Aligning Water Fund Investment Prioritization in Latin America: A Discussion Document

Most of the world's watersheds now function as tightly knit socio-ecological systems. The biophysical characteristics of the landscape, governance structures and individual land owner's or user's decisions in a place determine to a large degree what activities, such as ranching, farming, forestry, rural or urban development, happen in a watershed. What people choose to do on the land then feeds back to the condition of the ecological system and changes biodiversity, soil fertility, water quality, etc. These changes in turn affect the ability of people downstream to benefit from that system through the delivery of ecosystem services such as clean drinking water, flood protection, erosion control, or hydropower production.

Water funds are a conservation finance mechanisms that takes advantage of the close ties between people and nature in watersheds. For water funds to be successful long-term mechanisms, the investors in each fund must be convinced that their investments are worthwhile. Investors' confidence will generally rely on two things; whether or not water fund objectives are met and whether or not their money is spent wisely. While other documents have detailed how to engage water users, establish the institutional arrangements of a water fund, develop funding structures, engage stakeholders, implement conservation actions and monitor outcomes, little guidance has been developed on the suitable technical approaches to identifying where water funds should be developed and how their investments should be targeted to ensure that water fund objectives are met as efficiently as possible.

Our upcoming meeting will attempt to address this part of water fund design and implementation and provide guidance and standards at a time when water funds are going to be expanding rapidly in the region. The recent commitment by GEF, IDB and FEMSA to support the creation of 32 new funds in 5 years and the creation of the Latin American Conservation Council with interests in water security for the region are creating great demand for the development and implementation of new water funds. We will draw on the experiences of many groups in Latin America who have already developed methods for choosing places to create water funds and for designing investment strategies for individual water funds. Our discussions will aim to align regional efforts and initiate a process for the development of guidance and standards for water fund investment prioritization.

Core Components of Water Fund Investment Prioritization

There are two major questions that might be asked in the process of water fund prioritization, depending on the scale of the project. First, we might want to know *where to develop new water funds*. Once we have selected areas for new water fund development, we will likely want to know at the fund scale *where and how each fund*

should spend its money. It is unlikely that all projects at all scales will or should follow the same set of steps and use the same methodologies. However, several core components of water fund prioritization are emerging that will likely be useful in different ways and different combinations in each case (Figure 1). These components are choosing objectives, diagnostic screening, selecting priority areas, choosing activities, allocating the budget, estimating project returns and designing a monitoring plan. Each component can be addressed in several ways (Figure 1). With the exception of choosing objectives first, all other components can likely be used in any order to fit the needs of each project. Several different combinations have been used in existing projects. For example, the Agua por la Vida y Sostenibilidad water fund in Cauca Valley, Colombia, used all components (monitoring is still being developed) to decide how that individual water fund should invest its money (Figure 2). Other

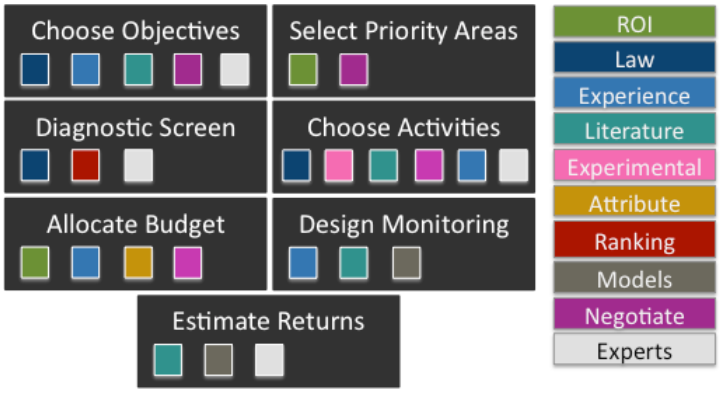

Figure 1. Core components of water fund prioritization with options for applying each component.

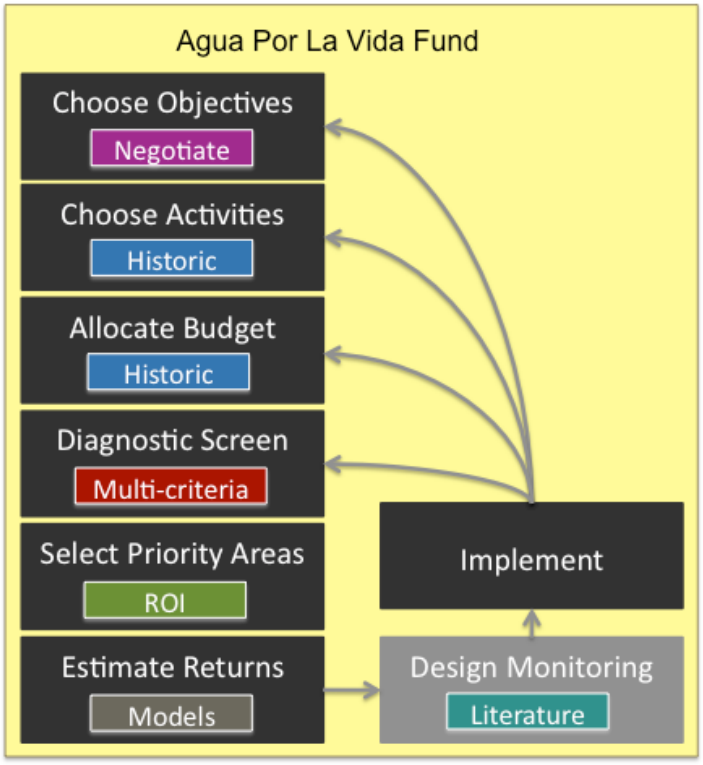

Figure 2. Use of water fund prioritization components for fund-level investment design for the Agua por la Vida y Sostenibilidad water fund in Colombia.

projects we will discuss in the workshop use fewer components in different orders. One of the main discussions in the workshop will be around whether or not these core components capture all of the needs of water fund developers in the prioritization stage. The following sections will briefly introduce some of the options for implementing each component and tee up our discussions around these options for the workshop.

Choosing Objectives

Choosing objectives is always the first step in prioritizing water fund investments. Without objectives, it is very hard to determine how much funding is needed, which activities should be used, where activities should be targeted, how much return the project can expect and what should be measured to ensure success of the fund. It is also a critical step because the selection of objectives sets the stage for assessment of the fund's success in the future. In other words, when someone asks whether or not a water fund is successful, they are asking whether or not the fund's objectives were met.

Objectives can be focused on biodiversity, ecosystem services, purely social returns, or any combination of the three. Examples of biodiversity objectives are those commonly defined by conservation organizations such as course and fine filter targets and other kinds of objectives such as maintaining environmental flows. Water funds are likely to focus on several of the following water-related ecosystem services as objectives; erosion control; water purification (nutrients, bacteria, chemicals); water supply or regulation (timing of surface water flows) for drinking, hydropower production, irrigation or industrial use (e.g. cooling, beverage bottling); flood regulation; groundwater recharge; or support of freshwater fisheries. Some water funds may also have social objectives in addition to the benefits people receive from ecosystem services. For example, the World Bank has assessed the potential to use payments from water funds as a means to alleviate rural poverty in Guatemala (Pagiola). In this setting, poverty alleviation would be a specific objective of a new fund.

Funds that have multiple stakeholders in different regions may have different objectives for watersheds or sub-watersheds within the fund. For example, the FONAPA fund has the local government water provider and a hydropower company as stakeholders, but these stakeholders receive benefits from different sub-watersheds within one large basin, so each sub-watershed has its own objectives.

Options:

There are several options for establishing objectives (Figure 1). **Law**: In some cases, objectives are set out in laws that require the establishment of watershed payments for a specific purpose. Objectives are partially set by the law in the Brazilian Water Producer Program. **Negotiation**: In all other cases, objectives will usually be set

through a negotiation process among the water fund stakeholders. **Literature**: In that negotiation process, information from the literature can be used to explain what baseline or desirable conditions in the watershed are, or what kinds of changes can be expected as a result of the kinds of actions the fund could take. This information will help in identifying how much change the fund wants to achieve (see below). **Experts:** When literature values are not readily available to help with quantitative objective setting, expert elicitation can be used. **Experience:** In some cases, water fund stakeholders may have experience making watershed investments already and their past experience can be used to inform the selection of objectives. Several stakeholders likely have their own objectives related to their ongoing work in the area and these may directly inform the water fund objectives. For example, if TNC is working in an area to conserve a particular forest type, the conservation of that forest type may become an objective of the water fund.

Guidance:
It is important that objectives be as explicit, beneficiary-specific and quantitative as possible. In the establishment of a water fund, much conversation might be needed to get stakeholders to agree on a set of core issues and establish an objective such as "maintain or improve water quality and supply". Broadly stated goals are important politically, and agreement on those will be an important first step. But if a water fund does not go further in defining to whom those benefits should be provided and how much improvement is desired, all further steps in the prioritization process will be very difficult, and it will be almost impossible to identify whether or not a fund is succeeding in meeting its goals. Ideally, ecosystem service objectives will state a specific **benefit** to a specific **beneficiary or group** with a **quantitative target**. Here are some examples of well-defined objectives:

<u>Biodiversity objectives</u>
TNC is already very good at defining biodiversity objectives.

<u>Ecosystem service objectives</u>
Maintain drinking water supply to X city at 2008 levels.
Reduce nutrient pollution at X water treatment facility by 10% from 2010 levels.
Reduce erosion upstream of X dam by 10,000 tons/yr.
Reduce bacterial pollution to drinking water standards for all people living below the poverty line.

<u>Social objectives</u>
Raise the income of the poorest 10% of the population above the poverty line.
Provide at least one alternative livelihood for all communities bordering protected areas.

Discussion:
Our discussions during the workshop will focus on whether some options for guiding objective selection are not represented here, and whether some approaches are more appropriate under certain conditions. We will attempt to finalize the list of

options and decide whether and what additional guidance should be provided on setting objectives. We will also discuss how to define objectives that are measurable so that monitoring can track progress towards objectives. In this context, we will discuss the level of certainty that water fund stakeholders need, and how that certainty aligns with what can be credibly achieved. For example, if erosion can only be measured with 50% accuracy, but the fund has a goal of reducing erosion by 10%, showing that objectives are being met could be problematic.

Choosing Activities

The activities (or strategies?) that a water fund invests in can be quite varied and can focus on achieving protection, restoration or both. In existing funds, activities employed include hiring park guards, developing alternative livelihoods for communities, education, fencing, restoration, forest enrichment, and silvopastoral systems and associated training.

Options:

The selection of activities has happened in several different ways. **Law**: The activities a fund can support may be dictated partially or entirely by law. This is the case in the Brazilian Water Producer Program where restoration of riparian areas is the primary activity recommended. Ideally, activities will be chosen based on their likelihood of creating the kind of change the fund aims to reach through its objectives. **Literature**: Information on how effective different activities are at delivering different outcomes can often be found in the literature. For example, there have been extensive studies in many parts of the world on how effective different vegetation types are at filtering out nutrients or sediment from surface water. Other studies have shown how well certain species respond to improvements in landscape management. These studies can help inform which activities are likely to help the fund meet their objectives most efficiently. **Experimental:** When little information is available in the literature on an activity or in a region of interest, experimental implementation can be used to learn about the effectiveness of different activities. The FONAPA water fund made experimental investments during the first 2 years of the fund to generate an understanding of which activities will work best for them. **Experience:** In some places where funds are developing, stakeholders may have their own experience with which activities are likely to be most effective. In the case of the Agua por la Vida y Sostenibilidad, one of the fund investors had been making investments in watershed management for several years before the water fund was formed. Through those investments, they learned what activities were likely to be most acceptable to landowners, and this social understanding has guided which activities are supported by the fund. **Experts:** In some cases, experience in the region of interest will be held by non-stakeholder groups, or experts. Including their local knowledge can be a very important approach. **Negotiate:** In some cases, activities may be chosen purely through negotiation.

Discussion:
During the workshop, we will discuss whether all options for activity selection are represented and whether we want to make specific recommendations for how activities should be chosen. Recommendations could include requiring that some information on activity effectiveness be available before a fund invests in it, or that activities with unknown consequences be invested in experimentally.

Diagnostic Screening

In the diagnostic screening phase, we are interested in characterizing the landscape in terms of its potential for housing a water fund and returning good benefits from that approach. The landscapes of interest can be very large regions, such as all of Latin America, or a single water fund. In this stage, we want to see where good places are for developing funds, and within a fund, where good places are for making investments. Screening criteria can be biophysical, socio-political or both. This stage sets up a later stage where priority areas are actually selected. We treat these steps separately because they may be influenced by different stakeholders, different information or separated in time.

Options:
There are two options that have been used for conducting diagnostic screening. **Models**: Biophysical and socio-economic models can be used to assess how ecosystem services are delivered on a current landscape and/or to assess how different future scenarios for water fund development will alter service provision. **Ranking approach**: When models are not available or take too much time, capacity or data to use, a ranking analysis can be a useful tool for diagnostic screening. Factors can include biodiversity-relevant features such as habitat type, species ranges, vulnerability, etc; ecosystem service-relevant features such as location and density of beneficiaries, characteristics of water supply, erosion risk, groundwater recharge capacity, or flood risk; implementation-relevant features such as political will, or funding potential and socially-relevant features such as indigenous areas, household income, education level, or source of income. This approach has been used in all water fund examples that will be presented at the workshop (FONAPA, Latin America Diagnostic Screening, Brazilian Water Producer Program, Agua por la Vida y Sostenibilidad). In each case, the factors used are different and the use of weights or ranks also varies. **Experts**: Expert opinion may be a key part of a ranking approach when literature values are not available to guide selection of ranks for each criteria. Expert opinion can also be used as the sole approach to identifying important areas for water fund development, in the absence of other information.

Discussion:
We will discuss the utility of modeling and ranking approaches for diagnostic screening and how monitoring programs can be designed to improve the utility of these approaches. We will review all of the factors used for ranking analysis and discuss whether some should become standard for this approach. We will explore

whether factors should vary across scales. We will also discuss whether factors should be paired with the activities a fund is likely to undertake. We will see an on-line tool that can be used to represent stakeholder preferences in the context of diagnostic screening. Because a lot of thinking and experimentation has been done on this topic, we will spend more time discussing this issue to take advantage of the experiences that will be represented at the workshop.

Allocating the Budget

Once a fund has determined how much money will be available for watershed investments, it must decide how the money will be spent. There are several components of that question. If the water fund encompasses several sub-watersheds or watersheds, how will funds be allocated among those units? If the fund is investing in more than one activity, how much funding will go to each activity?

Options: These questions can be answered in several ways. **Negotiation**: There may be strong political conditions that require the budget to be allocated in a certain way. For example, some stakeholders may feel that funds they contribute should be allocated to activities that favor their objectives the most. **Experience**: If any of the stakeholders in a fund have made investments historically, they may wish to keep the balance created by those investments. Expectations of a community that has been receiving funds may be hard to alter, and maintaining an existing pattern can help establish credibility and trust for a new fund that is formalizing historic, uncoordinated activities among several stakeholders. **Attribute**: Some funds may want to establish a sense of equality in the way funds are allocated among watersheds or users. In this case, the budget could be allocated among watersheds based on their area or the density of users within each watershed. With this approach, the most money would go to the largest watersheds, and/or those with the most beneficiaries. **Return on Investment**: Return on investment can be used to help allocate the budget to the activities that are likely to provide the greatest benefits per amount spent. To use an ROI approach, the fund would need information on how much each activity will cost and some way to estimate how much return to expect from each activity. The budget could then be allocated among activities based on their cost to benefit ratio.

Discussion:

We will discuss whether any options have been omitted. We will also discuss whether certain options should be recommended over others, and whether this step can and should be combined with the selection of priority areas.

Selecting Priority Areas

Usually following a diagnostic screen, a decision will have to be made about where to invest first. We are calling these places priority areas as they will be the ones that receive initial attention and investment. In most prioritization exercises, it will be important to build in the flexibility to reassess priorities on a regular basis as more

is learned about the effectiveness and feasibility of different activities and as understanding of land use and climate change effects becomes richer.

Options:
Selecting priority areas has been done in two ways. There are likely other options. **Negotiate**: In some cases, strong political preferences will guide where initial investments are made, and where future priority areas are. **Return on Investment**: A diagnostic screening or modeling exercise can be used to identify the areas that will likely have the largest returns for each possible activity in each area. If the fund or region also has information on costs for different activities, they can use a cost to benefit ratio to guide where investments will be most effective. In this case, returns may be changes in biodiversity, ecosystem service or social objectives.

Discussion:
Should selection approaches be the same for regional scale and fund-scale prioritization? What tools can be used for selecting priority areas (e.g. MARXAN?)? How can the selection of priority areas inform monitoring design? These issues will be discussed.

Estimating Project Returns

Once a set of priority areas has been identified, estimates can be made of how much return can be expected from a given level of investment. In some cases, a region or fund may only know about how much money will be spent on different activities or about how many funds will be established. In other cases, a specific fund may have established 'investment portfolios' that show exactly where and in what activities the fund will invest. It is easier to estimate project returns in the latter case, but it is possible in all cases described.

Options:
There are at least three options for estimating project returns. **Literature:** In some places, experimental research will already have been published that describes how much benefit one can expect from an activity. For example, a study may have been done in a large river basin that shows that silvopastoral systems reduced erosion by 1 ton/ha/yr. If a fund plans to invest in 500 ha of silvopastoril systems, they can use this published estimate or returns to estimate what their project will yield (~500 ton/yr reduced erosion). Other literature may document how service changes translate into economic or social change. For example, in most places, research has shown a non-linear relationship between turbidity and water treatment costs. Such known relationships can be used to estimate economic returns from water fund investments. **Models**: If literature is not available that documents the effectiveness of each activity that will be supported in a region or fund, models can be used to estimate returns. Several models have already been developed that can be used to estimate ecosystem service returns in biophysical terms. These include SWAT, InVEST, FIESTA, HEC-RAS, and many others. InVEST also allows estimation of

economic returns for a few water fund-related services, but not all. **Experts:** In some cases, the best available information will rest with local experts who can estimate, based on their own experience, what the likely biophysical and social effects of a particular water fund or investment strategy might be.

Discussion:
We will discuss what other approaches should be included as options for estimating returns, and whether specific guidance should be given regarding each approach. A broad discussion of how much certainty is needed in estimates of project returns will help guide our decisions on what approaches are acceptable in different settings. We will also discuss how this step needs to interface with the design of monitoring programs since estimated returns and monitoring metrics should be comparable if not the same. Finally, we will discuss the challenges of estimating economic and social returns.

Designing Monitoring

There is a working group, lead by TNC, that is developing guidance for monitoring program design. It is very important that their efforts and ours are aligned. We have identified several places in the discussion of prioritization core components where monitoring needs to be considered (e.g. objectives, diagnostic screening, selecting priority areas, estimating project returns). We will return to these connections and make sure areas for further discussion are identified during the Next Steps and Follow Up session at the end of the workshop.