

Notes From The Field

Unlocking the power of local knowledge: A novel framework to cost community-based adaptation to climate change

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Key Messages

- Global and national estimates of adaptation costs rarely capture the impacts of climate change and the costs of adaptation on the ground. Actual costs may be grossly underestimated, and funds may not match community needs.
- Community participation to pinpoint the real costs and benefits of adaptation interventions empowers communities and generates valuable data to inform global and national decisions.
- A new participatory costing framework, piloted in subsistence farming communities in East and West Africa, provides valuable insights into challenges and opportunities for effective community-based adaptation.
- Addressing challenges and opportunities before implementation saves precious time and resources, leading to better adaptation interventions and strategies.

There is consensus within the scientific community that even if we stop all greenhouse gas (GHG) emissions today, average global temperatures will continue to rise for some time as a result of complex feedbacks in the Earth's system. A warmer world will experience more intense rainfalls, droughts, floods and other extreme events. Households, communities and planners will therefore have to adapt to cope with, and reduce, the *"vulnerability of natural and human systems against actual or expected climate change effects"* (IPCC, 2007: p.76).

Adaptation to climate change has become a key theme in the strategies, planning and policies of global institutions, governments and non-governmental organisations worldwide. Yet adapting to climate change is costly, particularly for developing countries that rely on resources sensitive to climate change, such as agriculture and fishing, and that have little adaptive capacity. Many developing countries lack the ability to meet additional adaptation costs, making planned adaptation efforts more difficult (Stern et al., 2006). Yet without adaptation, development progress will be threatened and even reversed (World Bank, 2010).

One key challenge is the lack of accurate costing for adaptation to climate change. In addition, current approaches to identify the costs and benefits of adaptation are primarily

quantitative, using top-down methodologies that may grossly under-estimate the true costs.

This policy brief argues that global policies require credible evidence from the local level. Given that a single generic adaptation model is unworkable, the policy brief introduces a new analytical costing framework – Participatory Social Return on Investment (PSROI) – that has been piloted successfully in subsistence farming communities in East and West Africa.



Kaffrine Field Site, Senegal – Community members account for common assets (Author's own picture)

The challenges

A potential barrier to costing adaptation is how adaptation itself is defined. Put simply, adaptation encompasses all actions to ease the negative impacts of climate change. However, more formal definitions of adaptation diverge, revealing a lack of consensus on how adaptation can or should be conceptualised, and highlighting the complex nature of adaptive processes. Selecting an appropriate adaptation strategy means defining adaptation “*of what, to what, from whose perspective and over what time frame*” (Helfgott, 2011). Because these variables are so interdependent, changing even one would generate a different adaptation strategy.

Current efforts to identify the costs and benefits of climate change adaptation are primarily top-down and quantitative in nature. Several global estimates of adaptation costs have emerged, post Kyoto, ranging from \$4 billion a year to well over \$100 billion. However, these estimates are subject to a number of criticisms, being preliminary estimates, often incomplete, and/or subject to a number of caveats. Studies on the costs

of single adaptation options indicate that top-down models may grossly underestimate the total cost of adaptation and the amount of funding needed on the ground (Parry et al., 2009). While top-down models appeal to policy-makers because they are practical and easy to use, there is a serious risk of mismatch if top-down costing models are used to allocate funds at the local level where most adaptation takes place.

The differences in scale make it difficult to tackle economics and policies with one generic model, so we need a different type of model to bridge the divide between the global and local scales. The solution is not to project total costs using local estimates, but to look at global and local estimates together.

Beyond simply generating more reliable cost estimates at the local level, economic assessments need to reflect the actual needs and potential roles of local agents or stakeholders, exploring innovative ways in which they can be involved. This enters the domain of participatory assessments, in which local stakeholders are part of the process of research that leads to action. The stakeholder-focused approach to economic assessments is gaining attention in local level action research (see IIED 2011 on stakeholder-focused cost-benefit analysis in developing countries). When local stakeholders participate in the assessment process, the chances of the successful implementation of proposed adaptation strategies are higher than when assessments are done by outsiders.

Participatory Social Return on Investment (PSROI)

The novel Participatory Social Return on Investment (PSROI) framework values the bottom-up cost of climate change adaptation. The PSROI framework does not propose a new valuation technique (well-established practices already exist) but recommends a unique participatory approach.

PSROI is a structured framework for multi-stakeholder adaptation planning, with participatory processes at community level informing the selection and valuation of appropriate adaptation strategies and interventions. This gives policy-makers important insights into local context, allowing them to direct funding to initiatives identified and valued by local communities as being in line with their needs and capacities.

The PSROI framework builds on the growing Social Return on Investment (SROI)¹ valuation methodology – a modified cost and benefit analysis. This measures and accounts for a broader concept of value by incorporating *social*, *environmental* and *economic* costs and benefits. Put simply, it gauges the value created against the initial investment: for example, an investment of £\$100 may return £10 in one year, or a (P)SROI of 10%.

Rather than starting with a predefined intervention, the PSROI four-step valuation framework centres on community participation in the decision-making process at each stage of the valuation (Table 1). The community chooses the adaptation theme and intervention, and places a value on that intervention. This valuation, when compared with the potential return of the intervention, can identify key technical and implementation gaps that can be filled to improve the effectiveness of the intervention's design and implementation. The PSROI costing framework can be used by many stakeholders, including donors, local governments, practitioners, extension service providers, private sector suppliers and communities

¹ For more information on SROI, visit www.thesroinetwork.org.

themselves. Box 1 introduces the Kenyan field site, Kochiel Village, while Table 1 outlines the PSROI framework and field site results.

Box 1. Kochiel Village, Western Kenya

Kochiel Village in Kombewa District, Kisumu, Western Kenya is a small subsistence farming community near the Lake Victoria Basin with approximately 43 homesteads and farms of 1-10 acres. The main socio-economic activities include: small-scale farming, processing of agricultural products, small-scale commodity trade, and livestock rearing. The village has high levels of poverty and serious environmental degradation, due primarily to changing rain patterns, dwindling tree cover, significant soil erosion and declining soil fertility. The community is vulnerable to climatic variability and change because of multiple stresses, such as poverty, a high reliance on natural resources, a lack of safety nets and its low adaptive capacity. Farmer groups also have limited access to information on new farming technologies.

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Key steps	Description of methodology	Field results from Kochiel Village, Kenya
Step 1: Adaptation theme selection	PSROI analysis starts with a participatory approach to identify community-specific environmental challenges and to select appropriate broad adaptation themes such as soil degradation, water issues, etc. Methods can include multi-stakeholder workshops, focus group discussions and individual interviews. Backcasting can be used to select themes, starting with defining a desirable future and working backwards to identify suitable actions in the present.	The community voted for the theme of 'agroforestry' (inter-planting trees with crops) to address the main challenges of soil degradation and income diversification.
Step 2: Specific intervention designed	An appropriate intervention is selected to match the identified needs of the community. The intervention may be selected from a menu of established and tested interventions, such as World Bank Sustainable Agricultural Land Management practices, or may be newly designed by technical experts.	Under the agroforestry theme, the research team recommended inter-planting of local varieties of trees with crops – a technical intervention to match the community's identified needs.
Step 3: Baseline valuation	Baseline PSROI valuation of the economic, social and environmental outcomes of the intervention is undertaken using secondary data from academic literature, industry standards, case studies, key informants, etc.	A baseline value of KES (Kenyan Shillings) 47 for each KES 1 invested in the inter-planting intervention was calculated using secondary data (1 GBP = KES 135).
Step 4: Field testing of PSROI valuation	The baseline valuation of the selected adaptation intervention is validated using community insights generated from detailed interviews. Any discovered costs and benefits are included in the valuation. The testing and feedback process illuminates the community's perceptions of the intervention and allows for better matching of the intervention's design and selection with local needs.	The value decreased by approximately 50% (from KES 47 to KES 26 for each KES 1 invested) when data from field interviews with farmers were incorporated.

Table 1: The PSROI four-step valuation framework and field results.

The field results show that, in the case of Kochiel Village, when the community's estimate of the key input costs and benefits are included, the PSROI valuation drops by 50%. In other words, the community had a much lower perceived value of the intervention than the projected baseline value. The purpose of the comparison of the baseline valuation and community-based valuation is not to choose one result over another, but to quantify and recognise the differences between the two to inform decision-making and appropriate adaptation planning and design.

Key lessons

Although the Kenyan example is very specific, the PSROI framework provides an overall mechanism to cost any community-based adaptation initiative. Key lessons from the field site application include:

Community participation aids the design of adaptation interventions:

Development practices already encourage dialogue with communities to increase efficiency, effectiveness and sustainability. The PSROI solicits community participation at two stages: adaptation theme selection; and testing and valuing the intervention at community level. A low community valuation warns of either a mismatch of the intervention with local needs and/or poor perceptions of the intervention's potential benefits to the community. Tackling these challenges before implementation would save precious time and resources. A high community valuation, meanwhile, could signal potential opportunities for private and public sector funding. In another field site in Senegal, for example, community willingness to pay for private water supply, storage and distribution presented a potential economic opportunity for water utility companies.

Information gaps can skew valuations:

While farmers correctly identified key inputs for the technical intervention recommended by the research team, they had less success in identifying potential benefits. Complex interventions such as agroforestry projects that offer indirect benefits to agriculture are harder to visualise and may make the intervention less attractive to farmers, resulting in low uptake. Analysis of another agroforestry project in Africa showed that adoption rates were higher among farmers who received training than those who did not. Training and awareness-raising are, therefore, important components that should be considered in project planning and design to ensure effective implementation.

The need for long-term thinking:

It is difficult for communities in climate-vulnerable areas to visualise long-term benefits, given their immediate needs and the opportunity costs of delayed benefits. As a result, communities place a low value on distant benefits, making long-term interventions less attractive. As one farmer commented, despite recognising the long-term commercial benefits of trees: "If you have a tree and you need to feed the family, you [have to prematurely] cut it and sell."

An understanding of the specific needs of different stakeholders can help to match interventions to these needs, rather than offering generic solutions. Tailored project design that meets a variety of needs while improving long term adaptive capacity is more likely to succeed. For example, planting fast-maturing trees for animal fodder and firewood alongside slow-maturing timber trees may protect the latter from premature cutting.

Understand the diverse pressures on farmers:

The PSROI faces a challenge common to all costing frameworks: capturing the different risk preferences of individual community members. This limitation can create serious misconceptions among different shareholders. One government official in Kochiel blamed the low crop yield in the village on “farmers being lazy”, while farmers explained that they weren’t prepared to take the risk of using commercial fertilizers to increase yields, in case rains were late. Research indicates that, without credit or crop insurance, farmers will not necessarily grow the most profitable crops (Maddison et al., 2007; Candel, 2007). They will focus instead on low-risk, low-yield crops to ensure survival even if many of their crops fail. For the PSROI analysis to be effective, it needs to be supported by other cultural, political, institutional and viability analysis.

Recommendations:

The PSROI framework should be adopted by policy-makers as an effective bottom-up approach that supports community participation and, by extension, climate change adaptation. Although PSROI generates quantitative data and information, it is far more than simply a costing tool. It is a framework that not only values adaptation interventions, but also matches them to community needs.

Global top-down estimates are practical and easy to use, but fall short when used for on-the-ground funding allocation as they rest on broad assumptions that may not reflect local realities. At the same time, using local estimates to project global estimates is costly and risks overlooking the qualitative aspects of local perspectives of adaptation

National governments should use the PSROI framework to create a two-tier strategy to calculate adaptation costs, combining global estimates with national and regional funding allocation strategies to meet identified local needs. There are six policy incentives to do so:

1. Alongside global top-down estimates of adaptation costing, we need reliable bottom-up costing data to bridge the gap between policy and the actual needs on the ground.
2. A community-based adaptation costing framework like PSROI helps to minimize the subjectivity of external actors in the valuation by passing the onus of decision-making to the community.
3. While active participation does not guarantee that communities always choose the most beneficial interventions or adopt the most effective adaptation path, PSROI is effective in recording the process of change.
4. This record enables identification of where value is being created, who is creating it, and who benefits from.
5. By using this information, policy makers can make targeted efforts to make adaptation more effective and successful.
6. Finally by applying the PSROI in the local context, policy makers can follow a stakeholder-centric approach to identify and include hard-to-value and less obvious outcomes of an intervention in the valuation process. This allows a more inclusive and better valuation estimate that will help to direct funds towards interventions that are more valuable and effective.

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