



Motivating Sustainable Funding in Watershed Investment Programs

DEEP DIVE

NOTE: This document is an accompanying resource to the [Watershed Investment Program How-To Guide](#). Readers are strongly encouraged to review the guidance in its entirety before delving into any accompanying subject-matter “Deep Dives,” including this document.



Document Objectives

The purpose of this Sustainable Funding Deep Dive is to assist sponsors of Watershed Investment Programs (WIPs) with understanding the required steps to develop a sustainable funding strategy, by which we mean a strategy that ensures the funding commitments for a WIP meet the full-lifecycle costs required to execute the program's NbS Investment Portfolio and associated SMART Objectives (see [How-to Guide](#) for SMART Objective details).

Key moments to reference this guide with relation to the WIP development cycle phases include:

- I. **Pre-feasibility:** To understand which parties may be appropriate to reach out to for gauging initial appetite to fund your WIP.
- II. **Feasibility:** To calibrate the 'burden of proof' to unlock funding from counterparties & to co-develop relevant benefit monetization functions with your stakeholders to inform ROI analysis.
- III. **Design:** To understand how to develop a sustainable funding strategy to compare in-hand commitments against full program lifecycle cost and developing a path forward to bridge gaps.
- IV. **Execution:** As an opportunity to circle back and validate which additional parties may be motivated to join your WIP effort.

Figure 1 summarizes the key sustainable funding questions that should be answered during each phase during, and the related activities where these questions are typically addressed.

Please note that the How-to Guide and this supporting Sustainable Funding Deep Dive principally focus on motivating direct contributions from beneficiaries such as utilities or irrigation boards, as well as blending in funding sources such as public subsidies and external transfers. As a result, this document does not go into the policy and public advocacy steps required to shape the regulatory environment for water management institutions, nor does it detail the specific steps for establishing new watershed funding mechanisms (e.g., water quality trading regimes or carbon credit markets). Rather, this Sustainable Funding Deep Dive focuses on how to frame NbS investments as genuine 'green infrastructure' opportunities and thereby crowd-in associated funding commitments to generate water security outcomes.

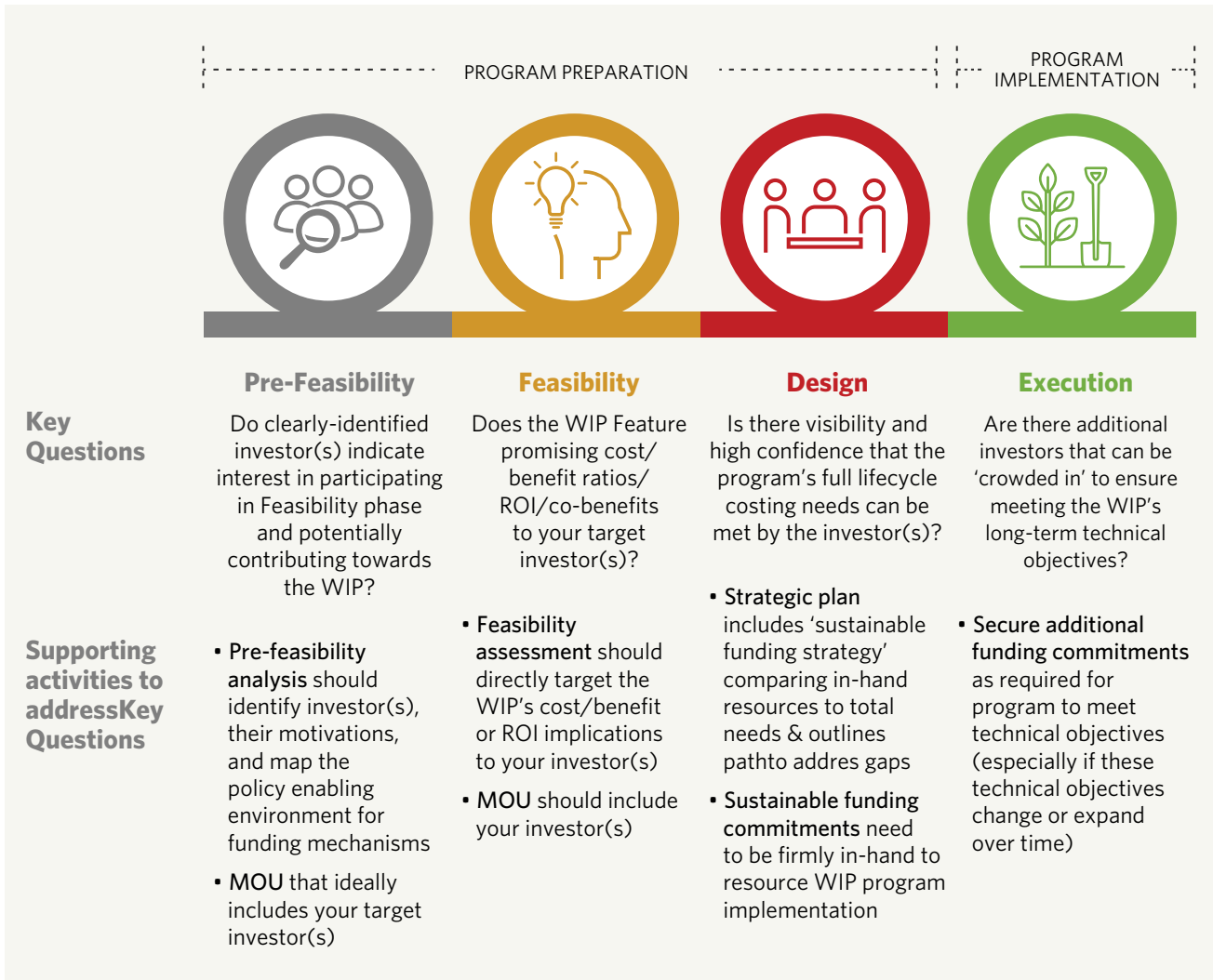


FIGURE 1. Sustainable funding workstream 'key questions' and supporting activities by phase in the WIP development lifecycle

General principles to consider when developing the sustainable funding strategy for your WIP include:

- WIP funders and financiers are typically motivated by the outcomes associated with your watershed investment program. It is important to generate credibility with these potential funders by generating a mutual understanding of the water security and co-benefit outcomes being sought, a concrete implementation plan that can generate these outcomes (the 'NbS Investment Portfolio'), and credible means of executing the implementation program via a thoughtful governance, finance and supporting operational structure.
- Grey infrastructure typically focuses on meeting single-purpose performance objectives. By contrast, NbS investments are often times able to meet multiple water security and co-benefit categories such as biodiversity, carbon, and sustainable livelihoods. This multi-benefit framing matters from a marketing perspective to differentiate and elevate NbS as the preferred default option, because watershed actors—per Figure 2 below—may benefit simultaneously along these multiple dimensions.
- It is important for WIPs to leverage, versus duplicate, existing watershed management efforts, and therefore considerable care should be taken to engage, build upon, and align with existing initiatives and institutional mandates.
- WIP typically have a 'burden of proof' required for unlocking funding. A prospective funder's excitement to participate and champion a watershed investment program is a necessary, but usually insufficient, condition for contributing monetarily; additional analytical products are often required to move from 'interested' to 'ready to invest'.

- Be mindful not just of the amount and kind of funding, but also the ‘flow-of-funds’ for how resources will be channeled towards the WIP. Funding can be provided either in a ‘direct’ or ‘in-kind’ basis, and involves the WIP funder to either allocate from existing revenues or generating new ones.
- WIP funders are often subject to binding regulations—e.g., least-cost procurement—which need to be accounted for in your outreach and advocacy plan. Map the policy enabling environment during Pre-Feasibility to understand the execution potential of proposed funding mechanisms; such efforts may point to the need for policy advocacy work for the prospective funder to participate in the WIP.
- It is essential to respect full-cost accounting principles when estimating the resources required to execute your WIP. These include implementation, management, transaction, opportunity, program management, and financing (if applicable) costs over the full program duration. Your funding source(s) must be arranged to flow to these various needs at the appropriate required times to ensure programmatic success.
- WIPs usually feature flexible portfolio-based approaches, a reality that allows for adaptive management and portfolio refinement over time. This presents an opportunity, but also means that core program scope, outcomes, costs, funding, and execution strategy must often be viewed as an ongoing ‘balancing act’ as opposed to a one-time analysis at financial closure.
- Maintain an open mind about the different potential funding sources which might be harnessed for you WIP. Per Figure 5 below, there are a variety of different funding stream options, and it may require considerable investigative effort to understand the specific most appropriate mechanism(s) to ensure WIP fiscal sustainability.
- Collective action allows for pooling multiple beneficiaries to fund a prioritized set of upstream activities that provide common benefit. This is particularly advantageous in cases where public agencies already embody specific roles and host related budgets that may contribute and align with the WIP’s overall objectives. However, additional counterparties generate additional complexity; therefore there is certainly a rationale for establishing bilateral watershed investment programs (e.g., a utility funding catchment investments) if the proposed investments meet internal needs on a standalone basis.

Pre-feasibility Phase: Hypothesizing ‘who cares?’

During pre-feasibility, the primary objectives from a funding perspective is identifying who has high-level appetite & ability to pay for water security outcomes and relevant associated co-benefits (e.g., biodiversity, carbon, and sustainable livelihoods). Therefore, during initial stakeholder mapping (see [Stakeholder Mapping Deep Dive](#)) it is important to identify (1) which parties are already working on the issue (to avoid duplication) and (2) which institutions are facing relevant water security challenges that may be addressed via NbS. In particular, outreach should be emphasized with agencies and regulatory bodies that have a responsibility for managing the water security challenges. Figure 2 provides a table of watershed stakeholders, the typical outcomes they prioritize, and whether they often provide direct or in-kind funding for implementing watershed NbS. Figure 4 maps the same beneficiaries against their level of funding volume and level of watershed influence from a jurisdictional perspective.

It is essential during Pre-Feasibility to align your core stakeholder group—including prospective WIP funders—on key scope elements that will feed into Feasibility. This helps ensure that the Feasibility Assessment generates the necessary ‘burden of proof’ to unlock funding commitments. The most essential elements to align upon include (1) the specific water security challenges that are being addressed (e.g., ‘water availability’), (2) the target beneficiaries on behalf of whom the benefits are being evaluated (e.g. ‘local water utility’), (3) the key metrics which will define success for benefit delivery, (4) the WIP’s target service area (which includes both the points where beneficiaries receive benefits—e.g., intake locations—and the geographic areas where implementation

takes place), and (5) the specific target NbS interventions to be evaluated. Figure 4 provides an indicative Theory of Change diagram using the example of the Greater Cape Town Water Fund that links NbS interventions, outcomes, and target beneficiaries. It is important that the potential funders and financiers are highlighted in this diagram and that these stakeholders are brought along the Feasibility Assessment’s ROI evaluation process if the goal is to generate associated funding commitments.

		PRIORITY WATER SECURITY BENEFITS			PRIORITY CO-BENEFITS			RESOURCING METHOD	
		Water Availability	Water Quality	Disaster Risk	Biodiversity	Carbon	Sustainable Livelihoods	Funding Provider	Alignment Opportunity
Public	Basin authority								
	Environmental authority								
	Local government								
	Water regulator								
Public/Private (depending)	Hydropwer								
	Irrigation board								
	Water allocator/ utility								
Private	Agricultural association								
	Subsistence agriculture								
	Insurers								
	Corporations								
	Philanthropy								
	Residents & small business								
International Cooperation	Bilateral & donor agencies								
	Dev. Finance Institutions								
	Non-profits & NGOs								

FIGURE 2. Linking watershed stakeholders to Water Security Challenges, associated co-benefits, and opportunities for direct funding & alignment of deploying existing resources

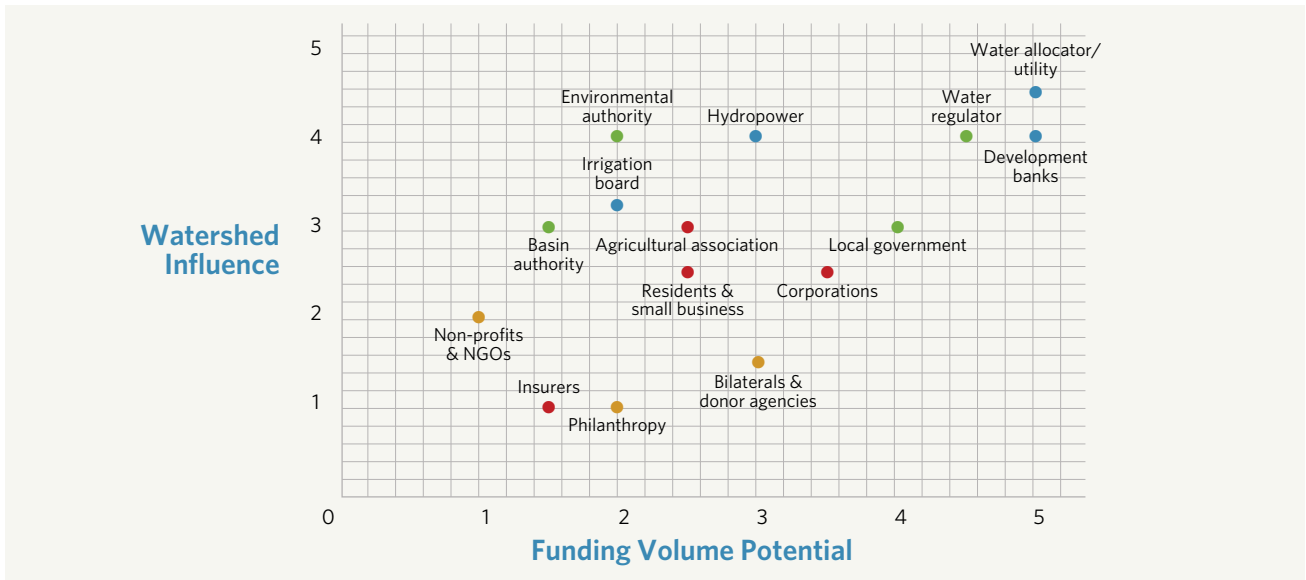


FIGURE 3. Beneficiaries mapped to typical funding volume and level of watershed influence

This figure highlights the relative levels of watershed influence and funding volume potential that different parties often play in WIPs.

Color legend for dots: green = public actors, blue = public/private actors, red = private sector, yellow = international cooperation.

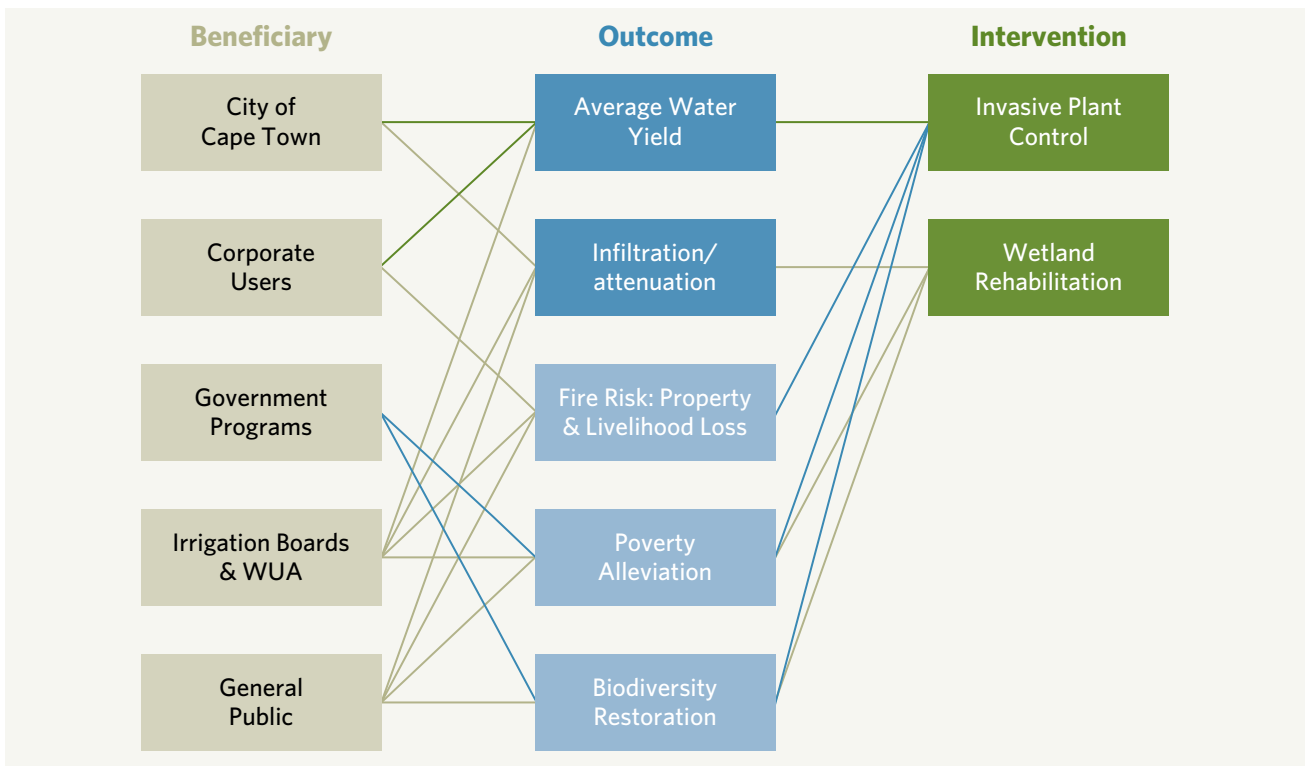


FIGURE 4. Pre-feasibility Phase indicative Theory of Change for Greater Cape Town Water Fund.

This diagram links beneficiaries (left side) with water security and co-benefit outcomes (middle) and the NbS intervention options (right side) that generate those outcomes.

Color legend: Green = new funding potential, blue = opportunity to align resources with existing mandates, and grey = interest but unclear direct funding potential.

WUA stands for Water Users Association

WIP FUNDING STREAM OPTIONS

WIPs can be resourced by a variety of different type of funding stream mechanisms. Importantly, not all these mechanisms are present and available in all jurisdictions, and therefore care should be taken to investigate your WIP's local stakeholder landscape to understand which mechanisms are relevant and promising.

Funding stream market size estimates are sourced from Bennett & Ruef 2016 unless otherwise indicated.

- **Direct water user investments:** Approximately USD \$650mm is channelled annually from direct water users such as cities, agricultural associations, industrials and water utilities acting on behalf of customers into watershed NbS. Such investments are primarily motivated by the direct water security benefits received by these downstream beneficiaries that translate into bottom-line impact in the form of cost reductions, increased revenues, or risk operational risk reduction.
- **Watershed stewardship commitments:** This grouping refers to project-based watershed investments made by companies with the intended goal of minimizing water risk and mitigating the impact of a company's operations or supply chain in a given basin (beyond what is legally required). These investments can also be referred to as "replenishment" investments or "water balance" investments. In some cases, these investments may be part of a company goal to "return" or "replenish" an amount of water equivalent to what is used in some or all of their corporate activities. These commitments are typically evaluated via standardized accounting methodologies such as the [Volumetric Water Benefit Accounting](#) method or agreed upon in other forums such as CEO Water Mandate's [NbS Benefit Accounting Initiative](#).
- **Public subsidy programs:** These watershed management initiatives reward land managers for enhancing or protecting ecosystem services, and are typically funded by supranational, national, and state/provincial governments. Such subsidy payments totalled USD \$23.7 bn across 139 programs. Examples include the European Union's Common Agricultural Policy (paid for via contributions by EU member countries) and the US Department of Agriculture's Conservation Stewardship Program (paid for via the Farm Bill).
- **External transfers:** This pool represents grants raised from international donor funds (e.g., the Global Environmental Facility), bilateral agencies (e.g., Swiss Agency for Development and Cooperation), private philanthropy, and corporate donations. Securing such support is typically tied to showing alignment between WIP outcomes and the global development agenda (e.g., the Sustainable Development Goals) and can be particularly relevant for addressing up-front WIP preparation phase development costs and conduct field intervention pilots for your WIP's priority NbS options.
- **Monetizable co-benefits:** This category refers to WIP benefits beyond water security that can, under certain circumstances, serve to enhance the WIP's financial profile when implementing its NbS Investment Portfolio. It includes:
 - **Carbon credits:** The \$1bn annual voluntary carbon credit market is primarily met by NbS measures, including landscape protection, forestry, and agriculture (Ecosystem Marketplace 2021). The most active buyers of these credits include the energy, consumer goods, finance and insurance sectors which seek to immediately address their net emissions footprint as they work to abate more difficult-to-address and costly supply chain and infrastructure upgrades over the long term.
 - **Circular economy outputs:** In certain cases, NbS measures can provide direct cash flow or asset appreciation that generates funding potential for the WIP. For example, selectively thinning forests to reduce the risk of catastrophic wildfire generates biomass and/or timber that can be of potentially valuable commercial use.
- **Water quality trading and regulated offsets:** With a total estimated global annual market value of UDS \$31 mm, these schemes are typically compliance-driven regulated markets where water users have the opportunity to manage their watershed impacts by compensating others for offsite activities to improve water quality or supply. Compensatory activities in such markets are packaged as a credit or other unit and are typically traded within watershed boundaries. Examples include the Ohio River Basin Trading Project and New Zealand's Lake Taupo.

	USER-DRIVEN FUNDING STREAMS		NON-USER-DRIVEN FUNDING STREAMS			
	Direct Water User Investments	Watershed Stewardship Commitments	Public Subsidy Programs	External Transfers	Monetize Co-benefits	Water Quality Trading and Regulated Offsets
National government						
Local government						
Water allocator/utility						
Corporations						
Hydropower						
Water users association						
Agricultural association						
Bilaterals & donor agencies						
Private philanthropy						

FIGURE 5. WIP funding stream options & typical associated beneficiaries

FEASIBILITY PHASE: ALIGNING STAKEHOLDER MOTIVATION VIA VALIDATED THEORY OF CHANGE

As you begin evaluating your WIP during the Feasibility Assessment, which should yield a specific NbS Investment Portfolio and associated business case, a number of aspects should be kept in mind to maximize the likelihood of motivating associated funding commitments.

The first such consideration is **'burden of proof'**. This asks the question: what is the appropriate level of detail/specificity to motivate funders? As mentioned, stakeholder excitement is typically a necessary—but insufficient—condition to unlocking investment, and analytics are often required for stakeholders to contribute monetarily. However, institutions may require different evidence bases to motivate such commitments. Therefore, prior to starting the Feasibility Assessment, it is essential to have a conversation with your stakeholders to understand what the required level of detail is, and what specific metrics are necessary to detail in the business case to rally internal support. Often times it is wise to select biophysical models in the Feasibility Assessment that stakeholders already use and trust for internal operations—this avoids having to defend both analysis results and the model used to generate them. A good practice is to prepare an overall technical methodology to kick off the Feasibility Assessment and have it formally reviewed and evaluated by technical counterparties within the prospective funders to ensure it meets their needs.

We observe three typologies for ‘burdens of proof’ to unlock funding commitments:

- **Benefit outcomes estimates:** Many institutions (e.g., philanthropy, bilateral donors, and government agencies) view water security & co-benefit estimates as suitably motivating to proceed with funding. Such funders may be satisfied by a common conservation plan/NbS Investment Portfolio and estimated associated ecosystem benefit outcomes, without requiring formal ROI evaluation or parsing benefits on a beneficiary-by-beneficiary basis.
- **Cost-effectiveness:** Least-cost delivery is often a binding requirement for public water management institutions and water utilities; furthermore, cost-efficacy also is a compelling framing device for corporate, industrial and hydropower water users. Associated metrics include program net present value, cost-effectiveness ratios, and full-cycle ROI. Benefit-cost ratios may be framed on a comparative basis with other water management options, or benefits may be associated with monetary values (see section describing ‘benefit monetization functions’ below) by translating water security outcomes into monetized program benefits.
- **Crediting methodologies:** Voluntary and regulated offset markets rely upon accounting/rule-of-thumb methodologies that use general averages and historical practice versus bespoke biophysical models. Of particular relevance is the water replenishment space, in which corporate users aim to reach water neutrality ambitions on a voluntary basis by supporting on-the-ground projects that improve watershed conditions. For example the Volumetric Water Benefit Accounting methodology developed by WRI and partners provides guidance on how to assess volumetric contributions from water stewardship activities (Reig et al 2019).

When crowding-in existing resources to your WIP on an in-kind basis, versus attracted new funding, it is important to showcase how the WIP meets the outcomes of concern/interest to the in-kind provider. For example in the case of the Greater Cape Town Water Fund (GCTWF), multiple government programs such as Working on Fire already contribute to invasives alien plant (IAP) control in the South Africa’s Western Cape, and feel motivated to deploy their capacity and resources in a common implementation plan that is coordinated by the GCTWF. Such in-kind providers are motivated to do so because GCTWF’s program vision aligns with their own jurisdictional mandates and serves to accelerate the outcomes they are bound to.

The second enabling conditions to bear in mind during Feasibility is **service area**. Particularly for collective actions settings, the umbrella service area where the WIP invests in and delivers water security benefits to may offer not 100% overlap with every beneficiary. Therefore it is necessary to identify the areas of mutual overlap where beneficiary funding can be targeted while simultaneously meeting programmatic objectives. This can become complicated as different funders may have different geographic restrictions that need to be carefully tracked during WIP execution.

Lastly, **jurisdictional restrictions** sometimes constrain beneficiaries from investing in the service area, even if it provides a compelling ROI and meets important institutional objectives. In these cases it may be necessary to conduct policy or legal work to provide comfort and clarity that the beneficiary indeed has a mandate to invest in the WIP. For example, to enable the issuance of a tariff to fund NbS investments in Sao Paulo’s Cantareira Water Supply System, TNC worked with counsel and Brazil’s National Regulatory Agencies Association, ABAR, to provide regulatory clarity for the ability of regulators to charge water users to fund catchment investments as part of rate base.

What’s it worth? Defining beneficiary-specific values for ecosystem service gains

As you progress with your stakeholders and begin to elaborate your WIP’s business case, it may be necessary to translate your WIP’s forecasted ecosystem benefits into estimated monetized benefits. **Benefit monetization functions** are formulas that allow for moving beyond simple cost-effectiveness ratios (where ecosystem benefits are presented in the numerator, and full-lifecycle program costs in the denominator) to explicit beneficiary-specific monetary values. Monetization rationales linked directly to water security outcomes typically motivate the most reliable, substantive and sustainable forms of WIP funding given that they tend to be recurrent in nature and require local investment to address.

The three typologies for quantifying direct benefits of your investment program to specific beneficiaries include.

- Empirical benefit functions:** These refer to quantitative relationships that directly link ecosystem services in an economic or financial manner to the beneficiary's bottom line. This can either take the form of reduced costs (e.g., reduced sedimentation leading to avoided reservoir dredging costs for hydropower operator), increased revenues (e.g. increased crop yield from improved dry season availability), or lower risk (e.g., avoided flood damages from reduced flood risk to urban infrastructure). Developing such empirical benefit functions require intimate knowledge of the beneficiary's internal operations, so expect to work closely with technical staff in the beneficiary's organization to validate appropriately. For further background on this approach please see the [Economic and Financial Analysis Deep Dive](#).
- Alternative cost:** This option compares the least-cost means of providing a similar level of benefit using an alternative delivery option. For example, the 2018 GCTWF business case compared the unit costs of delivering a cubic meter of water between IAP control—the selected NbS option—and alternatives including storage expansion, water reuse, groundwater exploration and desalination. Invasives removal was determined to provide water availability gains at up to 1/10th the unit cost of alternatives, generating an attractive program ROI.
- Willingness to pay:** This method relies on surveys or other methods to determine the amount population within the study area would be willing to pay for the benefit.

When making the business case for WIPs, it is often appropriate to conduct valuation exercises that highlight the broader public benefits provided by the NbS Investment Portfolio versus traditional grey alternatives. For example, many NbS options feature improved agricultural best management practices that not only deliver water security benefits but also improved smallholder farm income; this can be included as part of the overall program ROI and may be motivating to certain prospective WIP funders and financiers.

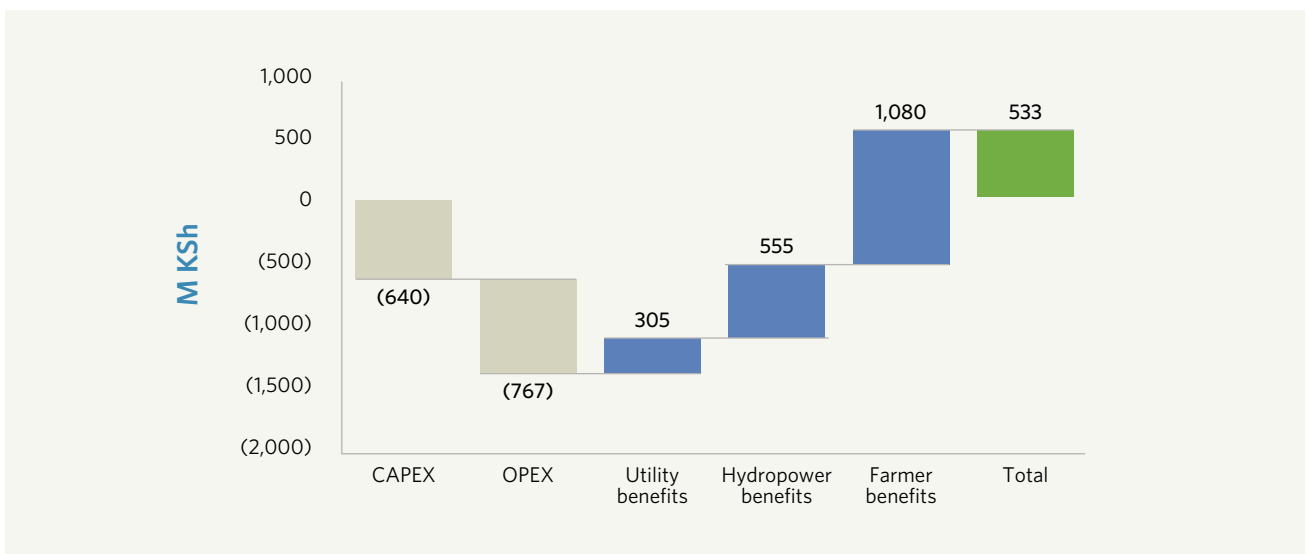


FIGURE 6. Upper Tana-Nairobi Water Fund Business Case NPV Evaluation

Figure 6 provides an example of how a mix of different beneficiaries can be co-evaluated as part of a common NbS Investment Portfolio. Total estimated program costs of 1,407 M KSh over the 30-year program (USD \$ 15.6mm) compares to estimated monetized benefits of 05 M KSh to water utility Nairobi City Water and Sewerage Company (experienced via avoided flocculant and electricity costs, and additional revenue from saved process water), 555 M KSh in value to hydropower utility KenGen (from avoided interruptions and increased water yield), and 1,080 M KSh of improved income to upstream local smallholder farmers. Full lifecycle Net Present Value is estimated at 533 M KSh, which does not account for additional relevant benefits including increased dry season flows, avoided turbine intake maintenance costs, improved economic opportunity for urban and private

sector due to improved water supply, carbon sequestration, and increased pollinator habitat (TNC 2015). These results helped motivate commitments by The Coca-Cola Company and Frigoken (downstream users), the Global Environment Facility, private philanthropic donors, and in-kind commitments by County governments and farmer partners.

Developing program full-lifecycle costs

As detailed in the [How-to Guide](#) (Feasibility Phase section) and the [Economic & Financial Deep Dive](#), at Feasibility Phase conclusion your stakeholder group should have selected the target NbS Investment Portfolio which includes a targeted level of effort for NbS deployment, projections for ecosystem service gains and associated water security outcomes, and estimated total full-lifecycle program costs. Importantly, these cost categories not only include (1) initial implementation costs, but also (2) maintenance costs, (3) transaction costs, (4) opportunity costs, and (5) program management costs, and are presented over the full deployment period required for executing NbS Investment Portfolio.

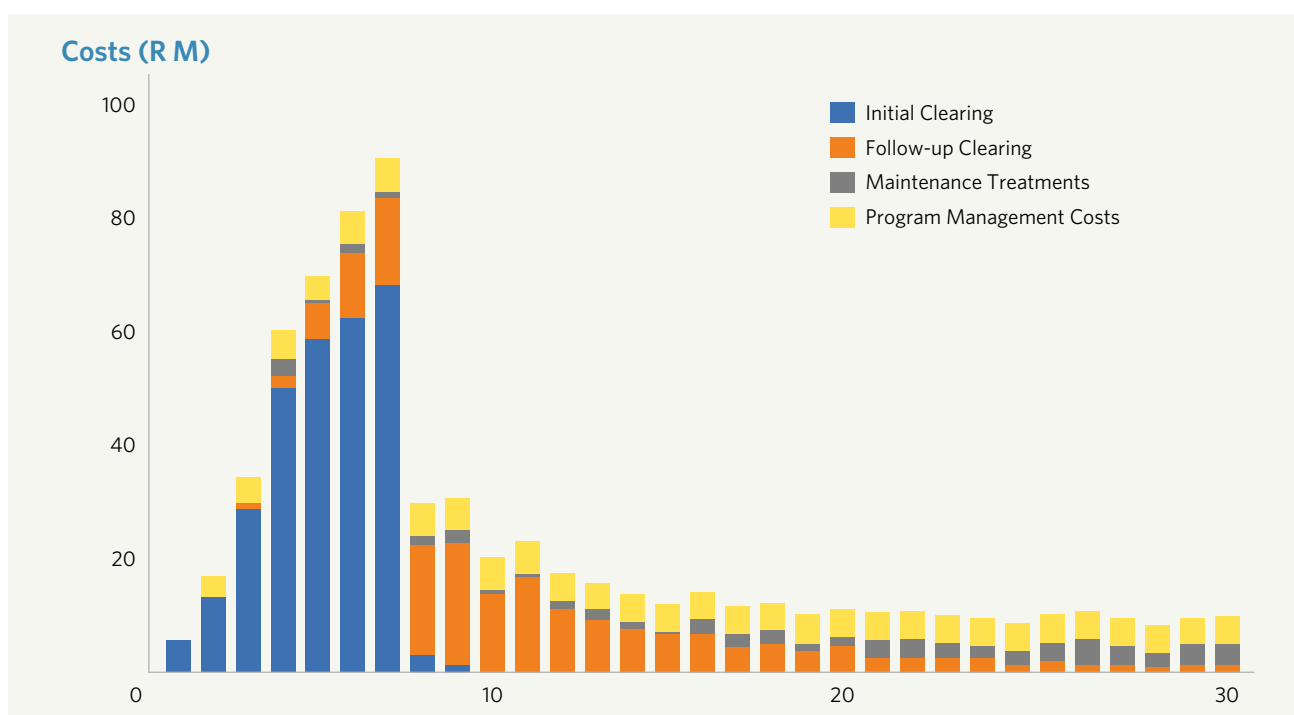


FIGURE 7. GCTWF full lifecycle program costing

Full lifecycle program costing for the Greater Cape Town Water Fund is presented in Figure 7. This figure covers the program’s full 30-year timeframe, and highlights how high initial implementation costs taper off for a long-tail of maintenance treatments to manage the re-growth of invasive pines, eucalyptus and acacias after initial clearing has taken place.

Figure 7 highlights two additional elements to consider for full-lifecycle program costing. The first is that values are presented on a nominal basis, versus the discounting values needed to generate ROI and cost-benefit ratios used in the business case evaluation. Secondly, portfolios should be costed annually on the basis of realistic implementation absorption capacity. In this case, the GCTWF estimates a six-year deployment period to conduct initial clearing and associated follow-up treatments based on the availability of crews to conduct the mechanical thinning and the environmental requirements to avoid unintended consequences (e.g., fuel load and erosion). Such annual—as opposed to ‘lumped’—costing is important as incoming funding (considered in the next section) must be matched against annual resource requirements, and differences between when money is received and expended will be affected by inflation.

DESIGN PHASE: UNDERSTANDING REALISTIC FUNDING NEED & FILLING GAPS VIA THE SUSTAINABLE FUNDING STRATEGY

The sustainable funding strategy section of the WIP’s Strategic Plan showcases how the WIP’s funding sources match against the full-lifecycle cost needs, and delineates the plan to infill against remaining resource gaps. The overarching goal from this process is to determine the overall fiscal viability of the WIP and ensure you are in a confident financial position that your WIP can meet its long-term program objectives.

Note that WIP’s often don’t always have 100% of required funds in-hand before launching, which can be appropriate if there are clear and tested hypotheses for where the funding balance might come from. However, it is important to have sufficient cash-on-hand (e.g., at least two years) to cover program management costs and make meaningful progress towards implementation goals. From this perspective, the sustainable funding strategy is a key proof point for defining the “R” (Realistic) dimension of the WIP’s “SMART Objectives”, namely whether there are likely to be sufficient resources to meet the WIP’s program outcomes and associated implementation goals.

A step-by-step approach for developing the sustainable funding strategy is provided below, and is illustrated by a case study for the GCTWF.

Pre-assessment: At Feasibility Phase conclusion you should have a Memorandum of Understanding with your key stakeholders to kickoff the Design Phase work as well as a defined NbS Investment Portfolio including full-lifecycle program costing. The MoU stakeholders come into play in Step 1 of the sustainable funding strategy process; meanwhile full-lifecycle costing (which should be indicated at least at annual resolution across the entire execution period) is used to conduct the gaps analysis as part of Step 2.

STEP 1: Engage existing core stakeholders to understand (1) their own planned commitments to the NbS Investment Portfolio and the format such commitment will take (e.g. direct contributions versus in-kind commitments), (2) guidance on what their priorities are in terms of the overall funding mix and what it needs to accomplish, and (3) their insights into additional parties that might be ‘crowded in’. By way of example, the GCTWF sustainable funding evaluation began with a canvassing of the existing SteerCo group to understand key points of concern and potential emphasis to guide the strategy. This process indicated that leadership should focus on a mixed funding model that promotes long-term business continuity via recurrent resources, and that the GCTWF should aim to attract new resources versus divert current funding away from local water agencies.

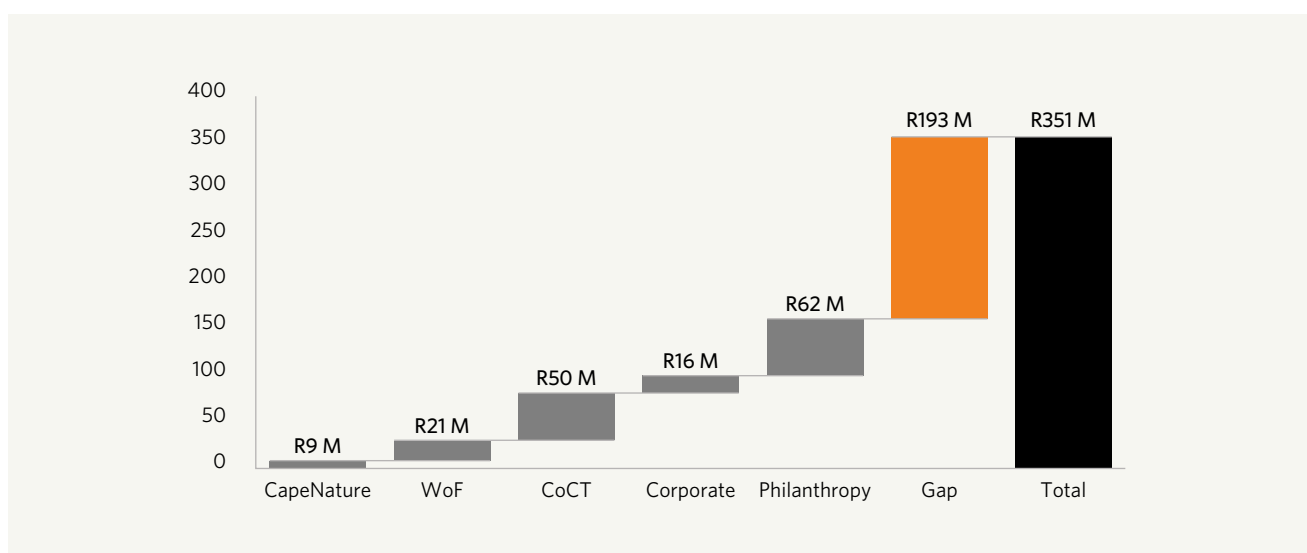


FIGURE 8. GCTWF resource gap for ‘High Impact’ deployment period (years 1-6)

STEP 2: Determine your funding gap by comparing full-lifecycle costs for deploying the NbS Investment Portfolio against existing committed in-hand resources to generate the 'funding gap' that needs to be addressed. Figure 8 presents such a funding gap evaluation for the GCTWF, which indicates that roughly 45% of resources can be considered 'in-hand' during the fund's immediate 'high-impact' period during years 1-6 of deployment, while a further 55% still requires to be secured at time of authorship. The funding gap analysis for GCTWF also points to a lack of long-term, recurring funding streams to pay for the R10-20 M in annual costs to cover the long-term maintenance period (years 7+) as well as operational costs to run the future dedicated GCTWF entity.

Note that certain funders may have restrictions—e.g., only allowing investment within a certain part of your target service area, or only being able to pay certain kinds of expenses. Therefore the gap analysis is a dynamic exercise that considers not just the overall annual funding requirement, but also the limitations and caveats placed on the resources provided. Furthermore, all these funds do not necessarily need to flow through a single bank account—especially if stakeholders are providing in-kind support aligned with the NbS Investment Portfolio—but that a coordination vehicle (e.g. umbrella agreement that is backed by a steering committee and common implementation plan) will likely be required if your WIP includes multiple implementing parties with different funding pools.

STEP 3: Circle back and revisit the core beneficiaries of your WIP. By reviewing the portfolio results generated during Feasibility and reflecting upon other potential catchment beneficiaries, it is possible to re-purpose existing analytics to drive new conversations, especially if there is existing stakeholder momentum for your WIP. Develop a list of specific prospects and coordinate outreach accordingly; this process often requires leaning on your Champions and local water management experts for adequate guidance.

By way of example, the GCTWF NBS Investment Portfolio modeling results can be broken down to showcase how avoided water yield losses—the primary metric of interest to the stakeholder group – is allocated by dam catchment and specific user beneficiary (Figure 9). Such analytics were useful in motivating the City of Cape Town's R62 M commitment to funding clearing over 3 years, and supported motivation for prioritizing a Water Resource Development charge (Figure 10, Option 7) to channel an efficient funding mechanism for Agriculture and Urban & Industrial users.

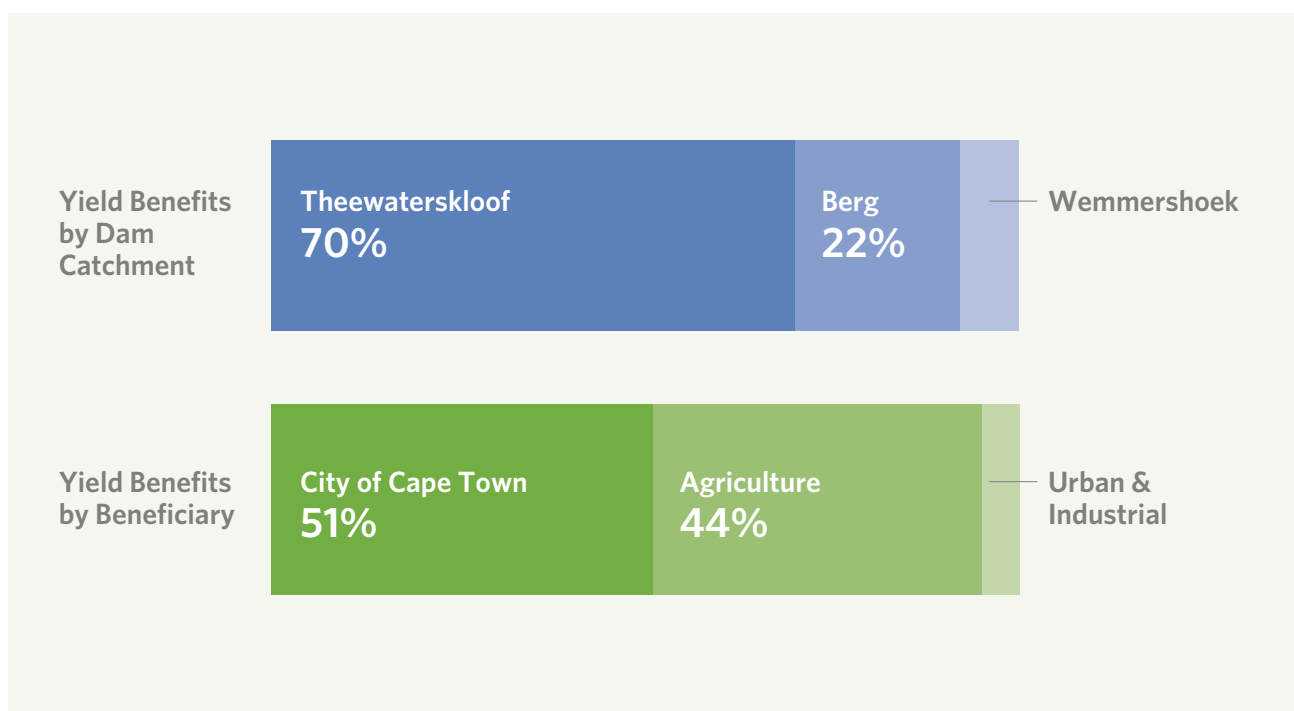


FIGURE 9. GTCWF Yield Benefits breakdown for full implementation scenario presented by Dam Catchment and Beneficiary

STEP 4: Validate stakeholder interest and clear roadblocks. Sometimes stakeholders require a change in regulation or legal clearance to them to channel funding towards catchment investments, especially if such commitments are geographically located beyond existing jurisdictional boundaries. In the case of the GCTWF, a legal opinion was obtained to clarify the City of Cape Town's ability to invest in IAP control despite the activities occurring outside of municipal boundaries. In a similar vein, the regulator for São Paulo's Cantareira Water Supply System, ARSESP, was interested in allowing the utility, Sabesp, to recover charges through the water tariff to pay for forest restoration and green infrastructure investments in the source watershed. TNC worked with counsel to develop a legal opinion for Brazil's National Water and Sanitation Agency, ABAR, clarifying the legal aspects that would allow such a funding mechanism to take place.

STEP 5: Secure funding agreements. As early as possible during WIP development, it is important to organize formal resource commitments with one or more parties to pay for the full-lifecycle program costs. The three important aspects to consider include sustainability, instrument type, and carve-out restrictions.

- (1) **Sustainability:** What is the reliability of the funding commitment? This includes 'ability to pay' (i.e., is the counterparty in good fiscal health and in a position to honor the commitment?) and 'recurrence' (is the funding one-time in nature, or is it a multi-tranche commitment spanning multiple years)? Recurrent funding sources include water management charges, allocable tax revenues, tariffs, and programmatic performance contracts. By contrast, grants and water stewardship commitments are typically one-time commitments.
- (2) **Mobilization instrument:** What conditions are required for release of payment? The funding agreement language articulates aspects such as implementation activity timeframe, standards of success, payment modality, and relationship to Monitoring & Evaluation. Typical categories include:
 - a. **In-kind contributions**, which are typically defined in a Memorandum of Understanding format and are quite common in WIPs harnessing collective action;
 - b. **Grant agreements**, which tend to be more flexible than performance contracts and indicate the outcome objective, execution period, and specifications for grant usage but may not be tied explicitly to binding performance objectives; and
 - c. **Performance contracts**, where release of funding is conditional upon delivering certain metrics (e.g., implementation delivery, or achievement of certain level of modeled ecosystem service provision).
- (3) **Carve-outs:** Lastly, prospective WIP funders sometimes have specific restrictions requiring resources to be spent in specific sub-geographies of the WIP's service area, or only on specific activities. For example, the GCTWF's R62 M commitment by the City of Cape Town was prioritized for the dam catchments that generate the highest degree of water security benefit for the City (e.g., Berg River dam) and/or are dams operated by the City (e.g. Steenbras). Such restrictions need to be holistically considered to ensure that the WIP is able to meet its full implementation objectives and cover all its cost categories over the targeted implementation timeframe.

STEP 6: Develop a tangible plan to infill against remaining funding gaps. Following Steps 1-5 it is possible that your WIP does not have 100% of commitments organized to meet the full lifecycle funding needs. Moreover, because WIPs follow adaptive management principles and NbS portfolios can be scaled up and down, it may be appropriate to continue attracting funding post start-up to accommodate expanded ambitions as you build upon success. In either case, the 'R' in SMART Objectives stands for 'Realistic'. Before moving out of Design Phase, it is important to either have commitments in-hand and/or a credible, tangible plan to infill against remaining commitments.

As indicated prior, the GCTWF's sustainable funding strategy indicated 45% of in-hand commitments and 55% remaining gap to cover immediate resource needs during the 'high impact' phase of operation. Following a thorough study and extensive stakeholder consultation, a detailed matrix was developed for the GCTWF to prioritize future outreach efforts to generate additional funding commitments (Figure 10). Particular emphasis is highlighted on attracting 'sustainable recurring' sources for the GCTWF's long-term maintenance phase versus one-off voluntary sources that are essential for driving the initial 'high-impact' period but less dependable for ensuring long-term programmatic success.

OPTION	FEASIBILITY	ALIGNMENT	DEPENDABILITY	VOLUME	EFFICIENCY	PRIORITY
Voluntary Funding Contributions						
(1) Private Sector – Corporate stewardship	High	High	Low	Low – Med	Med – High	3
(2) Private Sector – Philanthropy	High	High	Low	Low – Med	Med – High	2
(3) Donor agencies & global funds	Medium	Medium	Low – Med	Medium	Medium	1
(4) Municipal budget expenditure	High	Med – High	Medium	Med – High	Medium	1
Sustainable Recurring Funding Sources						
(5a) Provincial government programming	Low – Med	Medium	Medium	Medium	Medium	4
(5b) National government programming	Low	Medium	Medium	Medium	Low – Med	5
(6) Bulk water charge + Section 33 process	Med – High	Med – High	High	High	High	1
(7) Water Resource Management Charge	Low	High	Low – Med	Med – High	Low – Med	2
(8) CMA Rehab Scheme via WRD charge	Medium	Medium	Medium	Medium	Low	3
(9) Water Users Association Levy	Medium	Medium	Medium	Medium	Low	3
(10) TCTA infrastructure charge	Low	Low – Med	High	High	Med – High	Discard
Additional Resourcing Mechanisms						
(11) In-kind contributions	High	High	Medium	Low – Med	Med – High	1
(12) Value Added industries	Medium	High	Medium	Low – Med	Low – Med	5
(13) Endowment	Med – High	High	High	Med – High	High	Linked (1)–(9)
(14) Repayable financing	Low	High	High	High	High	Postpone

FIGURE 10. GCTWF prioritization recommendation to bridge funding gaps

STEP 7 (optional): Consider whether the tools of an endowment and/or repayable financing serve to advance WIP outcomes

In certain cases, endowments and repayable finance structures can advance your WIP by providing recurrent funding, accelerating conservation outcomes, and managing risk among WIP funders. An essential pre-condition for both tools is raising the required capital and, in the case of repayable finance, identifying relevant creditworthy cashflows that can serve to pay back principal and interest expenses over time.

TOOL #1: Endowments. Investment income generated by an endowment structure has been a successful strategy employed by multiple water funds to-date such as FONAG in Quito, Ecuador (Marsters et al 2021). The purpose of such endowments is typically to cover all or a majority of program management costs to ensure that core WIP functions such as leadership, implementation coordination, and monitoring & evaluation (which are often difficult to fundraise against) can be guaranteed. Moreover, endowments can function as a reserve fund to resource implementation during difficult periods. Endowments can be either organized as perpetual funds—where annual spend is limited to a maximum of investment income—or sinking funds, where disbursements include both investment income and capital principal, leading to a decline in the capital base over time and ensuing reduction in disbursement capacity (such *sinking funds* are typically organized with a 10-20 year disbursement period in mind). In either case, the WIP needs to attract significant capital by one or more parties to seed the endowment.

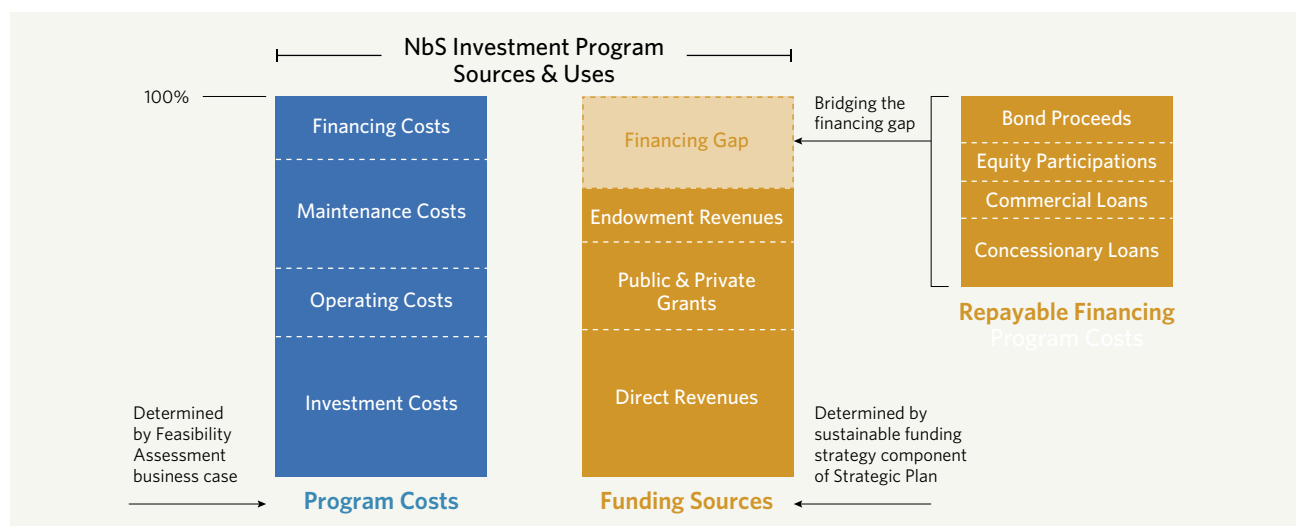


FIGURE 11. WIP Sources and Uses schematic featuring endowment & repayable financing options (adapted from OECD 2009)

TOOL #2: Repayable financing. This tool entails raising up-front capital that needs to be repaid (usually, with interest). Such structures are typical of grey infrastructure water sector projects in the form of sovereign, municipal, and private water purveyor debt operations, where creditworthiness (i.e., ability to repay the lender) is guaranteed by the fiscal health of the loan recipient. Note that in the mock WIP sources and uses funding schema shown in Figure 11, organizing repayable financing to bridge the financing gap results in an increase for overall program funding needs due to financing costs from interest payments and/or equity dividends. Rationales for your WIP to consider repayable financing include:

- (1) **Accelerating implementation outcomes by deploying ‘future’ funding today.** This occurs in cases where sufficient funding has been secured over the full program lifecycle, but where implementation deployment requirements are front-loaded and there is sufficient absorption field capacity to immediately execute. An example of this use case in a multi-funder context is Blue Forest’s Yuba I project, a USD \$4.6mm transaction that stacks multiple beneficiaries include the Yuba Water Agency (utility), California Climate Change Investment Program, and others to treat 15,000 acres of forest management practices to prevent catastrophic wildfires and associated sedimentation issues and property loss. Given the ability of Forest Service to immediately deploy treatments at scale, the financing allowed the consortium to accelerate project implementation from 10 years to 4 years.
- (2) **Enable contractual risk-sharing:** In select circumstances, release of payment by funders is conditional upon certain performance indicators being met (e.g., ‘payment for outcomes’ or ‘pay-for-success’ arrangements). This is particularly true for offset markets where a ‘credit’ product is sold to one or more ‘debtors’ wishing to fulfill a regulated or voluntary offset burden. An example of this is the Soil and Health Outcomes Fund, which pays farmers in Iowa, Illinois, Ohio, and Chesapeake Bay watershed to implement no-till and cover crop practices and organizes ‘outcome purchasers’ for the associated carbon and water quality benefits.

INTEGRATING NBS INTO DFI WATER SECTOR INVESTMENTS

Development Finance Institutions (DFIs) annually invest approximately \$15bn in the water supply sector (OECD 2017). There is a growing interest among DFIs to understand how NbS and green infrastructure approaches can be used to complement and co-optimize traditional grey infrastructure loan packages to the water supply, sanitation, and disaster risk sectors. Figure 12 presents how the WIP development lifecycle as detailed in the [How-to Guide](#) compares with typical DFI country-, sector- and project-level engagement processes for grey infrastructure projects.

The sovereign lending arrangements that dominate DFI water sector financing represent an attractive entry point for WIP funding and integrating NbS investments. An initial step for DFI's to consider is understanding how NbS components will figure into the DFI's overall client proposal. Importantly, during such conversations it is good to bear in mind that very few client water sector needs can be met exclusively through NbS; nevertheless many water sector projects can be supplemented with NbS components along a green-gray spectrum of solutions. This spectrum of methods includes:

- 1) **'Greener' gray:** Focused on minimizing the ecological impacts posed by traditional grey approaches. This may require expanding project and impact assessment processes—e.g., evaluating at the catchment or basin scale—to account for upstream-downstream linkages and associated interactions with ecological and social systems. Such approaches may need to evaluate tradeoffs between ecological and infrastructure performance needs, such as considering integrating a natural flow regime in a hydropower operation, and/or provisioning project funds to ensure continuity of ecological processes and benefits.
- 2) **Hybrid green-gray:** This category includes projects where NbS components are integrated to complement gray works with the intent of enhancing overall water security outcomes, ensuring long-term project resilience, etc. The first hybrid project variant is the 'add-on'—where NbS is designed to complement an already-finalized set of gray works. The second variant is where green and grey elements are co-developed and co-optimized at project inception. Such co-designed hybrid projects potentially present higher initial technical complexities but allow for more holistic, integrated vision and wider degrees of freedom in project design and options analysis. Please see [Green-Grey Infrastructure Deep Dive](#) for additional insights.
- 3) **Green-only design:** This approach considers NbS and associated ecosystem services gains as the primary infrastructure investment, and may rely on the protection/restoration of existing ecosystems (e.g., riparian rehabilitation) or the construction of engineered systems (e.g., sustainable urban drainage systems). Such projects are currently rare, but expanding, portion of DFI water sector investment portfolios.

Successfully incorporating NbS into DFI project design may require modifying business-as-usual practices for DFI investment officers as well as necessitate substantial client education to inspire interest (Mathews and Dela Cruz 2020). Relevant considerations to keep in mind when mainstreaming NbS approaches in DFI projects include:

- **Think broadly:** Traditional gray solutions are typically advantaged in single-purpose projects; however the multi-benefit nature of NbS allows green-gray approaches to shine particularly in multi-objective project contexts. Furthermore, NbS Investment Portfolio development requires adopting a long-term landscape view to evaluate linkages between land use change, climate change, and watershed ecosystem services delivery; this expanded view both deepens understanding of gray infrastructure resiliency and creates and opening for NbS to proactively contribute.
- **Educate early and often:** NbS options should be discussed with clients and partners as early as possible in the project cycle given that they will vary significantly in their baseline level of comfort, familiarity, and readiness with NbS. Green components should ideally be integrated also in upstream aspects including country-level engagement frameworks and sector strategies. Identify relevant local, national, or regional NbS project examples to inspire confidence in clients.
- **Keep operational complexities in mind:** Not all clients have the institutional capacity to 'operate' green infrastructure and are unfamiliar with the implementation realities of catchment management. Clients

might require significant institutional adjustments in policies, staff, and financing modalities to successfully deploy NbS; furthermore determining responsibility between regulatory and implementing agencies may slow progress during project preparation phases.

- **Obtain the right support:** Moving from Pre-Feasibility to Design requires extensive expertise and technical support, and choosing consultants who can adequately ensure the original NbS vision is fundamental to the successful incorporation of NbS into the executed projects. Otherwise, projects identified with strong green components may eventually shade into much grayer projects over time.

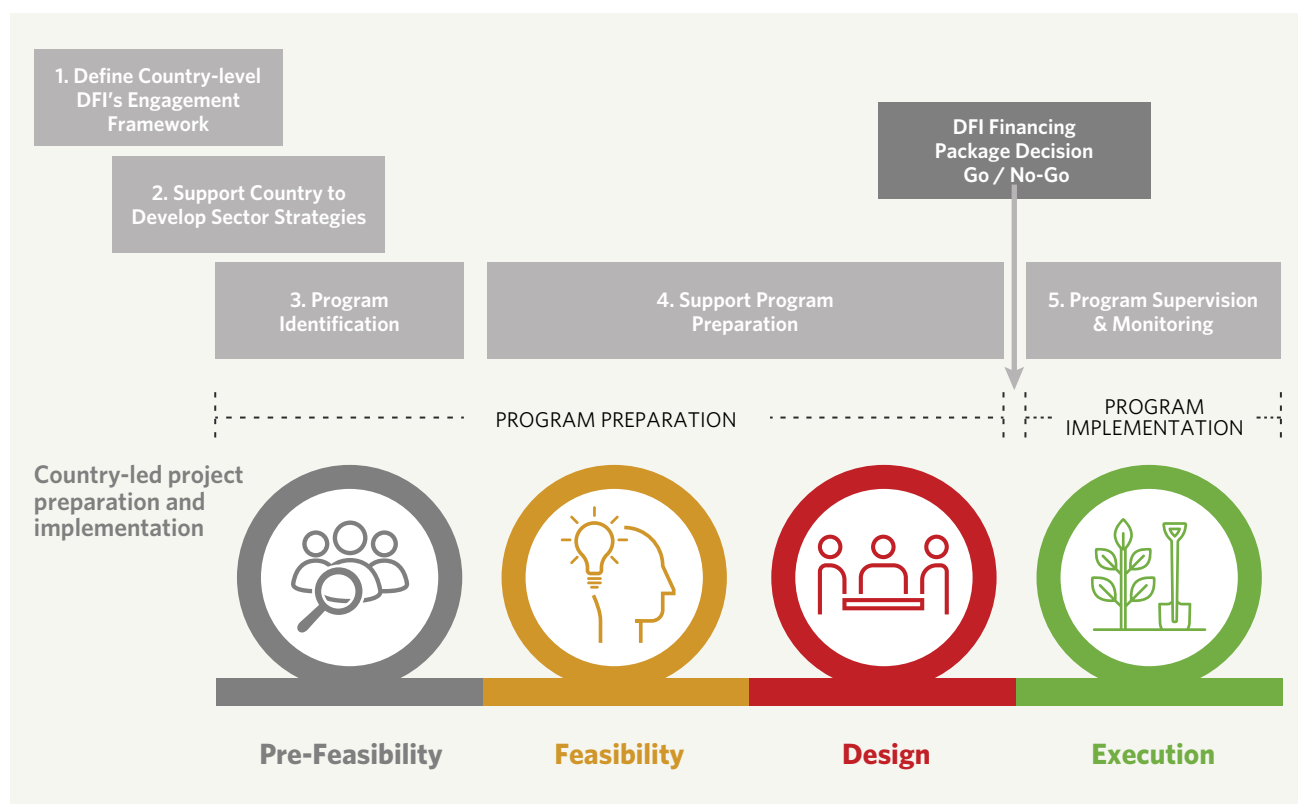


FIGURE 12. WIP development lifecycle in context of DFI country- and project-level engagement framework

EXECUTION PHASE: DELIVERING ON YOUR SUSTAINABLE FUNDING STRATEGY

As you launch into WIP implementation, below are a set of “Do’s and Don’ts” to guide your journey through Execution Phase:

DO view your WIP’s fiscal health as an ongoing ‘balancing act’ between funding availability, overall program scope, and in-field learning that requires regular revisiting. A good practice is to review and revise the Strategic Plan—including the sustainable funding component—every three to five years. This ensures that the funding strategy is regularly aligned against program SMART Objectives, changes in costing understanding, and can provide timely macro guideposts to inform annual operational planning.

DO consider your WIP’s funding needs for the entire program timeframe and across all major categories (including Implementation, Maintenance, Transaction, Opportunity, and Program Management cost buckets). Note that Program Management includes Monitoring & Evaluation, an essential aspect to integrate as part of reporting and communication to your key stakeholders, as documented success serves to de-risk the program and enables future success.

DO build upon and leverage existing field efforts. While multiple implementation parties and funding sources increases complexity, the possibility of stacking beneficiaries and developing a common NbS Investment Program can be powerful and inspiring.

DO consider prioritizing recurrent versus one-time funding streams (e.g. grants). One-time funds can be particularly helpful during WIP program preparation and initial implementation, but may be dangerous to systematically rely upon for medium- and long-term success.

DON'T build your WIP's funding strategy without simultaneously considering the program's governance profile and implementation strategy. These three items (funding, governance, and implementation) are interlinked and should be holistically considered together throughout WIP development phases, but in particular during Design Phase.

DON'T launch without sufficient immediate resources for the first two years of program management and implementation.

DO allow for sufficient flexibility in funding arrangements to create space for adaptive management. You will learn as you go, and therefore maintaining the ability to adapt future implementation according to these learnings is essential.

DO prioritize reporting and communications to your key stakeholders. It is important to stay front-of-mind for your funder(s) to ensure the WIP's continued financial integrity.

References

- Bennett G, & Ruef F. 2016. "Alliances for Green Infrastructure: State of Watershed Investment 2016". Forest Trends Ecosystem Marketplace.
- Tien Shiao, Cora Kammeyer, Gregg Brill, Laura Feinstein, Michael Matosich, Kari Vigerstol and Carla Müller-Zantop. 2020. Business Case for Nature-Based Solutions: Landscape Assessment. United Nations Global Compact CEO Water Mandate and Pacific Institute. Oakland, California.
- Forest Trends' Ecosystem Marketplace. 2021. 'Market in Motion', State of Voluntary Carbon Markets 2021, Installment 1. Washington DC: Forest Trends Association.
- Kroeger T, C Klemz, D Shemie, T Boucher, J.R.B. Fisher, E Acosta, P.J. Dennedy-Frank, A Targa Cavassani, L Garbossa, E Blainski, R Comparim Santos, P. Petry, S Giberti and K Dacol. 2017. "Assessing the Return on Investment in Watershed Conservation: Best Practices Approach and Case Study for the Rio Camboriú PWS Program, Santa Catarina, Brazil". The Nature Conservancy, Arlington, VA, USA.
- Marsters, L., G. Morales, S. Ozment, M. Silva, G. Watson, M. Netto, and G.L. Frisari. 2021. "Nature-Based Solutions in Latin America and the Caribbean: Financing Mechanisms for Regional Replication." Washington, DC: Inter-American Development Bank and World Resources Institute.
- Mathews, J and E Dela Cruz. 2020. "Regional: Protecting and Investing in Natural Capital in Asia and the Pacific. A Practitioner's Guide to Nature-Based Solutions". Asia Development Bank.
- OECD. 2009. "Managing Water for All: an OECD Perspective on Pricing and Financing". OECD Publishing, Paris.
- OECD. 2017. "Financing water and sanitation in developing countries: key trends and figures". OECD Publishing, Paris.
- Raepple, J., Stafford, L., Trémolet, S., Bugan, R. 2021. The Greater Cape Town Water Fund Sustainable Funding Strategy. The Nature Conservancy, South Africa.
- Reig, P., W. Larson, S. Vionnet, and J.B. Bayart. 2019. "Volumetric Water Benefit Accounting (VWBA): A Method for Implementing and Valuing Water Stewardship Activities". Washington, DC: World Resources Institute.
- Tacconi, L. 2012. "Redefining payments for environmental services". Ecological Economics. 73 (1): 29–36. [doi:10.1016/j.ecolecon.2011.09.028](https://doi.org/10.1016/j.ecolecon.2011.09.028) (not working)
- TNC. 2015. "Upper Tana-Nairobi Water Fund Business Case. Version 2". The Nature Conservancy, Nairobi, Kenya.
- TNC. 2019. "Greater Cape Town Water Fund Business Case: Assessing the return on investment for ecological infrastructure restoration". The Nature Conservancy, Arlington, VA, USA.