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United Nations Development Programme

ENVIRONMENT AND ENERGY

INTERNATIONAL GUIDEBOOK OF ENVIRONMENTAL FINANCE TOOLS

A SECTORAL APPROACH: PROTECTED AREAS, SUSTAINABLE
FORESTS, SUSTAINABLE AGRICULTURE AND PRO-POOR ENERGY

EXECUTIVE SUMMARY

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Overview and Scope

COMMONLY USED ENVIRONMENTAL FINANCE TOOLS

The *International Guidebook of Environmental Finance Tools* provides guidance to countries in developing and implementing the most commonly used, widely applicable, and potentially high-impact environmental finance tools. It does not offer a comprehensive list of all the environmental finance tools available to developing countries. Rather, it aims to define and analyse the primary tools that are already in use and that can be applied globally to advance sustainable development.

The tools explored in the Guidebook have been successfully applied to protect the environment and promote pro-poor and predominantly rural development. They were identified through a review of over 100 environmental finance case studies from over 30 developing countries across four sectors: pro-poor energy, protected areas, sustainable agriculture and sustainable forestry.

Although the full array of environmental finance tools is wide-ranging, only a handful of options are commonly used in each sector in developing countries. The Guidebook focuses on the most frequently used tools: loans, fees, subsidies, and — to a lesser degree — taxes and payments for ecosystem services. Three other tools are also included in recognition of their potential to address climate change concerns: market-based mechanisms, clean development mechanisms and voluntary emission reductions.

The Guidebook uses case studies to analyse the implementation and effectiveness of the tools it considers. Through this analysis, certain patterns emerge. Different sectors tend to rely on different financial tools. Indeed, for the most part, each sector relies on just one or two financial tools. Loans and subsidies are most commonly used in the energy sector, for example, while fees predominate in the protected areas sector.

This Executive Summary provides a concise overview of the *Guidebook*, including a review of its key findings. It summarizes the challenges to the successful implementation of the tools it considers, and highlights the key criteria for their successful implementation. It offers sectoral conclusions unique to energy, agriculture, protected areas and forestry, as well as general conclusions that apply to all four sectors. Definitions of the financial tools discussed in the *Guidebook* are located in the appendix, along with a list of country case studies.

The complete *International Guidebook of Environmental Finance Tools* is available at http://web.undp.org/undp/en/home/librarypage/environment-energy/environmental_finance/international-guidebook-of-environmental-finance-tools



Photo credit: Edwin Huffman/ World Bank

Implementing Environmental Finance Tools

THE CHALLENGES

Financing sustainability can be difficult. In many developing countries, governmental capacity to collect revenues and distribute funds is weak, independent financial institutions are limited to urban centres, and physical infrastructure is lacking. Even the most common environmental finance tools can face significant barriers when implemented in developing countries. The challenges most often faced in implementing each financial tool are discussed below.

FEES

Fees can be self-assessed (community forest fees or agricultural cooperative fees, for example) or imposed on others (entry fees or departure fees). The case studies show that explaining the rationale for the fee to the payer can reduce resistance, especially if the payer perceives a benefit from the fee.

Although fees provide a useful stream of revenue, they are rarely sufficient to cover the full costs of a programme. Farmer cooperative fees, for example, may not cover the full cost of transitioning to organic production methods, and entry fees rarely cover the full cost of maintaining a protected area.

Challenges in implementing fees include:

Setting the fee Although seemingly straightforward, it can take years to establish stakeholder support for a fee. Determining what a potential user is willing to pay may require significant research and stakeholder input, and is an inexact science at best. Fee analyses such as willingness-to-pay studies are time consuming but critical to setting the right fee and maximizing revenue.

Collecting the fee A fee collection infrastructure that ensures the transparent and accurate accounting of revenue is essential. Simply ‘collecting the money at the gate’ does not guarantee that the revenue will reach its intended target.

Ensuring distribution of monies for the intended purpose As with taxes, fee revenue can be redirected to other purposes when remitted to a central government. A local third-party organization established to manage fee collection and distribution can help ensure that fee revenue reaches its intended target.

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

LOANS

Environmental finance loans can range from multimillion-dollar World Bank investments in national energy projects to microfinance programmes that offer small loans to individuals. Loans may also take the form of credit, where a buyer receives a product up front (such as a solar home system) and repays the cost, plus interest and/or fees, over time. Patient loan programmes have proven successful, allowing borrowers several years to repay relatively small amounts. In some cases, long-horizon repayment terms have turned loans essentially into grants, particularly in the sustainable forestry sector.

Some of the challenges with implementing a loan are:

Setting loan amounts and terms Loans are a financial investment and require sophisticated contractual agreements that must be both appropriate for the borrower and attractive to the lender. As with a fee, how much debt a borrower can accept and how long it will take the borrower to repay the loan should be determined in advance. Lenders must determine the level of risk they are willing to assume, the interest rate or fee, and the return on investment required to maintain a sustainable programme.

Defining collateral Loan programmes 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 can be a home, tractor, or any other item with an equal or greater resale value as the original loan. In developing countries, many borrowers have no collateral to offer, which increases the risk to the lender.

Delinquent payments Delinquency is a persistent concern for lenders. Before a loan programme is implemented, terms governing delinquency — including penalties — should be established. 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 programmes can be launched.

PAYMENTS FOR ECOSYSTEM SERVICES AND MARKET-BASED MECHANISMS

Considering the time and money invested, payments for ecosystem services (PES) and market-based mechanisms (MBM) have been slow to achieve anticipated revenue levels.

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 to the future price of carbon, risk is inherent.

In contrast, PES transactions focus on behaviour change at the individual level that maximizes environmental protection, such as not farming on protected land.

Some of the challenges in implementing MBM and PES include:

Global vulnerability The flow of revenue from MBM is vulnerable to global trends (such as droughts or dips in global tourism), and to drastic price fluctuations, as evidenced by the carbon market over the past decade. Regulatory changes and international accords such as the Kyoto Protocol and REDD+¹ can create or destroy mechanisms for the trade of ecosystem services, which depend 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 arrangements.

Complex tools MBM and PES are complicated to set up and run. Because the revenue stream usually flows from developed to developing countries, they require an international infrastructure. MBM and PES are financially sophisticated tools but are often applied in countries with limited financial capacity. They normally entail third-party involvement for certification, verification and monitoring, which adds another layer of complexity.

High risk Because of their vulnerabilities and complexity, both MBM and PES are seen as potentially risky tools, especially when applied to developing countries, where tracking and ensuring results may be difficult. In response, PES and MBM projects often include additional reporting requirements, creating yet another hurdle for developing countries.

CLEAN DEVELOPMENT MECHANISM AND VOLUNTARY EMISSION REDUCTIONS

Clean development mechanisms (CDM) and voluntary emission reductions (VERs) can be valuable tools for lowering the cost of an emissions-reducing product or process, such as an efficient cookstove. They are especially attractive to 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 carbon markets is not easy. 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 — must be negotiated. Indeed, as of 2010, the majority of CDM projects were concentrated in only four countries: Brazil, China, India and Mexico.²

¹ Reducing Emissions from Deforestation and Forest Degradation (REDD) is an approach to providing financial incentives for reducing greenhouse gas emissions from deforestation and forest degradation. REDD+ covers not only deforestation and forest degradation, but also conservation and the sustainable management of forest resources.

² Disch, David; Kavita Rai and Shachi Maheshwari (December 2010), Carbon finance: A guide for sustainable energy enterprises and NGOs. Available at http://www.ashden.org/files/pdfs/reports/Carbon_finance_guide.pdf

By definition, VERs are not bound by the same requirements as CDM. Nevertheless, to maximize revenue and the highest possible (premium) price per ton of carbon dioxide (CO₂), many project developers follow the same guidelines as CDM, even 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 CDM and VERs are becoming virtually the same.

These challenges include:

Proving additionality CDM proponents must establish that their project could not or would not occur without carbon finance. Proving that a project would not happen without the expectation of carbon credits has proven to be a formidable challenge, especially in the forestry sector. 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 To determine the amount of carbon emission reductions a project can offer, a baseline of existing emissions must first be quantified. In the cookstove example, project developers need to know how much wood a village uses on an annual basis to cook meals, how much CO₂ is emitted from using that wood, and to what extent CO₂ emissions will be reduced by the introduction of more efficient cookstoves. Assessing the baseline requires 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. Proving additionality, preparing a baseline analysis and establishing a long-term monitoring programme are complicated and lengthy endeavours. 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 MBM and PES, revenue flows from CDM and VERs are vulnerable to global trends and price fluctuations. Furthermore, uncertainty about the path of the Kyoto agreement after 2012 makes CDM a risky option. In two of the case studies in the Guidebook, (Mexico/Sierra Gorda and Bolivia/ArBolivia), CDM was abandoned in favour of VERs.

SUBSIDIES

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

Challenges with implementing subsidies include:

Unintended consequences. Subsidies set artificial prices that do not accord with the market. As a result, they can have unintended consequences, such as encouraging 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 Subsidies that support specific products may suppress the market that might otherwise have developed; there is no incentive for competitive products, which typically bring down prices.

TAXES

Taxes usually require large-scale, national-level implementation, which may pose a problem for developing countries. Taxing its citizens can be difficult for a government when most workers are employed in agriculture or informal enterprises and when 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 taxes that are relatively easy to implement because the collection mechanisms are already in place (such as departure taxes where revenue is collected at the airport), may face opposition from law makers who are beholden to special interests or from businesses wary of losing customers.

Other challenges with implementing taxes include:

Collection and distribution Because most developing countries lack sophisticated tax systems to track and monitor the collection and distribution of funds, monies are often 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 to reflect 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 would benefit from strengthened capacity to perform the necessary financial audits to track revenue generation and distribution.

Key Criteria for Implementing a Tool

RETURN ON INVESTMENT, RISK AND CAPACITY

Environmental finance tools should be viewed as financial investments, and the criteria that define a good investment should be present before a tool is implemented. Investors generally follow defined standards in deciding whether to invest in a programme, project or product, and they expect a viable return, be it financial, social or environmental. The feasibility of that return depends on the level of risk and whether there is sufficient capacity to support the financial tool. Thus before implementing any tool, decision makers should ask: who are the investors, what will they want in return, and can the tool achieve that end?

More specifically, decision makers should consider the following key factors:

- Lenders will require an adequate monetary return on investment before they will finance and launch a loan programme, and they will expect sufficient capacity and low levels of risk before they are likely to invest.
- Fee payers should be seen as investing in an environmental or social system or programme (such as a national park or an agricultural cooperative) from which they expect to receive a service or benefit. They are unlikely to pay in the face of high risk, limited capacity and no return.
- Subsidies acts as an investment in a product or process to help reduce prices, expand the accessibility of the offering, and grow the market. For investors — non-governmental organizations (NGOs), governments, taxpayers — the most successful return may be that the subsidy is ultimately phased out. In this situation, the risk is that the subsidy may become indefinite.
- PES, MBM and CDM all involve public and private sector investors, usually from other countries. These investors must be assured that local capacity is sufficient for success and that the financial, environmental or social return is satisfactory. The complexity of these tools is their highest risk; they demand an enabling environment and institutional capacities.
- Even taxes should be subject to investor standards. Taxpayers demand that their hard-earned income is applied effectively and that the return is worth the burden. Failure to meet investor/taxpayer expectations can have dire consequences for governments.
- In sum, to ensure an adequate financial, social or environmental return on investment, decision makers should assess the levels of risk associated with a tool and whether the appropriate technical, financial and infrastructural capacity exists to mitigate that risk and guarantee an acceptable return.

Sectoral Conclusions

The Guidebook draws sector-specific conclusions for each of the four sectors it examines. An overview of those conclusions is provided here.

PRO-POOR ENERGY

Bringing energy to rural areas often means developing a business strategy that includes everything from identifying, training and hiring entrepreneurs, to establishing local financial institutions. Most often, the strategy must be built from the ground up, and there may be a number of hurdles to be cleared before a successful energy programme can take off. Some of those hurdles are described here.

- Most off-grid, rural, pro-poor energy projects involve some form of renewable energy technology (RET), which is often unfamiliar — and therefore potentially risky — to mainstream financial institutions. Many investors doubt the financial viability of RETs because they lack exposure to and knowledge of these technologies.
- The isolation of rural communities creates a number of barriers beyond their distance from the national grid. Because most pro-poor energy projects rely on loans, the market must be attractive to investors. That requires enough customers to support a supply chain including manufacturers, retailers and maintenance. Servicing multiple small and dispersed communities is rarely cost effective and banks will normally view such a project as too risky to invest in.
- Commercial financial institutions may not maintain branches outside of populated areas and may be skeptical of engaging with marginal communities. While some countries have developed their own microfinance institutions, commercial banks are rarely interested in promoting low-value credit and unprofitable loan schemes for technologies such as RETs, which they may not understand.
- In addition, RETs — such as solar and micro-hydro — carry high upfront costs that must be recovered from financially high-risk customers with no collateral. As a result, investors who establish pro-poor energy programmes find it exceedingly difficult to access start-up capital and are frequently forced to finance their operations through grants and other support from international aid and development organizations. Once funding has been secured, the lead organization will often find itself responsible for establishing and overseeing a finance structure that supports various loan schemes, such as credit, layaway, installments or long-term loans.
- There is an imperative need to strengthen existing capacities. Delivering a product to market requires a sophisticated supply chain including designers, manufacturers, suppliers, resellers and transport. If this supply chain does not already exist, it must be built. Introducing sophisticated RETs can be even more difficult, involving the additional effort and cost of importing supplies. Capacity development needs may also extend to the market, which is frequently suspicious of new RET products.
- Investors have found that in order to be successful, they must often be many things at once: entrepreneur, financial institution, development worker and possibly even environmental expert.



Photo credit: PARTHA PRATIM SAHA / UNDP

PROTECTED AREAS

Many protected areas rely on government funds for survival. To supplement inadequate national and regional budget allocations, financial strategies for protected areas should include mechanisms to self-generate and retain revenues. They should also lay the foundation for more complex funding options as they become available through climate policy, investor interest and government support.

The conclusions below address funding shortfalls for protected areas.

- Fees typically are not a significant source of funding for managing and operating protected areas. However, effective implementation of fee structures can create the framework needed for more productive financial tool implementations in the future.
- Entrance fee research shows that there is room for revenue growth within existing implementations. The ability to capture and analyse tourism volumes and market segmentations is essential for fees to reach their full revenue potential as a financial tool.
- The decentralized management of protected areas requires more coordination and technical infrastructure to capture and report financial and tourism information. This information can be used to prioritize capital outlays and future financial tool implementation choices.
- Taxes can generate substantial revenue. Stakeholder approval can be facilitated by establishing a mechanism with external oversight (such as a trust fund) to receive and allocate the funds.

Revenue generation capability, implementation time, and a low degree of complexity make this tool worth consideration, especially when compared with other tools.

- Statistics on the number of tourists visiting a country should be used as an indicator of revenue potential if hotel or departure taxes were implemented.
- Enabling policies, legal frameworks and governance structures need to be in place in order for pricing strategies and timely fee price adjustment decisions to be effective.
- In light of the time and money invested, PES and MBM have been slow to achieve anticipated revenue levels. There are synergies among protected areas services, PES and MBMs that can be leveraged. The capacity and processes built to implement a PES or carbon project can be stepping-stones to climate policy funding, such as REDD+.
- Pricing strategies need to integrate the many services offered by protected areas over the long term. Focusing on the value of individual services rather than the value of the entire system minimizes the perceived value of the whole.

SUSTAINABLE AGRICULTURE

Because the Guidebook's emphasis is pro-poor, its analysis of sustainable agriculture focuses on financial tools that enhance soil health and eliminate or minimize costly synthetic inputs while improving smallholders' livelihoods over the long term.

Education, participatory management and small-scale local efforts are common threads that run throughout the successful implementation of sustainable agriculture. The long-standing farmer cooperative model has evolved at local levels to take advantage of economies of scale. Unfortunately, these approaches do not have the technology- and input-intensive focus that traditionally attract major funders like the World Bank.

Other barriers to financing sustainable agriculture include:

- The risky nature of agriculture makes it unattractive to investors and financial institutions. Appeal beyond financial return, such as social impact, should be considered an incentive for investment, normally in the form of loans.
- The involvement of government and/or NGOs is critical for capacity development in the pilot phases of most sustainable agriculture projects to support the feasibility and success of the financial tool.
- The success of the financial tool relies on efficient supply chains for sustainable revenue generation. Supply chains that deliver agricultural products to reliable overseas markets are better able to leverage large-scale loans and other forms of investment. Domestic markets often require smaller investments (fees and loans) in projects that can be launched with government seed money (subsidies) to become self-sustaining.
- Growers can maximize their ability to attract capital by forming cooperatives to oversee the implementation of the financial tools and taking advantage of economies of scale and other efficiencies.

- The very nature of sustainable agriculture tends to discourage the traditional subsidy model, which historically has supported the use of synthetic fertilizer, pesticides and other external inputs that are antithetical to sustainable agricultural practices.
- Sustainable agriculture requires the elimination of those synthetic inputs that are most attractive for a corporation to develop and sell, and therefore to fund. There is no intellectual property attached to a successful organic farm or agritourism project, and so they are less likely to be funded than projects involving transgenic seeds or a new type of fertilizer.

SUSTAINABLE FORESTRY

Sustainable forestry efforts should focus on providing alternative sources of income to indigenous populations so they can attract more mainstream financial tools, such as loans and equity investment. Sustainable forestry initiatives should also aim to attract private sector finance in the form of impact investment.

Other conclusions specific to the sustainable forestry sector are listed here.

- There are a number of challenges facing sustainable forestry finance and not many large-scale successes when grants (including unfunded government finance) are removed from the analysis. Furthermore, as the carbon market continues to evolve, the sophistication required to implement these tools — and the complexity of maintaining and monitoring them — may limit their application.
- Localized projects that rely on patient loans, minimal interest and no collateral requirements may be the best option for sustainable forestry. However, the impact of these projects tends to be small. Bringing this approach to scale is a pressing challenge.
- Investors may need to accept that financial returns from forest projects will be minimal (possibly negative) and be willing to accept social returns instead.
- For programmes that have already achieved CDM accreditation but are concerned about the viability of the market, pursuing VER certification can be an important step towards reentering the market at a more stable point.
- Because fees are most often generated by the forest communities, achieving a sustainable level of financial support has proved difficult.
- Governments that have the capacity to do so should consider a sustainable forestry tax that can be attached to a good or service (such as hotels or petroleum products) or to tourists and other visitors (such as a departure tax).
- PES programmes in which forest dwellers are paid directly to protect their forests have been successful. However, government funding with no additional revenue-generating tools to subsidize the cost (such as a tax) is unlikely to be sustainable in the long term.
- The relationship between sustainable forestry finance and the fossil fuel industry is complex but rich in opportunities. The case studies of the fossil fuel tax in Costa Rica and an oil industry service provider funding forest preservation illustrate that preserving the carbon embedded in forests requires a trade-off between near- and long-term interests.

General Conclusions

Noting that developing countries face numerous obstacles to environmental finance, the *Guidebook* establishes five general conclusions.

Conclusion 1: Only a handful of financial tools — loans, fees and subsidies — are implemented in most cases.

Although a wide array of financial tools was initially considered for inclusion in the *Guidebook*, research revealed that only a small number of options are frequently used in each sector in developing countries: loans, fees and subsidies. Among the tools considered, some patterns emerged from the case studies. As shown in table 1, certain sectors tend to rely on some financial tools more than others. Indeed, for the most part, each sector relies on just one or two financial tools.

Financial tool	Sustainable agriculture	Protected areas	Sustainable forestry	Pro-poor energy
Fees	+	★	★	◇
Loans	★	◇	+	★
PES*	◇	+	★	◇
MBM/CDM/VER**	◇	+	+	+
Subsidies	+	◇	◇	★
Taxes	◇	+	+	◇

★ = predominant tool + = secondary tools ◇ = rarely used tool
 * Payment for ecosystem services (PES)
 ** Market-based mechanism (MBM), clean development mechanism (CDM), voluntary emission reduction (VER)

Overall, energy and sustainable agriculture rely most heavily on loans and subsidies. The up-front capital provided by loans and subsidies enable scaling, implementation and market growth, allowing the sectors to become financially self-sustaining over time. Energy also benefits from the ability to extend patient, long-term loans and credit to customers, without which energy services would be unaffordable.

Protected areas and sustainable forestry rely on the collection of fees and, to a lesser degree, PES. Protecting habitat and forests — and encouraging their restoration — often requires financial flows from the collection of upfront fees from users (such as industry or tourists) and potential users to encourage preservation. Only a few developing countries use taxation as a tool to preserve forests and protected areas.

Conclusion 2: Even the most straightforward tools can take years to successfully implement.

There is one critical element that spans all sectors and affects every step of implementation: 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. Time is required to collect and analyse stakeholder input, develop financial and physical infrastructure, and pass necessary regulations.



Photo credit: Adam Rogers/ UNDP Photo

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 RET, the dissemination of innovation through education takes time.

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

While there is no rule to guide decision makers, there are basic questions they can ask that may help them gauge the time it will take to implement a tool. If all of the questions below can be answered in the affirmative, then a tool may be launched within a year or less. However, if the answer to even one question is ‘no’, a tool may be delayed by years, or even fail.

- Is there a supporting policy/regulatory framework in place?
- Are there internal and/or external institutions that can manage financial transactions including local collections, disbursements and penalties?
- Is there market access and an adequate transportation infrastructure?
- Are there significant educational gaps in the target market (will the market understand and use the financial tool)?
- Is there strong stakeholder engagement and support from government to local community?

Conclusion 3: Rather than creating new and complex tools, decision makers should look to maximize impacts by improving the most common tools already in use.

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

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

Conclusion 4: Tools do not stand alone. Effective combining and sequencing may mean the difference between success and failure.

When considering financial tools for developing countries, it should be recognized that none stands alone. And while grants are not within the scope of the *Guidebook*, it is important to note that in all of the case studies, the financial tool required initial support before implementation — almost always in the form of a grant. Grants are most often used to build capacity and educate, but they may also act as a subsidy to reduce 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. MBM have not yet generated sufficient revenue to sustain protected areas and forests, and must be augmented by fees and sometimes taxes. Consequently, when developing a financial tool, it is important to consider the optimal sequence and combination of tools to enable effective implementation. In most cases, a tool to strengthen capacity (usually a grant) will support the implementation of the primary tool, such as a loan. The primary tool may then be augmented by secondary tools, such as government subsidies or MDM. Table 2 presents potential sequences and combinations for the four sectors.

TABLE 2: SEQUENCE AND COMBINATION OF FINANCIAL TOOLS				
	Capacity development 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

Conclusion 5: Financial, technical and infrastructural capacity development is essential to the sustainability of the tools.

Without capacity to support financial tools, pro-poor environmental finance will likely fail. For example, governments that first establish an enabling environment through policies, regulations and targeted actions for capacity development will reduce financial risk and enable effective environmental finance.

With that in mind, the implementation of environmental finance tools in the four sectors can be viewed through the lens of three general categories of capacity: financial, technical and infrastructural.

Financial Capacity

Financial institutional involvement and access to financial services and capital are essential to market development but can be especially challenging for poor rural communities. The lack of widespread financial infrastructure means that government agencies, NGOs and entrepreneurs must frequently either build local resources or rely on international financial institutions before a tool can be implemented. This can add greatly to project costs and time, and reduce the interest of investors.

In addition, 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, diversification options are limited when only a handful of tools (fees, loans and subsidies) are available; financial infrastructures are weak; and education and business skills are poor.

Technical Capacity

Basic business skills, such as accounting, financial management and marketing, are often lacking at the implementation level. Young entrepreneurs who want to design and sell more efficient cookstoves, or villages that want to offer ecotourism options to international tourists, have little access to business training programmes.

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 almost always more effective, efficient and equitable than management at the national level. Strengthening ground-level capacity is critical to sustaining environmental investments and securing support from the private sector.

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 programme that supports rural consumers can be prohibitively expensive if a weak transportation and distribution system raises costs and reduces profitability.

An Important Lesson

SIMPLER = EASIER = FASTER

Research shows that the four sectors analysed in the *Guidebook* — pro-poor energy, sustainable agriculture, protected areas and sustainable forestry — are more alike than not. Decision makers should bear this in mind when weighing the appropriate financial tool for a particular sector. Regardless of the sector, effective financial tool implementation relies on three critical capacity factors: financial, technical and infrastructural.

As evidenced by the case studies listed in the appendix, 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 development, environmental finance tools can help countries realize both sustainable development and acceptable financial, social and environmental returns.

Many of the lessons learned seem obvious, yet in reality they are rarely followed. As the world grapples with complicated environmental and social threats, there is a trend towards increasingly complex financial tools, as opposed to innovating the simple approaches that are already working.

The more complex the tool, the longer it takes to implement. However, there are relatively simple tools in use in developing countries today that can be expanded within existing national capacities without significant international input or support. Loans, fees and subsidies are the most common and successful tools already used to protect the environment and advance sustainability. Taxes — a tool that all governments implement but rarely use to protect and preserve the environment — should be added to the mix. Taken together, these four tools should move from rare to routine, and be improved as necessary to respond to local needs and capacity.

Decision makers should consider this simple but powerful lesson:

The simpler the tool, the easier it is to adapt to local circumstances and the sooner countries can get on track to building their green economies.

Appendix

FINANCIAL TOOL DEFINITIONS AND CASE STUDIES

FEES

Fee definition – A fee is a compulsory charge levied by a governing body (government or organization) for a specific purpose and for which a specific return (quid pro quo) is provided to the payer. Examples of fees include membership fees, entry fees, annual fees and user fees. Case studies in the *Guidebook* that include fees are listed below.

FEES CASE STUDIES			
Country	Sector	Tool	Case study
Senegal	Agriculture	Membership fee	Organic Banana Farmers Target Financial Independence in Senegal
Cambodia	Agriculture	Membership fee	An Organic Producers’ Association Provides Marketing Assistance, but Member Fees Fall Short
Belize	Protected areas	Departure fee	Fifteen Years of Revenue: ‘Conservation Fee’ Portion of Departure Tax Funds Protected Area Trust
Indonesia	Protected areas	Entry fee	Decentralization and Tags: Effective Fee Collection in Bunaken Marine Park
Kenya	Protected areas	Entry fee	Technology and Entry Fee Collections: More Options for Revenue
Cameroon	Forestry	Annual fee	NGO Oversight Required To Ensure Annual Forestry Fee Revenues Reach Village Level
Nepal	Forestry	Community fee	Community Forest Fee is Popular but Not Enough

LOANS

Loan definition – A loan is the distribution of asset from lender to borrower with an expectation of repayment over time. Loans are perhaps the most commonly used environmental finance tool in the developing world, and there are many variations and innovations on loan structures. Loans can be short- or long-term and can include microfinance, credit, rent, customer advances and installments, and supplier and trade finance. Case studies in the *Guidebook* that include loans are listed in the table below. In four of the case studies, loans are bundled with subsidies to make them more affordable.

LOAN CASE STUDIES			
Country	Sector	Tool	Case study
Bangladesh	Energy	Microfinance	Grameen Shakti Finances 500,000 Solar Homes in India
Honduras	Energy	Credit	Rural Communities Discover Biofuel as an Affordable Answer to Energy Needs (GotaVerde)
Kenya	Energy	Installments	Business in a Box Thinks Out of the Box to Provide Solar to Rural Poor (ToughStuff)
Lao PDR	Energy	Rent	Village Energy Committees Bring Light to Rural Communities (Sunlabob)
India	Energy	Patient loan	Biogas Domes Reduce Waste and Bring Light (Ministry of New and Renewable Energy)
Haiti	Energy	Subsidized loan	Entrepreneurs Bring Light to Rural Haiti (Sirona Cares)
Tunisia	Energy	Subsidized loan	Subsidizing Solar in Tunisia (PROSOL)
India	Energy	Subsidized loan	Indian Solar Home Program (UNEP)
Ghana	Energy	Subsidized loan	Achieving the 4 ‘E’s: Energy, Efficiency, Employment and Environmental Protection (Toyola)
Bhutan	Forestry	Patient loan	Organic Lemongrass Oil Certification Supports Sustainable Forestry Practices and Boosts Village Revenues
India	Forestry	Patient loan	Soft Loan Supports Forests While Alleviating Poverty
Morocco	Agriculture	Customer advance	Consumer Bridge Loans: Community-Supported Agriculture Aids Farmers and Develops Local Market
Uganda	Agriculture	Supplier loan	Taking Money Out of the Equation: Fruits of the Nile’s Non-Monetary Loans To Farmers
Peru	Agriculture	Trade finance	Supporting Cocoa and Coffee Over Cocaine through Trade Finance Loans
Tanzania	Agriculture	Trade finance	Built to Last: A Long-Term Lending Relationship Leads to Sustainable Local Enterprise

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

MBM definition – For purposes of the *Guidebook*, MBM are processes that match buyers and sellers of intangible ecosystem products, in which prices fluctuate. The market for carbon offsets is one example.

PES definition – A well-accepted definition of PES is a payment for environmental services scheme that is:

- 1. a voluntary transaction in which
- 2. a well-defined environmental service, or a form of land use likely to secure that service
- 3. is bought by at least one environmental service buyer
- 4. from a minimum of one environmental service provider
- 5. if and only if the provider continues to supply that service (conditionality).

PES and MBM variations include ecotourism, ecosystem service certificates, preservation incentives and carbon credits. *Guidebook* case studies that include PES/MBM are listed below.

PES/MBM CASE STUDIES			
Country	Sector	Tool	Case study
Cambodia	Protected areas	Ecotourism	Nest Eggs: Payment for Ecosystems Services (PES) – Ecotourism Builds Linkages Between Conservation and Economic Improvement
Mexico	Protected areas	Premium carbon	Premium Offsets: Sierra Gorda Carbon/Integrated Offsets
Madagascar	Protected areas	Carbon credits	Carbon Credits Bring Benefits to Forest Villages
Ecuador	Forestry	Preservation incentives	Paid to Preserve: Ecuador’s <i>Programa Socio Bosque</i> Incentivizes Landholders to Halt Deforestation
Paraguay	Forestry	Carbon credits	Oil Industry Service Provider Seeks Carbon Neutrality by Funding Preservation of Paraguay Rainforest

CLEAN DEVELOPMENT MECHANISMS (CDM) AND VOLUNTARY EMISSION REDUCTION (VER)

CDM definition – CDM allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction credits, each equivalent to one ton of CO₂, which can be counted towards meeting Kyoto targets. A CDM project must provide emission reductions that are additional to what would otherwise have occurred.³

VER definition – VER is a general term used to describe a class of carbon credits produced outside a legal framework such as the Kyoto Protocol. In the past decade, the VER market has grown rapidly in response to an increased demand for VERs in the voluntary offset market. Project developers generate VERs. They are then usually sold to retailers or aggregators, who can sell them to individuals and organizations as carbon offsets (in which case they are taken off the market and cannot be resold) or to investors who hold them for future use.

Guidebook case studies that include CDM/VER are listed in the table below.

VER/CDM CASE STUDIES			
Country	Sector	Tool	Case study
Mexico	Protected areas	VER	Premium Offsets: Sierra Gorda Carbon/Integrated Offsets
Brazil	Energy	VER	Subsidizing Efficient Cookstoves with Carbon Credits
Bolivia	Forestry	CDM/VER	CDM-Approved Investments Fund Saplings in Bolivia
China	Forestry	CDM	Restoring Degraded Land: The World’s First Clean Development Mechanism Forest Project in Southern China

SUBSIDIES

Subsidy definition – Subsidies come in many forms and are usually used to supplement another financial tool, such as a loan. Subsidies may be a direct payment from the government or a tax reduction to a private party for implementing a practice the government wishes to encourage. Subsidies can also be realized through CDM and VERs when carbon reduction revenue is used to lower the price of a product, or through start-up grants and other tools, such as a sliding scale where wealthier clients pay more to offset prices for those with less. *Guidebook* case studies that include subsidies are listed in the table below.

³ UNFCCC: http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php.

SUBSIDY CASE STUDIES			
Country	Sector	Tool	Case study
Brazil	Energy	VERs	Subsidizing Efficient Cookstoves with Carbon Credits
Brazil	Energy	Sliding scale	Hydro System Lets Users Pay What they Can (CRELUZ)
Haiti	Energy	Grant	Entrepreneurs Bring Light to Rural Haiti (Sirona Cares)
Tunisia	Energy	Grant/ government	Subsidizing Solar in Tunisia (PROSOL)
India	Energy	Government subsidy	Indian Solar Home Programme (UNEP)
India	Energy	Government subsidy	Biogas Domes Reduce Waste and Bring Light (Ministry of New and Renewable Energy)
Ghana	Energy	VERs	Achieving the 4 “E”s: Energy, Efficiency, Employment and Environmental Protection (Toyola)
Kenya	Agriculture	Insurance pre- mium sharing	Input Insurance Programme Grows with Shared Premiums and Mobile Technology
China	Agriculture	Input	Community-wide Conversion: Local Government Supports an Entire Township’s Transition to Organic
Tunisia	Agriculture	Investment	Applying Foreign Investment Incentives to Organic Agriculture
Philippines	Agriculture	Government subsidy	Supporting Urban Agriculture by Providing Plastic Pots and a Savings Scheme

TAXES

Tax definition – A tax is a compulsory charge levied by a government on an individual or organization’s product, income or activity to finance government activity. A departure tax that supports protected areas is an example of an environmental finance tax. There are myriad variations and innovations of taxes worldwide including departure, fuel and hotel taxes. *Guidebook* case studies that include taxes are listed in the table below.

TAX CASE STUDIES			
Country	Sector	Tool	Case study
Palau	Protected areas	Departure	Gone but Not Forgotten: Addition of ‘Green Fee’ to Departure Tax Support Protected Area Network
Macedonia	Protected areas	Hotel	‘Bed Tax’ to Support Protected Areas in Macedonia Starting in 2011
Costa Rica	Forestry	Fuel	A Little Goes a Long Way: Small Percentage of Fuel Tax Pays for Sustainable Forestry

ACRONYMS

CDM	Clean development mechanism
CO ₂	Carbon dioxide
MBM	Market-based mechanisms
NGO	Non-governmental organization
PES	Payments for ecosystem services
REDD	Reduced Emissions from Deforestation and Forest Degradation
RETs	Renewable energy technologies
VER	Voluntary emission reductions