



Empowered lives.
Resilient nations.

International Guidebook of Environmental Finance Tools: A Sectoral Approach

Protected Areas, Sustainable Forests, Sustainable Agriculture, and Pro-poor Energy

CHAPTER 2: CONCLUSIONS & RECOMMENDATIONS

August 2012

United Nations Development Programme

ENVIRONMENT AND ENERGY



Contents

CHAPTER 2: CONCLUSIONS & RECOMMENDATIONS ON THE APPLICATION OF FINANCIAL TOOLS

Introduction.....	3
General Conclusions	3
Financial Tool Challenges.....	4
Fees	4
Loans	5
Payment for Ecosystem Services (PES) & Market-based Mechanisms (MBM)	55
Clean Development Mechanisms (CDM) & Voluntary Emission Reductions (VERs)	6
Subsidies	7
Taxes	7
Addressing the Challenges: Building Capacity First	8
Developing Financial, Technical and Infrastructural Capacity.....	8
Using Investment Criteria to Assess Financial Tools	10
How to Build a Successful Tool	11
Successful Tools Take Time.....	11
Step #1: Understand Your Risk	12
Step #2: Mitigate Risk: Build Your Capacity First	12
Step #3: Know Your Market.....	14
Step #4: Attract Investors/Implement the Financial Tool	14
Step #5: Scale Up	15
Case Study: Building a Successful Financial Tool	15
Questions to Consider	17
Conclusion.....	17

CHAPTER 2: CONCLUSIONS & RECOMMENDATIONS ON THE APPLICATION OF FINANCIAL TOOLS

Introduction

While chapters 3 through 6 will focus on the four sectors individually, this chapter examines the general conclusions for the application of financial tools in developing countries, including the elements that need to be in place to support successful implementation.

This chapter is divided into six sections:

1. General conclusions relevant to all financial tools,
2. The challenges that are unique to individual tools,
3. A discussion of capacity building as a solution to those challenges,
4. Using investor criteria to understand the viability of a tool,
5. A five-step guide to successful tool implementation from estimating risk to scaling up, and
6. Ten questions to consider before implementing a tool.

General Conclusions

The tools examined in this Guidebook are of varying effectiveness depending on the sector and scale, and also on the level of financial, economic and infrastructure development within which the tools operate. Overall, when considering environmental finance in developing countries, only a few tools predominate: loans, fees and subsidies, a fact that could serve to inform future environmental finance decisions.

When assessing financial tool options, decision-makers should consider innovating existing tools rather than developing new ones.

For example, adapting a loan program to local needs has proven far more effective in financing pro-poor energy programs than introducing a new and complex approach such as CDM. Implementing a fee that incorporates willingness to pay studies and secure, transparent transactions has generated more revenue than PES or MBMs for protected areas. Indeed, adding complexity to a financial tool frequently requires the addition of international support in the form of NGOs and development agencies; which in turn increases cost and risk. Simplified approaches such as loans, fees and subsidies allow implementation by national and sub-national agencies and actors, increasing the likelihood that the tools will be developed and modified to suit local needs and behavior.

Although used infrequently for environmental finance in developing countries, taxation is another tool option that can be implemented nationally without complicated international assistance. As discussed below in the protected areas chapter, departure taxes have the potential to generate significant revenue for national parks, and taxes on petrol have already been used successfully to support sustainable forests in Costa Rica. In almost all countries, national governments have the immediate capacity to implement new or augment existing taxes to finance environmental protection.

Combining and Sequencing Tools

When considering finance tools for developing countries, it should be understood that none stand alone. In all cases, every financial tool required initial support, usually in the form of a grant, before implementation. Grants are used to build capacity and educate, or simply to subsidize the cost of a product or service. Once a tool has been implemented, it is frequently one of several combined to support sustainable agriculture and forestry, pro-poor energy access, and protected areas.

For example, successful loans for pro-poor energy and sustainable agriculture are often reinforced through grants, fees and/or subsidies. Market-based mechanisms have not yet generated sufficient revenue to sustain protected areas and forests and so must be augmented by fees and sometimes taxes. Thus, when developing a financial tool, it is important to consider the necessary sequence and combination of tools that enable effective implementation. In most cases there is a tool to build capacity, usually a grant, which will support the implementation of the primary tool, such as a loan, which is then augmented by secondary tools, such as government subsidies or market based mechanisms. Table 1 below presents potential sequences and combinations for the four sectors.

Table 1: Sequence and Combination of Financial Tools				
	Capacity Tool	Primary Tool	Secondary Tools	
Energy =	Grant +	Loan +	Subsidy +	MBM
Protected Areas =	Grant +	Fees +	MBM/PES +	Tax
Agriculture =	Grant +	Loan +	Fees +	Grant
Forests =	Grant +	Fees +	MBM/PES +	Tax

Financial Tool Challenges

Below is a discussion of some the challenges facing each financial tool, followed by an analysis of technical, financial and infrastructural capacity building as a solution to those challenges.

FEES

Fees can be self-assessed (community forest fees or agricultural cooperative fees) or imposed on others (entry fees or departure fees). As presented in the case studies below, explaining and demonstrating the value of the fee to the payer has been shown to reduce resistance, especially if the payer perceives a benefit from the fee. While fees are a useful stream of revenue, they are rarely sufficient to cover the full costs of a program (e.g. farmer cooperative fees don't cover full costs of transition to organic or market access; entry fees rarely cover the full cost of maintaining the protected area). Some of the challenges with implementing a fee include the following.

Setting/determining the fee: While seemingly straightforward, it can take years to establish stakeholder support to implement a fee. Determining the appropriate amount a potential user will pay may demand significant research, require stakeholder input, and remains an inexact science at best. Fee analyses such as willingness-to-pay studies are time consuming yet critical to setting the right amount and maximizing revenue.

Collecting the fee: A fee collection infrastructure should be established that ensures transparent and accurate accounting of revenue. Simply "collecting the money at the gate" will not guarantee that the revenue will reach its intended target.

Ensuring distribution of monies for originally intended purpose: As with taxes, when fee revenue is delivered back to a central government, it can be redirected to other purposes. A local third party organization established to manage the fee collection and distribution can help ensure that the conservation target is reached.

Corruption/crime can threaten collection/distribution: Fees can generate millions of dollars of revenue and are susceptible to corruption and crime. Again, implementing an accountable and transparent system, such as electronic credit card readers (so that no money changes hands) can help support a fee system of collection and distribution.

LOANS

Environmental finance loans can range from multi-million dollar World Bank investments in national energy projects to micro-finance programs that offer small loans to individuals. Loans may also take the form of credit, in which a buyer receives a product up front (such as a solar home system) and pays back the cost, plus interest and/or fees, over time. Patient loan programs have proven successful, allowing borrowers to take several years to pay back relatively small amounts. In some cases, long-horizon repayment terms have turned some loans essentially into grants, particularly in the Sustainable Forestry area. Some of the challenges with implementing a loan include the following.

Setting loan amounts and terms: Loans are a financial investment and thus require sophisticated contractual agreements that must be appropriate to the potential borrower and attractive to the lender. Like fees, it must be determined in advance how much a borrower can and is willing to accept in debt, and how long they can/will take to pay it back. Lenders must determine the level of risk they are willing to assume, the interest loan rate or fee, and what return on investment they need in order to maintain a sustainable program.

Defining collateral: Loan programs normally require collateral to help guarantee repayment and reduce risk. Collateral is a borrower's pledge of specific property against which a loan is made. The property could be a home, tractor, or any other item that has equal or greater resale value than the original loan. In developing countries, many borrowers have no collateral to offer, which raises the level of risk to the lender.

A new breed of loans (value chain finance) has broadened the definition of collateral to accept the future value of a product or service.

Risk pooling: Because the availability of collateral is unlikely in developing countries, some borrowers, especially in agriculture, have formed risk pools, which combine the uncertainty of individuals into a calculable risk for large groups. For example, if a small farming community is jointly responsible for a single loan, one farmer may fail, but the group can pool their revenue to pay back the loan. While this is a complicated approach that requires the cooperation and participation of several borrowers (often through the form of a local cooperative), it can reduce risk for both the lenders and borrowers.

Delinquent payments: Delinquency is always a concern for a lender and terms need to be established for when a borrower is delinquent and what the penalties may be before a loan program is implemented. Lenders must also develop protocols for repossession of products when buyers become delinquent.

Developing financial infrastructures: Because so many developing countries lack local banks to provide credit and accept payment, grassroots financial infrastructures frequently need to be developed before loan programs can be launched.

PAYMENT FOR ECOSYSTEM SERVICES (PES) AND MARKET-BASED MECHANISMS (MBM)

Market-based mechanisms are generally large-scale, voluntary or involuntary, with potential for long-term financial sustainability, but subject to market uncertainty. In the new frontier of applying value the future price of carbon, risk is inherent.

In contrast, PES transactions focus on behavior change at the individual level (e.g., not farming on protected land) that maximizes environmental protection. PES also tends to be more pro-poor than global market-based mechanisms.

Overall, considering the time and money invested, Payments for Ecosystem Services and Market-based Mechanisms have been slow to achieve anticipated revenue levels. Fees, such as park entry fees and, in particular, departure taxes, hold out the biggest opportunity for increased revenue with minimal associated costs.

Some of the challenges with implementing MBM and PES include the following:

Global vulnerability: Market-based Mechanisms' revenue flow is vulnerable to global trends and interests (such as droughts or a decrease in global tourism) and drastic price fluctuations as is evidenced by the carbon market over the past decade. Regulatory changes and international accords (e.g., Kyoto Protocol or REDD+) can create or destroy mechanisms for the trade of ecosystem services, which are dependent on agreed-upon certification standards. The vagaries of the international carbon and other ecosystem credit markets (voluntary and involuntary) lend a high degree of risk and uncertainty to these types of financing.

Complex tools: MBMs and PES are complex to set up and run. They require an international infrastructure, since the revenue stream usually flows from developed to developing countries. They are financially sophisticated (but are often applied in countries that lack financial capacity) and normally incorporate third party involvement for certification, verification and monitoring.

High risk: Because of the vulnerabilities and complexity, both MBM and PES are seen as potentially risky endeavors, especially when applied to developing countries that may not have the capacity to track and ensure results. In response, PES and MBM projects often request additional reporting requirements, creating yet another hurdle for developing countries.

CLEAN DEVELOPMENT MECHANISMS (CDM) & VOLUNTARY EMISSION REDUCTIONS (VERS)

CDM and VERs can be valuable financial tools to help bring down the cost of an emissions reducing product or process (such as an efficient cookstove) thereby making the unaffordable, affordable. They are especially attractive tools for investors and businesses that may be incentivized to invest in new markets in developing countries that were traditionally considered too marginal or financially risky. However, accessing the carbon markets is not easy. In order for a project or product to qualify for CDM, a rigorous monitoring process must be implemented, strict rules and guidelines must be followed and complicated deals, including terms and prices, between buyers and sellers need to be negotiated. Indeed, as of 2010 most CDM projects have taken place in only four countries: China, India, Brazil and Mexico. (Ashden, 2010)

By definition, VERs do not have to follow the same requirements as CDM, however, to maximize revenue and the highest possible (premium) price per ton of CO₂, many project developers that generate VERs are following the same guidelines as CDM and using the same third party certifiers such as the Gold Standard. Gold Standard certification is an internationally recognized best practice methodology that provides a high quality carbon credit label for both Kyoto and voluntary markets. Thus the challenges of implementing both CDM and VERs are becoming virtually the same and include the following.

Proving additionality: CDM proponents must first show that their project could not or would not take place without the presence of carbon finance. Proving that a project will not happen without the expectation of carbon credits, especially in the forestry sector, has proven to be a formidable challenge. Proving additionality requires: 1) identifying alternatives (without which there cannot be additionality), 2) preparing an investment analysis to determine that the proposed activity is not the most economic or financially attractive, and 3) investigating barriers and common practices.

Baseline studies: In order to determine the amount of carbon emission reductions a project can offer, a baseline of existing emissions must first be quantified. For example, project developers will need to know how much wood a village uses on annual basis to cook meals, how much CO₂ is emitted as a result, and how much CO₂ emissions will be reduced by the introduction of more efficient cookstoves. Assessing the baseline will require rigorously tested products (to confirm that they are capable of reducing emissions) and village surveys and monitoring to quantify wood use before and after the introduction of the stoves.

Monitoring over time: Following the baseline study, applicants must prove that they can monitor and verify carbon emission reductions from their projects over a period of many years.

Time: As shown above, proving additionality, preparing a baseline analysis and establishing a long-term monitoring program is a complicated and lengthy endeavor. Few projects are certified in less than two years and the process can be prohibitively expensive.

Third party certification: Projects must be verified, monitored and certified by a third party, which adds to the cost and the overall uncertainty of the effort, thus increasing risk.

Global vulnerability: Like MBMs and PES, CDM and VER revenue flows are vulnerable to global trends and price fluctuations and uncertainty over the path of the Kyoto agreement after 2012 makes CDM a risky option. In two of the case studies below (Mexico/Sierra Gorda and Bolivia/ ArBolivia) CDM has been abandoned in favor of VER.

SUBSIDIES

Subsidies are direct transfers, usually from government to consumers or producers, to lower their costs or augment income. In environmental finance, subsidies often aim to encourage a particular behavior, e.g. avoiding deforestation or using less pesticide. Subsidies can be used to protect and support the growth of a young industry but they can also create reliance on below-market prices for products such as efficient cookstoves.

Some of the challenges with implementing subsidies include the following.

Unintended consequences: Subsidies artificially set prices that do not accord with the market. As a result they can have unintended consequences, such as overproduction, reducing innovation and preventing competition.

Political difficulties: Politically, subsidies are very difficult to eliminate once they are put in place, yet they are costly for governments to maintain over time.

Market suppression: By introducing subsidies that support specific products, the market that may have developed otherwise may be suppressed because there is no incentive for competitive products, which typically bring down prices.

Vulnerability: While not often thought of as a subsidy, CDM and VERs are being incorporated by project developers to make unaffordable energy products like solar home systems or biogas domes affordable to poor customers. However this places a higher risk on the long-term viability of the program, which will be vulnerable to global carbon prices and the complicated carbon monitoring requirements. In some cases, grants have also been used to subsidize costs, however, relying on grants as a subsidy is also risky and likely to fail over time.

TAXES

Taxes usually require large-scale, national-level implementation and developing countries face many challenges when they attempt to establish taxes. Taxing their own citizens can be extremely difficult if most workers are employed in agriculture or in small, informal enterprises and their earnings are largely “off the books.” At the same time, tax development and administration requires experienced and highly trained staff, and ideally computerized systems to collect statistics and track revenue. Even those taxes that may be relatively easy to implement because the collection mechanisms are already in place (e.g. departure taxes where revenue is collected at the airport from departing tourists), may still face opposition from a legislature that is beholden to its own special interests or businesses that are wary of losing customers.

Some of the other challenges with implementing taxes include the following.

Collection and distribution: Because most developing countries lack sophisticated tax systems to track and monitor the collection and distribution of funds, monies often get diverted to non-intended uses. Taxes also fall prey to competing legislative agendas that seek to reassign revenue to other areas.

Relying on future revenue: Reliance on a steady stream of tax revenue can be risky if the tax amount is fixed and not structured with a formula to respond and adjust to economic fluctuations and inflation. Taxes should be implemented so that they can rise and fall as necessary in order to guarantee a certain level of income.

Taxes in lieu of funding: Once a tax is implemented there is a risk that funds originally assigned to environmental sustainability will be redirected elsewhere. If tax revenue falls the environment will suffer.

Financial auditing: Most developing countries do not have the capacity to perform the necessary financial audits to track revenue generation and distribution.

Addressing the Challenges: Building Capacity First

This section addresses the technical, financial and infrastructural capacity necessary to support the implementation and long-term sustainability of financial tools. Capacity, from local financial institutions to a reliable road network, must first be in place before financial tools can succeed.

Without sufficient capacity to support financial tools, pro-poor environmental finance will likely fail.

DEVELOPING FINANCIAL, TECHNICAL AND INFRASTRUCTURAL CAPACITY

Overall, environmental finance tool implementation in the four sectors can be viewed from the lens of capacity and falls into three general categories as discussed and presented in Figure 1 below: financial, technical and infrastructural. Governments that first take the initiative to develop capacity building programs, policies and regulations will reduce financial risk and enable effective environmental finance.

Financial Capacity

- As shown in the case studies below, various types of loans tend to be the most commonly found environmental finance tools in developing countries, followed by fees and subsidies. There are numerous innovations on loan structures from microfinance to long-term payback periods that have successfully provided access to capital for the very poor. However, because many developing countries have under-developed banking systems, loan programs in particular will be difficult to implement and expand, especially into rural communities. This suggests that building financial capacity may be the most critical element when determining how to increase a country's ability to finance sustainability.
- Host-country and overseas governments, and national public donors still comprise the majority of environmental finance investment and are critical to success, especially with regard to the more complex tools such as MBM or PES. There is growing interest from the private sector towards investments in developing countries, but this involvement hinges on the ability of developing countries to provide the skills and infrastructure to support a scalable market.
- Financial institutional involvement and access to financial services and capital are essential to market development and can be especially challenging for poor rural communities. The lack of widespread financial infrastructure means that government agencies, NGOs and entrepreneurs are frequently in the position of having to build their own financial institutions (such as microfinance "banks") before a tool can be implemented. This can add greatly to project costs and reduce the interest of investors.
- Investing in developing countries and in sectors that have yet to prove they can provide a viable return (renewable energy, organic produce, etc.) is a financial risk which makes environmental finance unattractive to investors. Building capacity can alleviate much of that risk.

- Reliance on single finance mechanisms and tools often leaves projects vulnerable to price and political fluctuations over which a developing country has little control. A diversified financial portfolio reduces exposure to risk. However when options are limited to a handful of tools (fees, loans and subsidies), financial infrastructures are weak, and education and business skills are poor, the options to diversify are few.

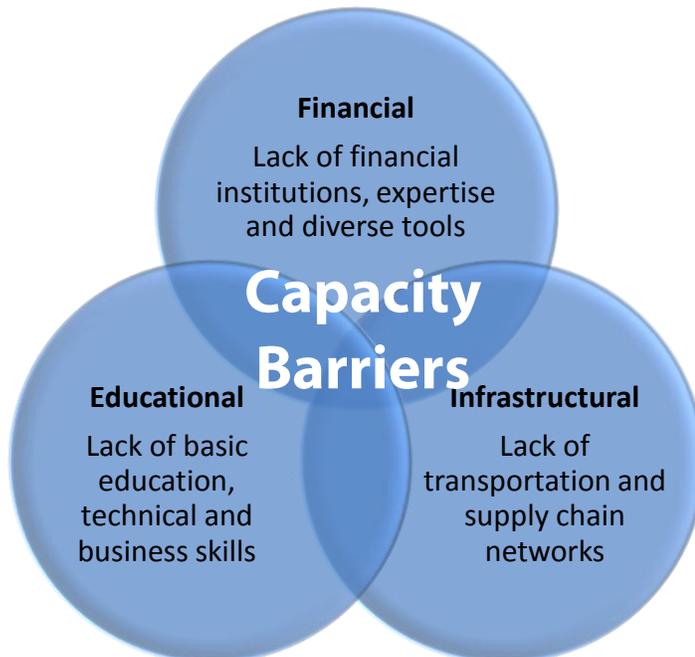
Technical Capacity

- Basic business skills, such as accounting, financial management and marketing are often lacking at the implementation level. Young entrepreneurs who may be interested in designing and selling more efficient cookstoves, or villages that may wish to offer ecotourism options to international tourists, have little access to business training programs.
- Lack of basic education is also a key barrier to successful tool implementation across all four sectors. As one entrepreneur states: “imagine trying to explain the contractual implications of selling your carbon rights in return for a more efficient cookstove to a young mother who can barely read or write because she has never had access to a good education.”

Infrastructural Capacity

- As evidenced by the case studies, bottom-up management of community-based resources is more effective, efficient and equitable, in most cases, than management at the national level. Thus, strengthening ground-level capacity is critical to sustaining environmental investments and securing support from the private sector.
- And finally, technological and infrastructure barriers need to be addressed along with the financial tool. For example, before a fee can be implemented, a protocol and system for collection and distribution frequently needs to be established. Creating an effective loan program that supports rural consumers can be prohibitively expensive if a weak transportation and distribution system raises costs and reduces profitability.

Figure 1: Capacity Barriers to Environmental Finance



Using Investment Criteria to Assess Financial Tools

Every tool can and should be seen as a financial investment, and the criteria that define a good or bad investment should be applied before deciding to implement a tool.

Investors maintain certain standards before they invest in a program, project or product and in general, will want answers to the following three questions.

- Is there an adequate return on investment (including financial, social and/or environmental)?
- Is the level of risk acceptable?
- Is there sufficient capacity for success?

Decision-makers should use investor criteria and ask these same questions to determine what type of financial tool to use and when or if it should be implemented.

For example, as investors, lenders require an adequate return on investment before they will finance and launch a loan program. Without a financial infrastructure or other capacity to support a product, lenders are unlikely to invest.

Figure 2:

Steps to Implementing a Successful Financial Tool



From the national park entry fee to the farmer cooperative monthly dues, paying a fee is an act of investing in a system or program from which the payee believes he will receive a service or benefit – a return on investment. If the fee is inadequate to provide the benefit, if the park system does not function, if services are unavailable or unreliable, visitors will not come and the financial tool (the fee) will fail. If a farmer cannot trust that a cooperative has the capacity, the management structure and marketing ability, to act on his behalf then he will not pay his dues. Both the tourist and the farmer must be willing and confident investors in order for a fee to succeed.

Subsidies are provided as an investment in a product or process to help bring down prices and expand the accessibility of the offering. If a product lacks supporting capacity — the physical and financial infrastructure necessary to bring it to market — then no amount of subsidy can make it succeed. No matter who is providing the subsidy: governments, NGOs or development agencies should be reluctant to risk an investment (i.e., a subsidy) in a product if it does not have the capacity to reach its customers.

PES, MBM and CDM all require public and private sector investors, usually from other countries, who must be assured that sufficient capacity exists for the success of the project and a financial, environmental or social return that is satisfactory. From loans to PES, assessing the viability and potential success of a financial tool should be viewed with an investor's perspective - and the first priority of an investor is limiting risk, which can be achieved through capacity building.

Finally, even taxes should be subject to investor standards. The taxpayer demands that his hard-earned money is applied effectively. If a tax is collected to preserve a forest or protected area then the social and environmental returns must be visible and effective. If the taxpayer fails to see the benefit because the lack of financial or infrastructural capacity (including corruption) prevents effective distribution of revenue, then the government risks a negative response, from refusal to pay to political upheaval.

How to Build a Successful Tool

While every case study is unique and there are always exceptions, certain elements must be in place in order for a financial tool to achieve success. As discussed above, in order to mitigate risk, a level of financial, technical and infrastructural capacity must be in place before the market can be effectively assessed, investors commit funds and a project can be brought to scale in any of the four sectors. These steps, from understanding risk to scaling up, are described in detail below and presented in Figure 2.

From a financial tool perspective, capacity building can be seen as risk mitigation.

SUCCESSFUL TOOLS TAKE TIME

In addition, there is one critical element that spans all sectors and impacts every step: time. Even the most enthusiastic and experienced project directors have been stymied by the amount of time needed to bring an environmental finance tool to sustainable fruition. Stakeholder input needs to be collected and analyzed, financial and/or physical infrastructure needs time to develop, and regulations, if necessary, can take many legislative sessions to be passed. Even if a tool is launched relatively quickly (less than a year), it is likely that the necessary infrastructure to support the tool has been developed over many years prior to the actual start date. Furthermore, in the case of newly introduced technologies or processes, such as organic agriculture or renewable energy, the dissemination of innovation through education takes time.

In the case studies below, the time to implement a financial tool is directly related to the financial, infrastructural and technical capacity already in place. In complex cases where legislation must first be drafted to support the tool, followed by stakeholder understanding and support, success has taken decades. In other instances, where education has been critical to the execution of the tool, actual implementation has been delayed by up to six years. Basic infrastructural needs, such as roads and other supply chain requirements have stalled a tool for five years.

Initial Financial and Capacity Building Support

Just as most new businesses need an infusion of capital, the vast majority of the environmental finance tools examined requires some form of initial monetary support, often in the form of long-horizon government, NGO or investor loans or grants, before a tool can become financially self-sustaining. This initial funding is critical to building necessary infrastructure and training, and to set appropriate procedures in place.

In addition, through policies, programs and legislation, governments and NGOs often play a vital role by:

- Supporting access to credit and developing local financial infrastructure;
- Providing subsidies;
- Maintaining and growing physical infrastructure; and
- Developing other identified local capacity needs.

5 Steps to Successful Implementation

Although time-consuming, there are five critical steps to building a tool - from concept to scale. Before introducing a tool, program developers must understand their risk by assessing what is in place and what is missing, and determine how much time they may need to build capacity to mitigate risk. Knowing the market is also a critical element to successful tool implementation, from understanding willingness to pay to assessing individual needs and financial capacity. Once these building blocks are in place, attracting investors, successfully implementing financial tools and scaling up a program becomes possible.

The five steps to implementing a successful financial tool are discussed in greater detail below.

STEP #1: UNDERSTAND YOUR RISK

Risk means anything that introduces uncertainty into a project. By that definition, risk takes many forms when investors consider developing countries. Projects that may be delayed because of unexpected lack of capacity will cost time and therefore – money. Programs that require additional capital outlay to guarantee collection, distribution and security because a country lacks financial institutions, add an additional layer of risk and cost. Markets that depend on established local supply chains including manufacturers, distributors and retailers in countries that lack business skills and education will likely remain small and localized, unable to grow to scale. Because most developing countries have multiple capacity barriers, investments are high risk.

Additionally, even in mature markets, investors and the financial industry traditionally have been wary of working in the agricultural, alternative energy and environmental sectors. Risks from climate, political and regulatory instability, and consensus creation are red flags to a standard investor. For example, research has shown that the financial industry traditionally is uncomfortable with renewables, especially small-scale projects such as solar home systems, mini-hydro or biofuels. They prefer large-scale energy projects that don't rely on individuals for return on investment. This can also be seen in the projects of major global investors such as the World Bank and other Development Banks.

Before introducing a financial tool, developing countries must first assess what barriers will create financial risk and how they can mitigate those barriers through capacity building.

STEP #2: MITIGATE RISK: BUILD YOUR CAPACITY FIRST

Education

From a financial perspective, capacity building can be seen as risk mitigation and education is frequently the first step to protecting an investment. Scale and financial sustainability can only be assured through end-user education and training. Even the best-laid environmental finance plans risk failure if insufficient effort is spent on educating all stakeholders on the issues and solutions that the finance tool addresses. Assumptions of financial literacy or business skills can also threaten a project, as can unexamined beliefs about market size (e.g., is the market large enough to support the tool) or product acceptance (e.g., does the market want the product the tool is intended to support). Clarity on the tool, including what it does and does not entail, is crucial. For sectors that are influenced by new technologies and processes such as energy and agriculture, continuing professional education is essential to understanding the advantages and disadvantages of introducing innovative approaches and products.

Financial institutions and other lenders also need to educate themselves and stay abreast of trends in areas such as renewables, agro-ecology, and climate finance to avoid missing opportunities or exposing themselves to unforeseen risk. Where financial tools are being implemented to support the introduction of new products, local manufacturers must understand the importance of quality control while potential investors want to be assured that these products can be maintained and repaired.

Assumptions about inherent business skills or understanding of process in lieu of training strategies and programs can harm a tool's longevity as well as the investment. To mitigate the lack of training and technical opportunities, NGOs have proved particularly critical for the dissemination of necessary knowledge and skills at community levels; savvy international businesses and governments have been partnered with NGOs to take advantage of their experience in education at the community level.

Financial Infrastructure

In most cases, the tools discussed in this Guidebook are funded outside of their national financial system. At the local rural level, those most impacted by the tool usually do not have access to banks or other institutions that would normally play a role in the process. As a result, introducing a financial tool, such as a loan, is time consuming and often requires the willingness of the investor to accept the role of financial institution as well. Thus, before a loan program can be implemented, the investor

must develop a local financial infrastructure, which includes establishing loan terms as well as a physical system that allows for payment collection, delinquency penalties and repossession if necessary. This challenge can delay the launch of a project while reducing return on investment, adding elements of risk not easily overcome.

In addition, because of their unfamiliarity with banks or other financial institutions, rural residents first need to understand how a tool, such as a loan, functions and how it may impact them and their own finances (such as when they default on a loan). Local engagement most often begins with education, so that communities can understand the market or social opportunities they can access with the new financial tool. Financial planning education should be offered, followed by the introduction of new services, from local banks to mobile phone applications, to support local needs.

Unfortunately, historical interactions with financial and/or government institutions can interfere with the building of mutual trust between newly introduced financial organizations and poor and indigenous communities. This can hinder the successful realization of an environmental finance project. For example, studies have shown that fee or tax collectors are more effective if they are members of the community in which they are collecting. However, if no prior financial structures exist, local community members may need to be hired and trained to perform collection duties, which again, adds to the time and uncertainty of a project.

Physical Infrastructure

Establishing the necessary physical infrastructure is also critical in the capacity building phase, from growing a supply chain process for a solar program to building roads to provide services and market access. Figure 3 presents the elements of a supply chain that must be in place before introducing a tool that supports the manufacturing and distribution of a product such as an efficient cookstove or agricultural inputs and outputs.

Successful implementation of environmental finance tools across all sectors relies on extensive infrastructures, including policy, transportation, economic/financial and governance. Infrastructure issues can include a number of diverse factors that must be addressed including but not limited to the following:

- Established transportation network;
- Existing supply chain capacity;
- Indigenous manufacturing capacity;
- Land tenure;
- Security;
- Existence of local entrepreneurs; and
- Measurement capability such as sensors for carbon monitoring.

Developing local manufacturing and distribution capacity is critical to cutting costs while building economic opportunity. Other, less tangible factors such as security and land tenure are equally important, and are discussed in more detail below.

Security

Finance almost by definition involves the transfer of currency, which provides a tempting target for graft, corruption and outright theft. Identifying and addressing vulnerable points in the process (e.g., when agents distribute cash “in the field”) will reduce risk of loss from theft. Electronic cash transfers and the creation and strengthening of financial institutions in rural areas can mitigate the risk of major loss through crime (although, it must be noted that both of these efforts take significant time). Institutionalized corruption is also a barrier to effective environmental finance. Finally, issues of security are not always limited

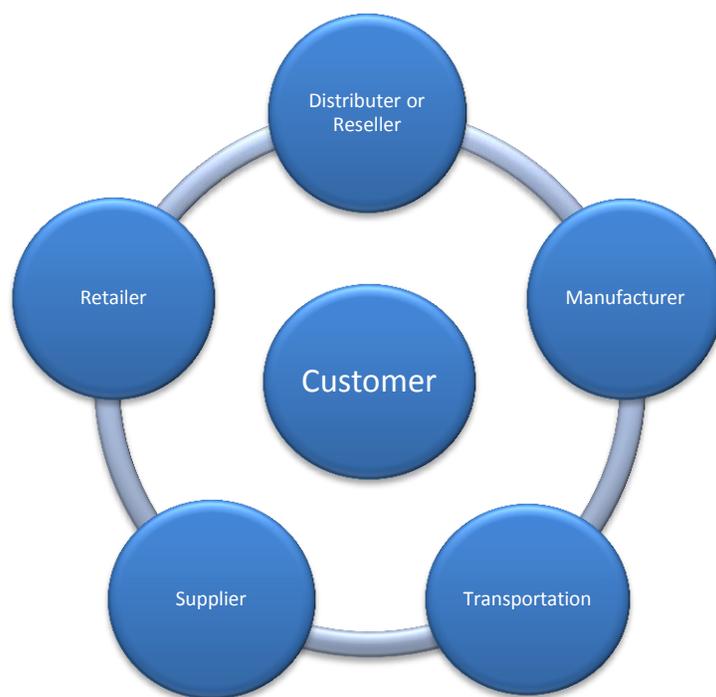


Figure 3: What's In a Supply Chain?

to currency. In the case of high-value solar and water energy systems, the threat of theft is a very real and enduring problem in some countries.

Land Tenure

Laws and traditions of land ownership impact the effectiveness of environmental finance projects. Simply coming to agreement on who owns what pieces of land can involve lengthy legal discovery and negotiation. Beyond ownership, many communities have legal land use rights that further complicate project and tool implementation. The complexity of land tenure can cause unacceptable risk to an investor who relies on legal rights and protections to guarantee the safety of an investment. Additionally, in cases where land ownership is distributed through hundreds or even thousands of small plots, negotiating with individual land owners can be formidably time consuming and adds to the overall administrative costs of a project. Cooperatives have been successfully engaged to address this issue.

STEP #3: KNOW YOUR MARKET

Pricing & Willingness to Pay

An understanding of the market is crucial in order to set prices or fees at the optimal amount. How much to charge and what markets are willing to pay are two critical questions to be answered in order to determine if a product is too little or too much. Unexamined assumptions about willingness to pay have often resulted in fees or prices being set too low for maximum effectiveness. From paying the organic premium to setting a park's entrance fee, there are many examples of prices being set without first examining the market's ability to pay, the education or promotion needed to support that willingness, or even the target market's existence. When looking at pro-poor energy opportunities, understanding if the market can afford the product is essential to determining the financial tool, be it a loan, subsidy or combination of both.

STEP #4: ATTRACT INVESTORS/IMPLEMENT THE FINANCIAL TOOL

As discussed above, financial tools can rarely be implemented without an initial infusion of money. Attracting investors to support a loan program, implement a fee structure, or subsidize the costs of a product requires local financial, technical and infrastructural capacity building. From the farmer to the World Bank, investors must have faith that they will either receive an acceptable rate of return or that at the very least; the project they are supporting will succeed and grow. Through the financial and development support of NGOs, national and foreign governments, and international aid and development agencies, risk can be mitigated, the capacity to attract investors can be built and a tool can be developed that responds to local conditions.

Attracting Social Impact Investors

In case studies across all four sectors, the relatively new phenomenon of social impact investors plays a part. Impact investors, both for- and non-profit, have requirements to demonstrate measureable social and/or environmental benefits as set out in their investment guidelines and mission statements. In addition, they are more willing to accept a smaller profit, in return for improving the social condition and/or protecting the environment. These investors can tolerate certain infrastructure weaknesses if they believe they can make a strong social and environmental impact; thus impact investors can lay the groundwork for more commercial investors in the future, and many of them provide capacity building programs as part of their financial investment.

That said, impact investments, usually in the form of loans, frequently hinge on the ability to become economically self-sufficient over time and offer growth potential.

Attracting Business

Businesses large and small can and do play a positive and vital role in supporting environmental finance. From cookstove manufacturers and timber companies to textile manufacturers and dried fruit importers, many businesses are willing to extend

their timelines for a return, forgo large profits and support the protection of forests and other sensitive areas when the capacity exists to sustain a financial tool. The growth of Corporate Social Responsibility (CSR) and the emerging acceptance that sustainability is good for business are additional factors in the increasing involvement of business in global environmental finance.

The creation of market-based mechanisms is a boon to some financial investors, who see a long-term advantage in getting a foothold in the emerging markets for carbon, water and biodiversity. In scaling pro-poor energy, businesses recognize a large untapped market within the rural poor but need to understand how to minimize risk and achieve scale in capacity strained countries.

STEP #5: SCALE UP

All environmental financial tools, at some point, must achieve a sustainable, low-risk scale as defined by the investor. That means the tool must become:

- Efficient: the capacity exists for the tool to be successfully administered and revenue collected and/or distributed,
- Effective: the tool provides a desired return and achieves its environmental and/or social purpose, and
- Sustainable: the tool can be implemented over the long-term without additional financial support (e.g., grants).

Thus, loans and fees will not succeed if they are administered poorly, the market is too small to generate a viable return on investment, or they cannot survive over time without regular infusions of grants or other financial support. Subsidies will continue to grow, demanding even more government resources, if local capacity does not allow markets to mature, creating a consumer demand for full-priced products. Taxes that fail to produce results because they do not generate an adequate return or the revenue is poorly distributed will generate taxpayer resentment and likely become unsustainable over time. Market based mechanisms require an even higher level of scale-up given the complex demands on capacity development and the uncertainties surrounding the value of carbon.

No matter what the tool, a scale must be achieved to ensure that it is efficient, effective and sustainable. Investors will expect a return that is at least consistent and at best grows. Thus, without the capacity to be effectively implemented and grown to scale, a financial tool will fail.

Geographic isolation, diffuse populations – particularly in rural areas – and poor infrastructure make it challenging to achieve economies of scale in environmental investment. Even in an increasingly “flat” world, in many instances geography still controls destiny. The more isolated a community, the less likely these tools are to function and particularly, to scale up. The antidote to challenges of distance in many cases is partnership, as isolated communities gain strength and voice by banding together to create a market or to become significant as producers. Partnerships are crucial to scaling, as energy or agricultural cooperatives can take advantage of economies of scale and become more attractive targets for investment.

Criteria that allow scaling may be different for each sector (e.g., sustainable forestry may require low densities, while successful energy projects require high) but it is an issue for all of them. Some of the factors that impact scalability include: population density, accessibility, communications and access to capital.

Case Study: Building a Successful Financial Tool

The following is a sample case study that exemplifies the steps to developing a financial tool as described above. In this case study, the for-profit company, Toyola, developed a credit scheme to sell energy efficient cookstoves in Ghana. About 75% of recipients buy on credit at about a 20% - 30% mark-up over the cash price. The project took six years to move from the capacity building phase to production and it is important to note that the ongoing capacity need of access to capital could remain as a significant barrier to scale and therefore, future investment.

Toyola: Selling Clean Cookstoves Around the World

Understand Risk	<p>Ghana's forested areas are disappearing at a rate of approximately 3% per year. Around 30% of households rely on charcoal for cooking and 55% use firewood. Ghana established the need for the introduction of new, more energy efficient cookstoves but there was no indigenous manufacturing industry to respond. As a result, investors would perceive the inability to manufacture and sell the stoves as a risk to a sustainable program, potentially adding cost by either requiring imports or demanding a timely and intensive training program.</p>
Build Capacity/Mitigate Risk	<p>In 2002, USAID, the Shell Foundation and the NGO EnterpriseWorks, financed the training in the production of the stoves to 78 local artisans. The training included an extensive marketing campaign, and rigorous scientific testing of the stoves' benefits, however, the program did not offer business training or access to finance.</p> <p>It was not until 2006, when two of the trainees, gained business planning and financial support from E+Co (an energy investor) and the Kumasi Institute of Technology (an NGO) that their company, Toyola, was born.</p>
Know the Market	<p>In order to determine the appropriate price point for their stove, Toyola conducted informal surveys through traditional village channels and community markets using local agents to speak with target consumers. They also looked at what was currently being paid for standard, inefficient cookstoves plus fuel expenses.</p>
Attract Investors/Implement Tool	<p>Having determined the price point, E+Co invested US\$70,000 for the purchase of a truck and supplies. The business expanded rapidly, selling 20,000 stoves, mostly on credit, in the first year (2008). As a result, E+Co has made two additional loans to Toyola each in the amount of US\$100,000.</p>
Scale Up	<p>Toyola has developed an efficient, effective and sustainable credit program that has advanced beyond the need for additional financial support. As a result, Toyola Energy has grown rapidly since it started selling stoves in 2007, but demand for stoves in Ghana outstrips supply. To meet this demand, Toyola now makes stoves in five locations in Ghana and one in nearby Togo.</p>
Ongoing Capacity Needs	<p>While Toyola has managed to grow, they and their workforce are severely constrained by access to capital, which limits their ability to provide credit.</p>

Questions to Consider

Just as there are numerous crosscutting issues that impact environmental finance in all four sectors, there are also crosscutting questions that should be asked before choosing a financial tool. The questions below are intended as a general aid for decision-makers. While tool-specific implementation checklists are included in the individual sector chapters, the following provides a general introduction to the broad array of questions to consider when choosing a financial tool.

Even if decision-makers don't have all the answers, the list below should help to ensure that they are asking the right questions, regardless of sector.

- Is there supporting policy framework?
- Are there supporting internal and/or external financial institutions?
- Is there market access and an adequate transportation infrastructure?
- Has pricing been researched to ensure appropriate funding levels (to include environmental services)?
- Are there auditing processes in place?
- Is there a secure process of finance allocation and collection?
- Are there procedures in place to build necessary capacity?
- Is there strong stakeholder engagement and support from government to local community?
- Has the risk been assessed and can it be managed?
- Has the financial tool and project been implemented elsewhere?
- Will the financial tool be efficient, effective and sustainable?

Conclusion

When making decisions about appropriate finance tools for sustainable energy, agriculture, protected areas, or forests, research shows that the four sectors are more alike than not. Regardless of the sector, effective financial tool implementation relies on three critical capacity factors: financial, technical and infrastructural. As evidenced by the discussion and case studies below, the opportunities are many, but so are the barriers. For every value proposition that shows the potential for a high rate of return, there are just as likely to be a host of hurdles to overcome from the political to the educational. However, with the appropriate investments in capacity, research proves that finance tools in developing countries can succeed and provide both sustainable development and acceptable financial, social and environmental returns.

Many of the lessons learned may seem obvious and straightforward yet in reality they are rarely followed. As the world grapples with major environmental and social threats, the trend is leaning towards more and more complex financial tools to solve our problems as opposed to innovating those simple approaches we know already work.

The more complex the tool, the longer it takes to implement, yet there are tools being used today in developing countries that can be launched within their existing capacities and without significant international input and support. Loans, fees and subsidies are the most common and successful tools in use today to protect the environment and advance sustainability. Taxes, a tool all governments can and do implement (but rarely use to protect and preserve the environment), should be added to the basic mix. Taken together, these four tools should be moved from rare to routine, and innovated as necessary to respond to local needs and capacity. We urge decision makers to consider this simple but powerful lesson:

The simpler the tool, the easier it is to adapt to local circumstances and the faster they will be on track towards building their green economies today, rather than waiting for the next new tool tomorrow.

Cover Photo: *Adam Rogers/ UNDP Photo*

Acknowledgements: This report is prepared by the Environmental Finance Center West at the School of Business & Leadership, Dominican University of California. Special thanks go to the authors Sarah Diefendorf, Lauralee Barbaria, Nancy Roberts, and Floyd Fox, as well as Andrew Bovarnick for guiding this project onwards.

Production team: Laura Hildebrandt and Serena Bedwal, UNDP

For more information: www.undp.org/environment

United Nations Development Programme

One United Nations Plaza • New York, NY 10017 USA