEA EA is an extension to the System of National Accounts (SNA). It provides a structured statistical framework to organise information on the extent and condition of ecosystems and the flows of ecosystem services they supply to different users (or economic units) and integrate this with information from the SNA. These accounts support the mainstreaming of natural capital approaches into development and economic planning at different levels of government and across sectors.

NATURAL CAPITAL IMPACTS AND EXTERNALITIES

Investment projects may be associated with changes to land cover, land use, ecosystem services use and environmental degradation. This will impact on ecosystems, the services they supply and the welfare of the users of these services. Environmental Impact Assessments of investment projects tend to focus on avoiding, mitigating or off-setting biodiversity loss. However, natural capital impacts and effects on ecosystem services are very rarely considered in the impact assessment of different projects. For instance, in their review of literature on how development corridor projects are assessed, Juffe-Bignoli et al. (2021) found that only 7 articles out of 271 assessed impacts on ecosystem services.

Poor consideration of natural capital can result in undesirable internal and external impacts for investment projects. Failure to consider natural capital impacts in project design can lead to projects that perform poorly against their desired outcomes, or even fail. For instance, sedimentation is a major problem affecting irrigation schemes in sub-Saharan Africa, which leads to inadequacy and inequity in the distribution of irrigation water to crops over time (Gurmu et al. 2022; de Sousa et al. 2019) resulting in underperformance and high maintenance costs. In the current study, a participatory monitoring program was used to investigate sediment causes and sources, measure the annual sediment load, and monitor desilting campaigns in two small scale irrigation schemes in Ethiopia, Arata-Chufa (100 ha. This impact may manifest when agricultural extensification and intensification projects exacerbate degradation of agricultural land, leading to increased soil erosion, which then builds up in irrigation channels.

An external effect, or externality, occurs when a natural capital impact from an investment project affects a third party (e.g., a downstream water user). Griffiths et al. (2019) businesses, and lenders worldwide are adopting an objective of no net loss (NNL) highlight this issue in the context of project mitigation actions to achieve no net loss of biodiversity, often deployed as a response to Environmental Impact Assessment. They observe that changing the configurations of biodiversity (or ecosystems) in the landscape via off-setting alters the patterns of ecosystem services supply and use. This results in third parties becoming worse off after the project than they were before it, as they may no longer have ready access to ecosystem services in a given location, despite the overall 'stock' of ecosystem assets being the same. This can have substantial impacts on vulnerable groups, who are often highly dependent on ecosystem services for their welfare.

² <https://naturalcapitalproject.stanford.edu/software/invest>

³ <http://www.policysupport.org/home>

⁴ <https://aries.integratedmodelling.org/>

NATURE-BASED SOLUTIONS (NBS)

Nature-based Solutions (NbS) to development issues a key natural capital approaches being adopted in Africa, and elsewhere around the world . The United Nations define NbS as actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively (UNEA 2022). In short, they are solutions that harness the multiple benefits nature can provide to overcome issues. When NbS are deployed as part of a strategy for adapting to climate change, this may be referred to as Ecosystem-based Adaptation (EbA).

NbS has recently been recognised as being essential to the overall global effort to achieve the Sustainable Development Goals (SDGs) with the adoption of a resolution on “Nature-based Solutions for supporting Sustainable Development” at the UN Environment Assembly (UNEA 2022). Moreover, the UN Decade on Ecosystem Restoration strategy explicitly recognises the role of NbS for addressing societies development challenges (UNEP and FAO 2020).

The UN Office for Disaster risk reduction further highlights the important role of NbS for disaster risk reduction (UNDRR 2021).

The role of NbS in climate change mitigation was explicitly recognised at the United Nations Framework Convention on Climate Change 26th session of the Conference of the Parties (CoP 26)⁵. These are land-stewardship actions that capture or reduce greenhouse gas (GHG) emissions by protecting, better managing and restoring ecosystems.

NbS are also increasingly being recognised as economically efficient solutions to many development issues. The Global Commission for Adaptation identifies that restoring mangrove forests that protect from sea level rise and storm surges is 2 to 5 times cheaper than building engineered structures (Bapna et al. 2020). The World Economic Forum (WEF 2022), highlights urban NbS can be 50% more cost-effective than “grey” alternatives and deliver 28% more added value. The WEF (2022) also highlights that spending USD 583 billion on nature in cities across the world could create 59 million urban jobs.



5 <https://www.un.org/en/climatechange/cop26-day-7-sticking-points-and-nature-based-solutions>

NATURAL CAPITAL APPROACHES FOR GREEN RECOVERY AND DEVELOPMENT IN AFRICA

Africa has a wealth of natural capital, although this is under threat from human activity and climate change (WWF 2020). The importance of protecting these stocks of natural capital creates an urgency for transitioning to an economic development pathway and recovery from COVID-19 that is nature positive. Nature positive means enhancing the resilience of our planet and societies and halting and reversing nature loss⁶. A business-as-usual recovery built on unsustainable production and consumption of nature will simply not be sustainable due to the risks this poses to economies, livelihoods and well-being. This means investment projects that impact on natural capital need to be avoided or these impacts mitigated.

At the same time, these stocks of natural capital provide a foundation for sustainable green economic development and a green recovery in Africa following the impacts of COVID-19. The WWF (2020) highlights a set of key investment opportunities to support transition to nature positive economies and green and just recovery in Africa. This includes investing in nature-based solutions, which boost the supply of ecosystem services relevant to climate change adaptation, water management and nature-based tourism. They also include investing in more sustainable and productive food systems (e.g., via agroforestry and climate-smart production), as well as applying natural capital assessment to inform climate resilient infrastructure development.

Similar opportunities to the above are highlighted in the African Union Green Recovery Action Plan (2021 - 2027) (African Union, n.d.). Biodiversity and NbS feature as a priority intervention area under the plan, which highlights the opportunity they bring to build back better by delivering on multiple social, environmental, as well as economic, development goals. Sustainable agricultural land management; maintaining ecosystem services essential for agriculture (e.g., pollination and water regulation); and maintaining climate resilient landscapes and livelihood resilience are all important interventions that can be achieved using natural capital approaches under the African Union Green Recovery Action Plan.



The role natural capital approaches and NbS can play in delivering sustainable economic development is also formally committed to in green economy and development plans for several African countries (Figure 2). As an example, Mozambique has substantial natural capital assets but these are declining and the country is facing significant development challenges posed by climate change (AfDB 2015). To respond to these challenges, the Government of Mozambique (GoM), together with AfDB, WWF and other key development partners, launched a Green Economy Roadmap (GER) in 2012. The GoM subsequently approved a Green Economy Action Plan (GEAP) for the period 2014 to 2019, recently updated for the period 2020 to 2030 (GoM 2020). The GEAP identifies three pillars as major entry points for a green economic transition, one being the efficient and sustainable use of natural capital or resources. Entry points for natural capital approaches are also identified in the pillar on sustainable infrastructure (e.g., integrated water resources management) and strengthening climate change adaptation (e.g., disaster risk reduction).

6 <https://www.weforum.org/agenda/2021/06/what-is-nature-positive-and-why-is-it-the-key-to-our-future/>

Figure 2. Examples of national development plans in Africa where NbS feature



The Uganda Green Growth Development Strategy (UGGDS 2017/18 –2029/30) aims to operationalise green growth principles and accelerate the implementation of global development goals, Uganda Vision 2040 and the National Development Plan (GoU 2017). The UGGDS focuses on five core catalytic investment areas agriculture, natural capital management, green cities (urban development), transport and energy for green growth and development. The natural capital management component of the strategy focuses on wildlife and tourism; forestry; wetlands, fisheries and water resources (plus their associated sectors). The planned strategic interventions under this component that can be linked to natural capital approaches are clustered around: tourism development; sustainable forestry management; sustainable wetlands; and optimal water

In South Africa, the Medium-Term Framework (MTSF) for 2019 to 2024 reiterates the national development ambition to transition to a green economy. It aims to accelerate economic transformation and job creation by targeting seven sectors underpinned by natural capital, including: ocean economy; biodiversity economy; and, land reform and rural development (RSA 2019).

It also includes targets for NbS linked to ecological infrastructure, the biodiversity economy and several stewardship sites to increase biodiversity conservation areas. The recent national reconstruction and recovery plan also highlights the need to pursue environmental sustainability in post COVID-19 recovery, targeting the creation of 50,000 new jobs via environmental programmes (i.e., natural capital approaches) (RSA, n.d.).

Ghana has committed to an Environmental Fiscal Reform Policy, which aims to increase financial flows to NbS and address natural capital depletion issues including deforestation, biodiversity loss and land degradation due to mining (Ali et. al, 2021). The Ghana Shared Growth and Development Agenda (GSGDA) II, 2014-2017, highlights “Accelerated agriculture modernisation and sustainable natural resource management” as a thematic development area (FAO 2014). Natural capital approaches feature in the form of sustainable management of land, water, biodiversity, natural resources, minerals extraction and protected areas to support the development agenda (GoG 2015). Ghana’s Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC) for the period of 2020-2030, includes a commitment to “Enhance landscape restoration” as an NbS for climate change mitigation (GoG 2021).

NATURAL CAPITAL APPROACHES IN AFRICA

There are an increasing number of examples from Africa that demonstrate effective deployment of natural capital approaches to protect, sustainably manage, and restore natural or modified ecosystems for economic development and to address wider societal challenges. This section provides examples of how natural capital approaches are being applied across the continent.

AVOIDING UNINTENDED NATURAL CAPITAL IMPACTS

A recent report from WWF (2021) provides a case study on the role the Lukanga Swamp plays in the flow regime of the Kafue River, which is crucial to Zambia's economy and water and energy security. The Kafue River provides 40% of industrial water supplies, it powers two hydropower plants that provide 50% of national energy. These are also the main source of electricity for the capital city of Lusaka and its 3.3 million people.

The Lukanga Swamp sits in the upper basin of Kafue River. Approximately a third of the river's annual discharge flows through the swamp (WWF, 2021). As such, the swamp is an important natural reservoir that stabilises water and energy supplies. Through the "sponge effect" of the swamp, it stores water in wet seasons and release them in dry seasons. This natural regulation function works across both wet years and dry years too. This ability to regulate water flows provides benefits for all downstream water users, including the two hydropower projects.

The Lukanga Swamp faces several threats, such as unsustainable extraction of water by large agricultural schemes, land degradation and encroachment; water pollution from sediment and nutrients from upstream agriculture; and, heavy metal contamination from copper mines. To demonstrate the financial liabilities associated from these threats, a natural capital assessment was undertaken to calculate possible costs to water users of a 10% reduction in the Lukanga Swamp's storage capacity. This shows, such a reduction in water storage would cause an estimated USD 42 million in annual financial losses to ZESCO (the electricity provider), Lusaka Water Company and Zambia sugar. ZESCO would bear 90% of this loss.

Without this natural capital assessment, the potential downstream economic impacts of developing agricultural and mining projects around the Lukanga swamp may not be considered in decision-making. This case study serves to highlight the importance of considering natural capital impacts if economically rational investments in projects are to be made.

CAPTURING BENEFITS FROM ECOSYSTEM PROTECTION

A report from the World Economic Forum (WEF 2020) highlights that Namibia has is designating 44% of its territory as protected areas. As a result, Namibia now has the largest quotient of free-roaming animals in the world (e.g., Figure 3). These iconic species are a major draw for wildlife watching tourists from across the world. Namibia, being a leader in responsible tourism, has made sure that these ecotourism activities involve, engage and benefit the local communities through "communal conservancies". These encourage community stewardship of the flourishing wildlife, by making it more lucrative than poaching. The 2018 tourism satellite accounts for Namibia reveal that ecotourism is a key earning sector of the economy, contributing 3.5% GDP directly, 10% through related activities and employing nearly 15% of the local workforce.





Wild animals congregate around a waterhole in Etosha National Park, northern Namibia, Africa

The Mikoko Pamoja project is another example of how ecosystem protection can deliver multiple benefits. It is a community-led project in Gazi Bay, Kenya to protect 107 ha of natural mangrove forest, as well planting 2,000 trees annually (Plan Vivo 2020). Climate change mitigation benefits are estimated to be 2,500 tonnes CO₂ yr⁻¹, which derive from the avoided deforestation and degradation, as well as new planting. The project also delivers local social welfare benefits, linked to ecosystem services for coastal protection, nursery habitat for local fisheries and water purification. The protection of natural habitat also provides substantial co-benefits for biodiversity. The project raises income from forest resources via carbon credits and other income-generating activities such as beekeeping and ecotourism. Its aim is to provide long-term incentives for mangrove protection and restoration through community involvement and benefit⁷.

NBS FOR FOOD SECURITY

Agricultural NbS include actions such as climate smart agriculture, sustainable land management, agroforestry and conservation agriculture. They are an effective, long-term approach to tackling issues that include declining agriculture productivity, pollution, biodiversity loss, and climate change (UNDP 2021). Agricultural NbS for food security are increasingly being implemented in Africa.

In Ethiopia, land degradation is substantially undermining agricultural production potential, with 27 million ha of land significantly eroded.

This threatens rural food security and the livelihoods of many small-scale farmers, and is estimated to cost 2-3% of GDP (GCA 2021). To mitigate with such threats, between 2008 and 2024, the Government of Ethiopia will spend around USD 950 million on building capacity and implementing improved watershed and sustainable land management (SLM). SLM interventions include natural capital investments such as terracing and bunds to retain water, tree planting to rehabilitate communal lands, soil and water conservation and agroforestry. Key outcomes so far are 9% increases in vegetation and 0.3% increases in soil carbon, indicating a reduction in land degradation due to SLM practices (GCA 2021). Measurable reductions in soil erosion have also led to better returns on productivity enhancements as fertiliser and improved seeds (GCA 2021).

The Great Green Wall Initiative (GGWI) of the Sahel is a large scale NbS approach to tackle food and water security in this region of Africa. The GGWI aims to restore 100 million hectares of degraded land (Figure 4). This will help address food security issues for 20 million people, whilst creating 350,000 jobs and sequestering 250 million tonnes of carbon by 2030 (ILO & WWF 2020). So far 12 million trees have been planted in Senegal; 5 million ha of degraded land restored in Nigeria; 3 million ha of land rehabilitated in Burkina Faso, 15 million ha of degraded land restored in Ethiopia and 5 million ha of degraded land restored in Niger. The restoration of land in Niger has delivered an additional 500,000 tonnes of grain per year, enough to feed 2.5 million people⁸.

⁷ <https://www.planvivo.org/mikoko-pamoja>

⁸ <https://www.greatgreenwall.org/results>

Figure 3. The Great Green Wall creates a barrier against climate change running across the Sahel region⁹.



NBS FOR WATER SECURITY

Africa is exposed to many water-related risks, such as water pollution, floods, droughts and water scarcity, which are likely to become more acute with climate change (Acreman et al. 2021). There is increasing interest in NbS, such as catchment management, reforestation and wetland restoration to help reduce these risks. WWF (2021) has reviewed the evidence base of these types of NbS for managing water risks and climate change adaptation in Africa. They found removing non-native forests and vegetation can increase water availability, while native forests can increase water availability in the dry season, forests and floodplains can mitigate flood risks and forests and wetlands can improve water quality. Whilst native forests can reduce total water production from a watershed, the increase water availability in the dry season can be more important to water users than total annual production (WWF, 2021).

South Africa's Working for Water (WfW) scheme is an excellent example of an NbS for water, and is recognised as one of the most successful integrated land management programmes in the world (GEC 2018; Turpie et. al, 2008). Launched in 1995, the WfW scheme clears mountain catchments and riparian zones of invasive alien plants. Various studies have shown that these alien plants use substantially more water than natural vegetation, making it unavailable for other uses (Turpie et. al, 2008). The clearing of invasive alien plants from riverbanks between 1997 and 2006 is estimated to have increased streamflow by nearly 46 million m³ per annum (GEC 2018). As of 2017, WfW supports 50,000 jobs every year, with over half of these job supporting the vulnerable and underprivileged. The programme has ambitious quotas for young people, disabled individuals, and those living with HIV/AIDS (GEC 2018). As well as these economic, social and livelihood benefits, the removal of invasive species also improves habitat for native species to proliferate (Turpie et. al, 2008).

⁹ <https://www.greatgreenwall.org/results>

NBS FOR DISASTER REDUCTION

Many of Africa's urban areas are dealing with water-related disaster risks. In Mozambique, the World Bank and Global Facility for Disaster Reduction and Recovery (GFDRR) recently supported the Government to implement nature-based urban flood management interventions in the city of Beira (CES Consulting Engineers 2020). These interventions included restoring the natural drainage capacity of the ecosystems of the Chiveve River. Specifically, mangroves, natural riverbank habitat and upgrading the urban areas surrounding the river to green urban parkland. These interventions also improved the local recreational amenity of the river environs. According to residents and the municipality, there was no major flooding in the river area since the NbS implementation (CES Consulting Engineers 2020). Implementing similar NbS to address flood risks in the cities of Nacala and Quelimane is now being considered by the Government of Mozambique.

The Government of the Seychelles, with support from the World Bank and GFDRR, is developing a strategic approach to coral restoration (BMT 2020). The project aims to address coral degradation that has led to loss of ecosystem services linked to coastal protection, habitat for economically important fish species and amenity for tourism. Fifteen locations have been identified for coral reef restoration at an estimated implementation cost of USD 18.4 and 26.7 million, with an additional total maintenance cost of around USD 1.3 to 1.8 million. This investment would reduce flooding, as the healthy reefs will help to reduce the damage done to buildings and infrastructure during flood events. Co-benefits are identified linked to tourism, increased fish and shellfish for local communities, commercial fishing and carbon sequestration.

'TAKE AWAYS' FOR NATURAL CAPITAL APPROACHES IN AFRICA

The case studies highlight the importance of sustainable management and enhancement of natural capital to support economic and social development, achieve food and water security, deliver climate change adaptation and mitigation and reduce disaster risks in Africa. However, consequently, it is imperative that natural capital approaches and gender and socially inclusive if they are to be legitimate and effectively contribute to green economic development. For instance, as women often rely heavily on nature for their livelihoods and are often responsible for wood fuel and water collection, better management of natural capital offers opportunities to make access to these resources easier and less time consuming, opening-up other opportunities for women to pursue¹⁰.

There is also good evidence that empowering women with respect to natural resources management can deliver improved stewardship and better outcomes (IISD 2021). At the same time, there is considerable evidence of gender differences in access to and control of natural resources, with women most often disadvantaged (IISD 2021). This includes in land tenure systems, as well as access to finance so women can take advantage of livelihood opportunities linked to nature (IISD 2021).

Other important lessons learned for natural capital approaches in Africa include:

- Natural capital assessment are needed to reveal the potential economic (and social) losses of different investment projects which arise from the impacts they have on natural capital (WWF, 2021).
- Economic valuation of ecosystem services can help increase participation of private financial institutions, insurers, the private sector and attract innovative financing (UNDP 2020).
- Local communities need to be engaged in natural capital management, use and stewardship (Plan Vivo 2020)
- Natural capital approaches can leverage deliver climate change and biodiversity co-benefits. This creates opportunities for co-financing (Plan Vivo 2020)
- Increasing uptake of Agricultural NbS requires building technical and institutional capacity for appraisals of NbS and designing financing mechanisms which are operated on a commercial, transparent and sustainable basis and support the mobilization of additional commercial resources (GCA 2021).
- The potential for NbS to generate jobs in an inclusive, gender-responsive approach is highlighted (GEC 2018).
- Comparisons with grey infrastructure will provide insight to investors to demonstrate NbS as a cheaper alternative (WWF 2021).
- The financial feasibility and sustainability of NbS must consider how operation and maintenance costs are funded over the long-term (CES Consulting Engineers 2020; BMT 2020).

¹⁰ <https://www.iisd.org/articles/insight/nature-based-infrastructure-powerful-tool-womens-empowerment-climate-adaptation>

NATURAL CAPITAL ASSESSMENTS FOR INVESTMENT FINANCING DECISIONS

The decision to finance (or invest) in a project will be made based on it delivering good returns, meeting its objectives, and having an acceptable risk of failure. Investment projects also become more attractive when the range of co-benefits they deliver is made explicit to investors (e.g., when they deliver climate mitigation, other social benefits and better biodiversity outcomes). In order to mainstream natural capital into investment project decisions, decision-makers need information on the economic and social welfare liabilities associated with potential natural capital impacts, as well as the economic, social and environmental returns associated with natural capital investment (e.g., via NbS).

One way to better mainstream natural capital into these decision-making processes is by making an economic case for natural capital impact mitigation or investments. This can be demonstrated based on changes in the values of ecosystem services flows under investment project versus no project scenarios.

Commonly, funding bodies evaluate investment costs against these monetary estimates of ecosystem service flows in cost benefit analysis (CBA) approaches (e.g., the Green Climate Fund require CBA of funding proposals). This section provides several examples of ex-ante natural capital assessments that enable comparison between proposed investment project scenarios that either impact or improve natural capital and no-project scenarios.





DEVELOPING A FOREST RESERVE FOR SUGAR CANE, UGANDA

In 2007 the Government of Uganda received and tabled a discussion for a proposal from the Sugar Corporation of Uganda Limited to expand sugar cane production across 7,100 hectares of the Mbira Central Forest Reserve in the south of the country. The economic rationale presented for converting part of the forest reserve for sugar cane production included increasing sugar production and foreign exchange savings (around USD 20 to 25 million per annum), creation of 3,500 jobs with annual earnings of US\$ 3 billion (around USD 1.7 million¹¹) and generation of additional tax revenues of US\$ 11.5 million / year (around USD 6,500 / year).

The proposal sparked considerable controversy and even civil unrest and does not appear to have been implemented. The key concerns identified being the impact on the benefits derived from the forest, loss of biodiversity and the loss of cultural heritage linked to the forest being part of the Buganda Kingdom. A number of pro-conservation groups highlighted that the forest provides important ecosystem services for the national and local economy, supporting the welfare of many people who live close to the forest. NatureUganda (2011) presents a natural capital assessment to quantify and value these flows of ecosystem services and the benefits they provide, so they can be compared against the economic benefits that would be realised from conversion to sugar cane.

NatureUganda (2011) value the benefits of the forest conservation scenario using annual flows of ecosystem services supplied by the area of the forest proposed for sugar cane plantation. The net present value of the flows of these ecosystem services over future years was also estimated (using a discount rate of 12%). This provides an opportunity cost associated with the decision to convert part of the forest reserve to sugar cane production. The results of the natural capital assessment are summarised in Table 1. Table 1 reveals that the annual total value of ecosystem service benefits from the forest area proposed for sugar cane development exceeds USD 1 million per year. The net present value of these benefits was estimated to be approximately USD 10 million.

The total annual flows of ecosystem services presented in Table 1 are lower than the economic benefits of conversion to sugar cane production (estimated at around USD 3.6 million per year). However, the results in Table 1 highlight that there will be substantial economic and social welfare impacts on third parties associated with development of the forest by the sugar cane business. This suggests a decision to pursue sugar cane production would not be in the broad public interest. This is in addition to the impact such development would have on carbon storage by the forest (estimated value of around USD 6.4 million) and progress towards national biodiversity objectives.

¹¹ https://archive.bou.or.ug/archive/opencms/bou/collateral/interbank_forms/2007/Feb/major_07Feb07.html

Table 1. Summary of ecosystem services benefit values from the area of Mbira forest proposed for conversion to sugar cane production (NatureUganda 2011).

ECOSYSTEM SERVICE BENEFIT	ANNUAL VALUE (USD, 2007)	NET PRESENT VALUE (USD, 2007)
Sustainable timber	580,205	4,835,046
Poles and firewood	35,909	299,241
Non-timber forest products	40,491	337,425
Ecotourism	10,779	898,825
Community water supplies	33,681	280,679
Pharmaceutical values	20,049	167,076
Carbon sequestration	173,293	1,44,104
Watershed protection	172,464	1,437,200
Option and existence value	14,372	119,767
Total	1,081,243	9,819,363

BUSINESS CASE FOR WATER FUNDS, CAPE TOWN, SOUTH AFRICA

In the Greater Cape Town region, water security has been a major concern, especially since the city faced a three-year drought during 2015-2018. Although the city has made great efforts to cope with the water shortage issue, the threat remains. Forecasts of population growth will increase water demand, whilst climate change predictions show risks of increased water shortages in the future. Consequently, more than USD 540 million public funding is now being considered for augmenting the city's water supply (TNC 2018).

Many of the water catchments surrounding Cape Town have been degraded by invasive alien plant species. These include Australian acacias, pines and eucalyptus. These plants have deep roots and consume up to 20% more water per hectare than the native fynbos vegetation (TNC 2018). As such, invasive species removal from these catchments provides a potential NbS to augment Cape Town's water supply, whilst also improving local native biodiversity.

Several different partners, including local government departments, private companies and international organisations came together under the auspices of the Greater Cape Town Water Fund Steering Committee to evaluate the impact and costs of investing in this NbS. To support this evaluation, a natural capital assessment was completed to model outcomes from these interventions to remove invasive plants, over a 30-year period.

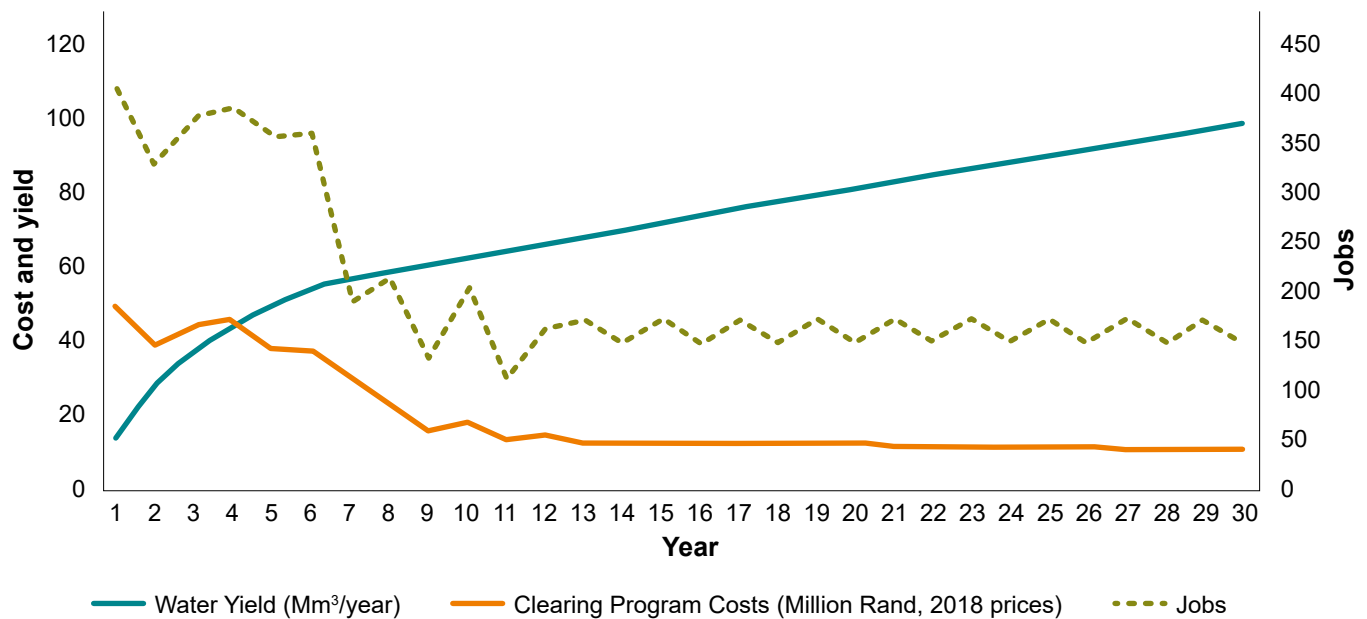
The natural capital assessment mapped the current extent of alien plant invasions degrading local catchments and modelled current and future water loss due to these species. The assessment estimated that water use by alien plants reduces the amount of water entering the rivers and dams supplying water to Cape Town by 55 billion litres (55 Mm³) annually. The assessment also estimated the costs of the removal and long-term control of invasive plants for different sub-catchment areas. Initial costs were estimated to be Rand 40 million (approximately USD 3 Million¹²) per year in very dense infestations in sub-catchment areas that then declined over time (Figure 5).

Increases in water yields from invasive species removal were then modelled and sub-catchments ranked by their return on investment (ROI). This was based on the amount of additional water generated per cost unit over a 30-year period. From this, several sub-catchments that provided high rates of return (m³ water per Rand invested) were identified as priorities for invasive species removal. After the initial treatment is completed in year six within priority sub-catchments, removal of invasive alien plants could yield an extra 56 billion litres (56 Mm³) of water per year (Figure 5).

As Figure 5 reveals, investing Rand 372 million (approximately USD 28 Million) into invasive species removal will generate expected annual water gains of 100 billion litres (100 Mm³) over 30 years, compared to the business as usual (or do nothing) scenario (TNC 2018). Approximately 350 job opportunities could also be created in the first five years, as removing alien plant invasions is very labour intensive (TNC 2018).

¹² https://www.nedbank.co.za/content/dam/nedbank/site-assets/AboutUs/Economics_Unit/Forecast_and_data/Daily_Rates/Annual_Average_Exchange_Rates.pdf

Figure 4. Costs, benefits and jobs created over a 30-year timeline for implementing invasive species removal to boost water supply in Cape Town (TNC 2018).



When compared with other water augmentation solutions, the proposed NbS is cost-effective, supplying water at one-tenth of the unit cost of alternative solutions (e.g., desalination or groundwater exploration) (TNC 2018). The natural capital assessment also shows that NbS delivers at the scale required. Restoring priority sub-catchments by eliminating alien plant invasions can deliver one-sixth of the city’s present supply needs within 5 years and the volume of this supply will double within 30 years. This NbS will also restore local ecosystems and create jobs.

Based on this natural capital assessment and the projected ROI of water augmentation via invasive species removal, the Greater Cape Town Water Fund was able to attract private and public investment from different water users, sectors and government bodies. The Greater Cape Town Water Fund builds upon the experience of more than 30 other water funds in 12 different countries. It is the second project of its kind in Africa and the first in South Africa and pioneers the use of cutting-edge financial and governance systems to safeguard and restore the catchments that are essential to the livelihoods and economy of the Greater Cape Town Region (TNC 2018). Hence, the business case developed for investing in NbS to augment water supplies can be a learning source for similar NbS investments.

ECONOMIC VALUATION OF AGROFORESTRY AND LAND RESTORATION IN THE KELKA FOREST, MALI

The drylands of Africa have face severe impacts from desertification and land degradation, which are leading to the loss of important ecosystem services and associated livelihood opportunities (Sidibé et al., 2014). Therefore, urgent action is needed to halt land degradation and restore already-degraded lands. Demonstrating the benefit of Sustainable Land Management (SLM) interventions is critical for stimulating investments in NbS to these issues.

The Economics of Land Degradation (ELD) Initiative highlights potential benefits derived from SLM investment using quantitative ecosystem service valuation studies. As part of the ELD Initiative, Sidibé et al., (2014) provide an ex-ante economic valuation of the costs and benefits from agroforestry and forest restoration intervention scenarios in the Kelka forest region of Mopti, Mali. The Kelka forest is an important habitat for wildlife and is the main source of energy for 60,000 local people. However, the forest has been undergoing observable degradation in recent years. Furthermore, local communities are vulnerable to food insecurity caused by the fragility and infertility of the local agricultural land (Sidibé et al., 2014).

Sidibé et al., (2014) present cost benefits analysis of returns in key ecosystem services from agroforestry and forest restoration in the Mopti region. The agroforestry interventions comprised of intercropping with Albida Acacia trees to enhance groundwater recharge, fix nitrogen and provide firewood. The forest restoration comprised of planting three native acacia tree species in areas of degraded land. Sidibé et al., (2014) estimate the value of annual ecosystem service returns over a 25-year period in present value terms, using a 5% discount rate. These are compared against the costs for these interventions in Table 2.

As Table 2 reveals, the benefits received by the local communities over 25-years exceed costs by 2.7 times. When the value of additional carbon sequestration services to the global community is included, this rises substantially to 13 times. These ratios provide a strong economic rationale for investing in agroforestry and forest restoration with respect to returns enjoyed by the local community, as well as globally. In addition to the global climate change mitigation benefits delivered, forest restoration also delivers biodiversity improvements.

Table 2. Cost Benefits Analysis of proposed NbS for Kelka Forest Area, Mali (adapted from Sidibé et al., 2014)

		PRESENT VALUE IN USD (5% DISCOUNT RATE OVER 25 YEARS)
BENEFITS	Increased firewood	31,200,000
	Increased nitrogen fixation	10,000,000
	Increased soil moisture	18,100,000
	Enhanced shallow aquifer recharge	20,900,000
	Enhanced availability of animal fodder	14,040,000
	Enhanced carbon sequestration	559,400,000
COSTS	Agroforestry implementation costs	1,600,000
	Agroforestry management costs	6,910,000
	Reforestation implementation costs	37,500,000
Net benefit to local community (Excludes carbon sequestration)		48,230,000
Benefit cost ratio		2.7
Net benefit to global community (Includes carbon sequestration)		607,630,000
Benefit cost ratio		13.6



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MOZAMBIQUE SAPZ NATURAL CAPITAL APPROACH

The agricultural sector in Mozambique has huge potential to contribute to national development. It contributes around 26% of total national GDP and provides 71% of total employment (World Bank 2022). However, the productivity of Mozambique’s agricultural sector is one of the lowest in the region (AfDB 2018). The Pemba-Lichinga Special Agro-industrial Processing Zone (SAPZ) project is intended to address this and stimulate a major increase in agricultural production within the Pemba-Lichinga corridor in Northern Mozambique. It broadly aims to bring smallholder farmers out of subsistence, into a competitive and inclusive agribusiness subsector.

The inter-ministerial steering group for Mozambique’s Green Economy Action Plan (GEAP) have identified mapping, valuation and integration of natural capital in national planning as a priority. In response to the steering group demands for mapping, valuation and integration of natural capital into planning, the NC4 ADF initiative commissioned a natural capital assessment of the SAPZ.

The assessment highlights the benefits that would be realised to the forestry and water sectors, as well as for climate change mitigation and biodiversity, via a more integrated approach to the SAPZ. It compares two forward-looking scenarios. One where the SAPZ is implemented in a business-as-usual approach, where current crop production (mainly maize and bean) is intensified from existing cropland footprint (i.e., this project does not extend the cropland footprint beyond currently cultivated areas). The other scenario reflects a natural capital approach, which integrates cropland intensification with targeted establishment of agroforestry in existing cropland (in areas important for water supply and soil erosion control) and afforestation of existing cropland in riparian areas (to improve water related ecosystem service and deliver other forest ecosystem services). The extent of existing cropland converted to agroforestry under the natural capital approach was 4,460 ha and afforestation of existing riparian cropland was 10,513 ha.

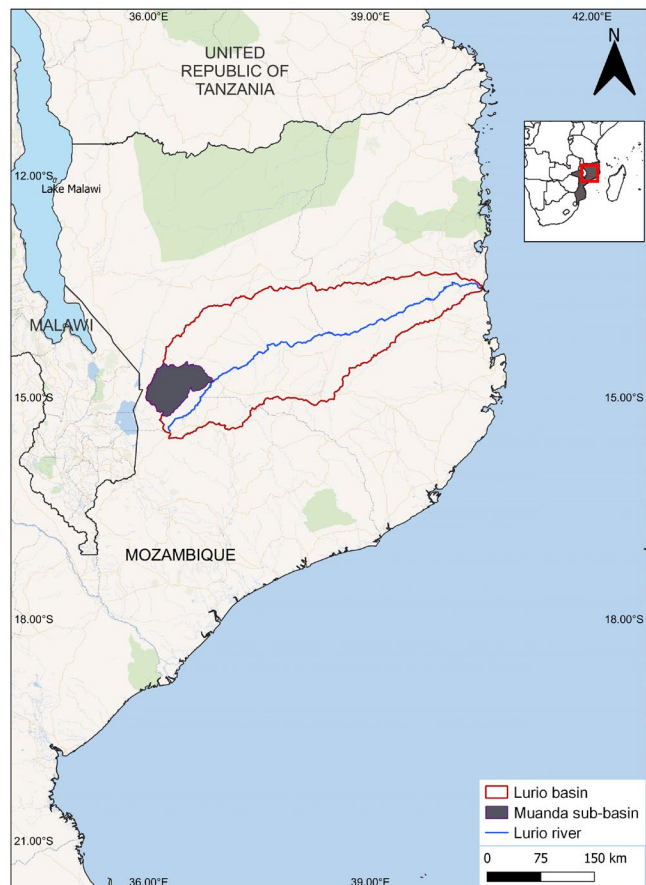
Using spatially explicit ecosystem service modelling approaches, the supply of the ecosystem services that would be realised under the natural capital approach were modelled and compared to those supplied under the business-as-usual approach. This reveals to decision-makers the additional benefits an integrated approach to the SAPZ could deliver, rather than just focusing on maximising crop provisioning services.

The natural capital assessment models the following ecosystem services in physical and monetary terms under the two scenarios:

- Water flow regulation (dry season supply).
- Sediment retention (or erosion control) services for water courses and irrigation protection.
- Carbon sequestration and storage for climate change mitigation.
- Wood fuel provisioning services for local energy security.

The natural capital assessment focuses on the Muanda River basin, which drains into the Lurio River (Figure 6). The assessment focused on this area as it is a key watershed for the SAPZ and has been identified as the principal water source for a proposed Agro-Processing Hub in the watershed. The spatial distribution of the natural capital approach interventions is shown in Figure 7.

Figure 5. Muanda (dark area) and Lurio (boundary line) river basins.



Projection: EPSG 4326 Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Figure 6. Proposed agroforestry and afforestation in Muanda basin under the natural capital approach scenario.

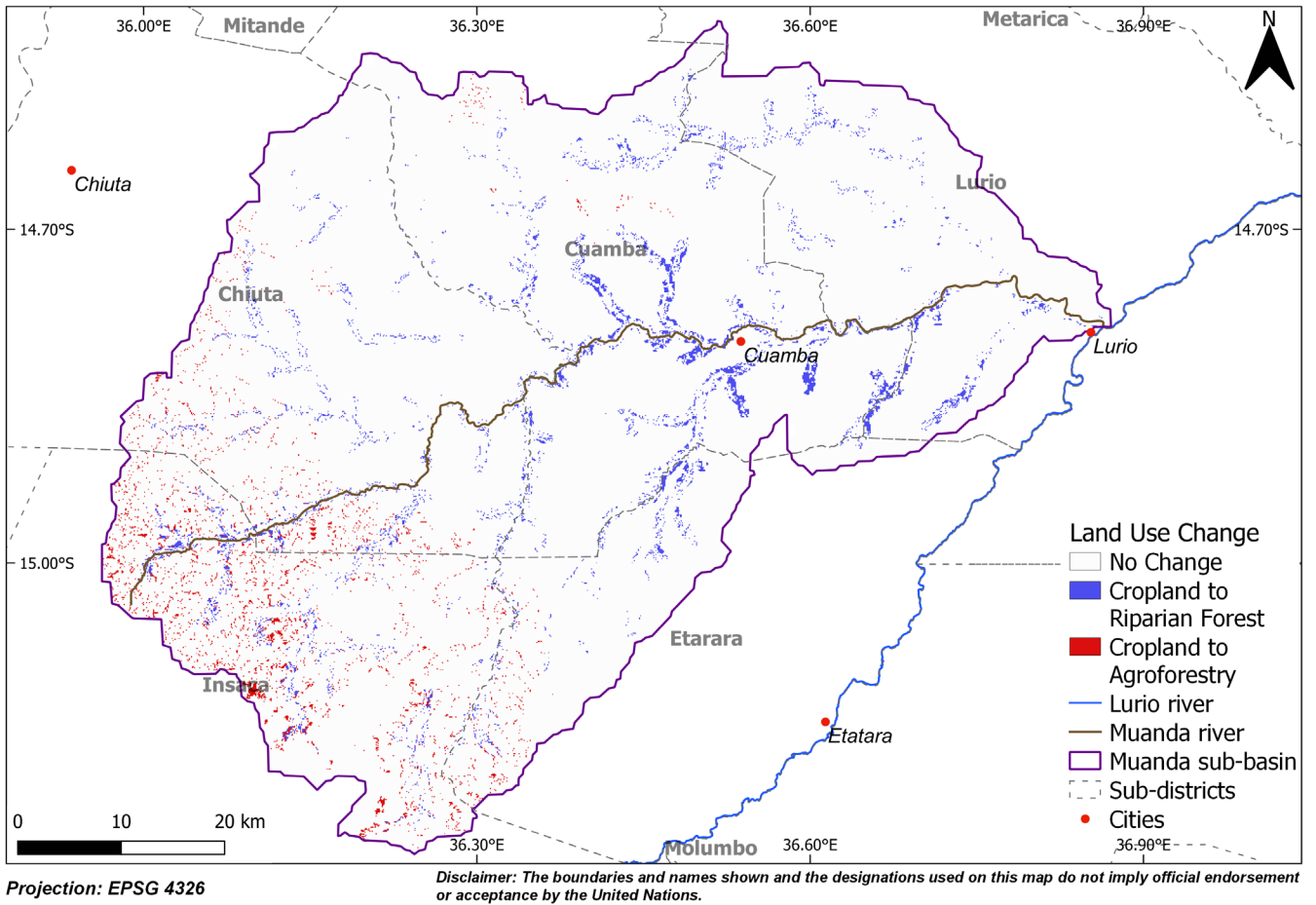


Table 3 provides an aggregated economic analysis of the returns in additional ecosystem services delivered under the natural capital approach scenario. As Table 3 reveals, the aggregate value of increased ecosystem service delivery under this scenario is USD 626,305 per year, compared to the business-as-usual scenario. This is equivalent to USD 42 / ha of benefits that accrue to Mozambique from the agroforestry and afforestation interventions. This increases to USD 90 / ha when global, avoided social costs of climate change mitigation are used, instead of traded carbon prices.



Table 3. Economic benefits analysis of increases in selected ecosystem services delivered under a natural capital approach for the SAPZ

ECOSYSTEM SERVICE	UNITS / YEAR	DIFFERENCE IN DELIVERY	MARGINAL VALUE (USD / UNIT)	TOTAL VALUE (USD / YEAR)
Water flow regulation (dry season supply)	m3	2,850,000	0.08	228,000
Sediment retention services	m3	21,655	3	64,965
Carbon sequestration ¹³	tCO ₂ e	16,720	5	83,600
Fuelwood supply	tonnes	12,487	20	249,740
Total				626,305

Table 3 reveals a range of additional benefits natural capital investments in the landscape can deliver to planners. As such, the natural capital assessment can support a more integrated landscape development approach in the following ways:

- **Informing nature-based solutions to support the SAPZ:** Targeted agroforestry and afforestation increases potential for irrigated agriculture by delivering 2.85 Mm³ of additional dry season river flow and reducing river sedimentation by 21,65 m³/year (and the associated rate of sedimentation in irrigation systems). This will also support the operation of the APH.
- **Delivering wider social benefits:** The natural capital approaches scenario highlights how the SAPZ could improve energy security in the Muanda River basin, by generating an additional sustainable wood fuel supply of 12,487 tonnes / year for local communities.
- **Delivering climate change mitigation:** Carbon sequestration services that could be realised via the natural capital approach scenario could contribute around 16,000 tCO₂e per year to Mozambique's national Determined Contribution under the Paris Agreement.
- **Delivering better biodiversity outcomes:** The natural capital approach scenario establishes over 10,000 hectares of natural forest in riparian areas with benefits for forest biodiversity.

By way of comparison with the business-as-usual scenario, Kidane et al., (2019), estimate a net return from conventional tillage maize farming in Mozambique is USD 104 / ha. This is higher than the USD 42 / ha and USD 90 / ha of ecosystem service benefits derived from Table 3.



However, Table 3 only provides a partial economic analysis of natural capital interventions. The revenues from agroforestry are also not estimated at this stage. There are also several ecosystem services that have not been possible to monetise (e.g., pollination, flood mitigation, non-wood provisioning services from forests). The natural capital approach is also shown to deliver improved outcomes for the water and forestry sectors, improvements in social welfare via energy security, as well as better outcomes for climate change mitigation and biodiversity. Thus, supporting implementation of the GEAP in Mozambique and, potentially, encouraging climate and conservation co-financing for the project.

¹³ Based on traded price of carbon in voluntary markets

APPLYING NATURAL CAPITAL APPROACHES TO INVESTMENT PROJECT FINANCING

Widespread adoption of natural capital approaches is essential to transition from an economic development pathway built on unsustainable production and consumption of nature, which is posing increasingly acute risks to economies, livelihoods and well-being. Whilst this is a global issue, these risks are particularly relevant to African countries, given the relatively high reliance of their economies and communities on the benefits nature provides. At the same time, African countries are endowed with a wealth of natural capital. Sustainable exploitation of these natural capital stocks can provide a foundation for green recovery and development in Africa following the impacts of COVID-19.

The role of natural capital approaches in economic recovery following the COVID-19 pandemic is explicitly recognised by the African Union's Green Recovery Action Plan. Natural capital investments, such as NbS, are also being recognised as a core part of delivering green economic development in its Member States (e.g., in Mozambique, Uganda, South Africa and Ghana). Multilateral development banks have also recognised the importance of NbS for a green recovery from COVID-19¹⁴.

The NC4-ADF initiative aims to lay out the foundation for mainstreaming natural capital into investment project financing decisions in Africa. This provides an important contribution to transitioning to green economic development in Africa. This technical note provides an introduction to help build a common understanding on how natural capital approaches can be applied in these project financing decisions.

The report highlights the importance of considering natural capital impacts in project design and implementation. For instance, the potential downstream economic impacts on electricity generation and water supply from poor management of Lukanga swamp, Zambia. Not considering natural capital can also increase risks of project failure (e.g., sedimentation of irrigation schemes in agricultural projects), as well as effecting the welfare of local communities dependent on ecosystem services.

At the same time, natural capital approaches can also inform nature positive investments that deliver on goals for the economy and well-being. The case studies of NbS in Africa highlight successes in supporting economic development (e.g., investing in protected areas for Namibia's tourism industry), delivering food security, better health and livelihoods (e.g., the Great Green Wall Initiative), delivering water security and job opportunities for those that need them most (e.g., South Africa working for water project), for disaster risk reduction (e.g., protecting Beira city in Mozambique from flooding) and for climate change mitigation (e.g., the Mikoko Pamoja project in Gazi Bay, Kenya). NbS projects in Africa are also shown to yield relatively high job creation for those who most need it and deliver long-term co-benefits, including climate change adaptation and mitigation and better outcomes for biodiversity.

The ex-ante natural capital assessments presented in this report illustrate how economic valuation of ecosystem services under different project investment scenarios can reveal the importance of natural capital to decision-makers. They provide cost and benefit analyses and business case applications that will be familiar to investors. In this context, the proposal for sugar cane production in the Mbaria Forest highlights the multiple economic benefits forgone by focusing on maximising supply of a crop provisioning service in investment projects. It serves to highlight the importance of maintaining natural capital if economic development is to be socially inclusive and to the benefit of all.

14 <https://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=EZSHARE-1729984378-40>

The report also provides several natural capital assessments that highlight the investment opportunities that NbS provides. The Kelka Forest and SAPZ project natural capital assessment, highlight the additional economic benefits realised from mainstreaming a natural capital approach into planning agricultural development projects. By implementing agroforestry and targeted afforestation, a wider range of benefits can be secured from the landscape and the long-term sustainability of the agricultural sector improved (via SLM or improved dry season irrigation). The importance of NbS in socially inclusive development, which delivers on local well-being goals is, again, clearly revealed via these assessments (e.g., with respect to energy, food and water security, as well as diversified livelihood opportunities). The Cape Town Water Fund case study highlights investment in NbS is cost effective and makes business sense to a range of potential investors. As such, the fund was able to attract private and public investment from different water users, sectors and government bodies.

Despite clear opportunities, there remain multiple barriers to mainstreaming natural approaches into development planning. These include the need to build technical and institutional capacity for wider understanding of natural capital concepts, as well as for implementing natural capital assessment to inform investment project appraisals. At the national level, more information and data are needed on natural capital and ecosystem services, so countries can more readily and conveniently implement natural capital assessments. Furthermore, as NbS type projects are relatively new investors, they may be perceived as risky when compared to familiar, built infrastructure solutions. As such confidence needs to be built that NbS are viable investment projects that deliver on development objectives.

Development financiers can help overcome the barriers to wider implementation of natural capital approaches by both helping to build the knowledge base on natural capital and confidence in NbS. This will greatly assist in shifting current investment flows away from projects that degrade natural capital, and the unintended economic and social consequences this causes. It will also assist shifting investment away from traditional grey infrastructure solutions towards NbS. Natural capital assessment has a critical role to play here in demonstrating to investors where NbS is a cost-effective alternative. Where NbS co-benefits are characterised as ‘public goods’, natural capital assessments can also help to unlock a range of wider funding opportunities (e.g., climate and conservation co-funding).

As highlighted, there are clear actions that can be implemented to mainstream natural capital approaches into the appraisal of African development projects. This will foster more integrated development planning that recognises the contribution of nature to different development objectives. This is not only for economic development and post COVID-19 recovery but also for creating livelihoods for the most vulnerable, addressing the climate crisis and delivering on conservation goals. Natural capital assessments directly contribute to this vision by offering a pathway to mobilise finance from multiple sources. In this way, they can help deliver more effective development planning, with better outcomes for people and nature.



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