

# Beyond cost-benefit: developing a complete toolkit for adaptation decisions

Cost-benefit analysis has important uses – and crucial blind spots. It represents only one of several economic tools that can be used to assess options for adapting to climate change in developing countries. The Nairobi Work Programme would best serve governments by considering not just cost-benefit approaches, but the entire range of tools. By developing a ‘toolkit’ that helps users choose from a variety of evaluation methods, we can support adaptation decisions that promote equity, put local people in control and allow for dynamic responses to climate change as it unfolds.

## Policy pointers

■ **There are several economic tools** for evaluating climate change adaptation plans; cost-benefit analysis is one of them.

■ **Communities often** make informal economic assessments of their decisions, taking into account their limited resources and a wide range of pressing needs.

■ **Adaptation means learning** by doing. Projected costs and benefits will always depart, sometimes significantly, from their initial estimates.

■ **The Nairobi Work Programme** should develop a simplified toolkit to guide policymakers, donors and facilitators in choosing the most relevant economic tools for their decisions.

### Dual risk

The developing countries most vulnerable to climate change have limited resources to support adaptation, and much at stake. Failure to adapt would cost lives, livelihoods and ecosystems, in addition to the purely economic cost: Africa, for example, could lose 3.4% of GDP by 2060 from just 2°C of global warming.<sup>1</sup> But inappropriate adaptation actions will be even more costly if they have unintended negative effects. The big economic question, then, is how to adapt effectively using scarce resources while avoiding expensive mistakes.

Cost-benefit analysis is a familiar tool that is being widely applied to this new question. The Nairobi Work Programme, organised by the UN to assist countries in evaluating their adaptation options, will focus on the approach in its June 2010 workshop. Up for discussion is the use of cost-benefit methods not only for Stern Review-style accounts of the costs of climate change internationally, but for adaptation planning at the country and community levels.

Yet not every adaptation plan demands a cost-benefit analysis, and applying this approach by default could hurt more than it helps. For some community-based adaptation, alternative tools are often better at capturing important concerns and aims. The options beyond accounting for costs and benefits include analysing cost-effectiveness, economic impacts or value as perceived by stakeholders (known as ‘social return on investment’). More informal assessments are often developed by the communities themselves.

In this briefing, drawing on practical experience with vulnerable communities, we highlight key points to be taken into account when considering using cost-benefit analysis for adaptation decision-making.

### Accounting problems

In traditional cost-benefit assessments of adaptation plans, the benefits of avoided climate change impacts must be assigned monetary values. But these benefits come in various forms – such as steadier agricultural yields, reduced loss of lives, access to markets and gains in local knowledge – not all of which can be realistically quantified.

And even the costs of adaptation are not easy to agree on, as shown by the wide variation in current estimates. For developing countries, the World Bank gives a range of US\$9-41 billion per year by 2020, Oxfam<sup>2</sup> at least US\$50 billion per year and the UN Development Programme a range of US\$86-109 billion per year. Some experts argue that the UNFCCC estimate of US\$27-66 billion per year for developing countries is a gross underestimate.<sup>3</sup> In most estimates, costs of adaptation for sectors where information is not available, such as ecosystems, are not included.

These costs are so hard to estimate because adaptation involves a complex mix of activities aimed at cushioning society from a range of impacts whose nature and magnitude are not precisely known. Effective adaptation empowers communities to make changes to their lives and livelihoods as the impacts

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become clear. Such an open-ended approach does not lend itself to up-front direct accounting of the total price of inputs into a given project. Instead, it involves planning and efficient deployment of limited resources in both the short and long term.

## Reality check

As vulnerable communities begin this planning process on the ground, several common issues are emerging that challenge traditional cost-benefit analysis.

- Practical adaptation at the community level seeks **win-win outcomes** – ones that benefit both local communities and the ecosystems on which they depend. This depends on a strong understanding of how the local ecosystems and farming systems function. To achieve synergy with these systems, planners must draw extensively on local knowledge, introduce new knowledge and make wise use of scarce resources. Formal approaches to costing usually contribute little to this process because they rely on market values, excluding those who do not participate in formal markets.
  - Most community-based planners **assess values without using quantitative cost-benefit analysis** for the following reasons: they recognise that many of the benefits they are seeking are intrinsically difficult to value; it is an information-intensive (and therefore costly) tool for small-scale projects; and it doesn't lend itself easily to social weighting. Moreover, some development NGOs take the view that the local people should usually decide themselves what they want to invest in, using their own criteria. This does not mean that communities neglect to assess the costs and benefits of different intervention options, but rather that value is assigned locally and not through a formal accounting process.
  - **Project designs minimise direct costs and external impacts.** Community adaptation projects often seek to use technologies and approaches that can be scaled up at low cost, using materials and other resources available locally. These types of approaches have the benefit of avoiding negative impacts on the environment and other communities. Too often cost-benefit analyses can omit these impacts.
  - **Failure and learning have value.** Coping with change requires new skills and knowledge. At the local level, a learning-by-doing approach to adaptation is essential. In such an approach, there will be interventions that do not succeed at first, or that need to be tailored to local conditions. In a strict cost-benefit analysis, these are labelled as costs without benefits, and the value of learning from the process is not considered. Failure, of course, is not justified by its educational value; it is simply a reality
  - of the adaptation and development process that is not captured well in cost-benefit analyses.
- **Marginalised communities** – people usually kept out of decision-making by geography or politics – need special consideration. How can costs and benefits be balanced where one community or stakeholder benefits and another suffers, such as when an industrial user's access to scarce water means a loss of access for small-scale farming communities? If an intervention allows the industrial user to adapt at the farmers' expense, how do we weigh the economic contribution to exports against the drop in local food production and food security? How do equity and rights issues fit into an economic framework? Those most marginalised are often highly vulnerable to climate change. Scarce funds for adaptation will require challenging political decisions that could too easily lead to further marginalisation and increased vulnerability.
  - Integrated community-based adaptation often involves **encouraging biodiverse agriculture** to ensure resilience in food-production systems. In many cases the benefits for climate change adaptation and mitigation are clear, and the costs lower than those of intensive monocultures; yet a typical cost-benefit framework may not recognise this. Costs are often not counted when they occur in other sectors, such as energy, forests or local governance. Alternative tools such as economic-impact analysis are better at evaluating the entire picture.
  - An adaptation programme should increase **adaptive capacity**, the ability to live with and make decisions under continuing uncertainty. Adaptive capacity improves when people are well-linked into networks with access to information and resources. Although some NGOs and academic institutions are developing metrics for adaptive capacity, social networks will not easily be assigned an economic value for cost-benefit accounting.
  - Cost-benefit analysis does not lend itself to assessing **long-term outcomes** 20 years from now or more, especially in the context of great uncertainty.
  - Because the rules of cost-benefit analysis discount future benefits, they assign low value to **early preventative action** that averts catastrophe in the long term. Especially at the local level, the margin between costs and benefits may not imply that such actions are not necessary.

## Unmet needs

Cost-benefit analysis can also fall short when it comes to meeting key needs in community adaptation planning. These needs include:

- **Putting people at the forefront.** For adaptation to be sustainable at the local level, people must be able

to control and adapt the technologies they use for their livelihoods and for managing natural resources. Assuming that adaptation will be sustainable on the basis of a cost-benefit rule alone could be risky.

**Equity.** If national and international funding for adaptation is to address the needs of those most affected by climate change, social and equity issues will need to be given greater prominence than they receive in current cost-benefit frameworks.

**Dynamic planning.** Adaptation planning and action must be dynamic and iterative. Because knowledge of long-term climate scenarios is imprecise, actors can plan in advance only for very general adaptation paths. In the future, quick action may be needed in response to seasonal weather forecasts and other climate information that is available only in the short term. Generic long-term plans will have to be elaborated in detail as changes emerge, and perhaps significantly revised to counter unanticipated climatic trends. Thus, even where cost-benefit analysis is required, the initial estimation of costs and benefits may become inaccurate over time. Decision-makers should be applying dynamic tools continually.

## Different tools, different uses

At the international level, cost-benefit analysis is more worthwhile than at the community level. For example, the Stern Review's finding that the cost of inaction on climate change is 20 times higher than the cost of action has stimulated international policies leading to local action around the world. Moreover, the various estimates of the costs of adaptation in developing countries have provided a starting point for the international community to gauge the likely requirements for adaptation finance.

By contrast, countries' decisions on what adaptation programmes to set up, and at what scale, will be informed by other factors such as risk assessment, not just by costs and benefits. At the detailed level of the community, costs and benefits of adaptation can realistically be tallied when comparing options for specific capital investment projects, such as water supplies. But outside such well-specified types of action, cost-benefit analyses have severe limitations.

These limitations need not impede decision-making. For the most vulnerable communities – in Uganda, for example, where heavy rains caused lethal landslides this March, or in small island nations that could disappear below rising seas – the need to address climate change is obvious without using numbers to justify it. And between this broad view and the details of specific projects, the variety of activities and processes that constitute climate change adaptation should be assessed using different economic approaches. Well-rounded assessments can deliver illuminating results: in Namibia and Tanzania, for example, economic analyses found climate change could have an economic impact of less than 1% on gross domestic product, but equity and distributional analyses revealed that the burden would lie heavily on smallholding farmers and the urban poor.<sup>4,5</sup>

One of the questions the Nairobi Work Programme will need to be clear about is why costs and benefits need to be estimated in the first place. If the task is allocating national resources to get the most adaptation bang for your adaptation buck, then there is some purpose for cost-benefit analysis. But even where costs and benefits must be evaluated, methods for capturing and quantifying them need to go beyond traditional valuation techniques, especially in data-scarce environments.

They should include concepts such as social return on investment, in which stakeholders help identify hidden costs and benefits that are not part of formal markets.

## Toolkit for adaptation decisions

Instead of focusing narrowly on cost-benefit analysis, the Nairobi Work Programme should assess the full range of economic decision tools. To serve its mission of supporting government decision-making, we recommend that the Programme develop a 'toolkit' designed to help a diverse audience choose appropriate valuation methods for their needs. The kit's users will include communities, NGOs, local and national governments, and others in the international community.

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The International Institute for Environment and Development (IIED) is an independent, nonprofit research institute working in the field of sustainable development. IIED provides expertise and leadership in researching and achieving sustainable development at local, national, regional and global levels. This briefing has been produced with the generous support of Danida (Denmark), DFID (UK), DGIS (the Netherlands), Irish Aid, Norad (Norway), SDC (Switzerland) and Sida (Sweden).

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## Notes

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- <sup>2</sup> Oxfam International. 2007. *Adapting to Climate Change: what's needed in poor countries, and who should pay*.
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- <sup>3</sup> Parry, M. et al. 2009. *Assessing the Costs of Adaptation to Climate Change: a review of the UNFCCC and other recent estimates*. International Institute for Environment and Development and Grantham Institute for Climate Change, London.
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- <sup>5</sup> Reid, H., Sahlén, L., Stage, J., MacGregor, J. 2007. *The Economic Impact of Climate Change in Namibia: how climate change will affect the contribution of Namibia's natural resources to its economy*. Environmental Economics Programme Discussion Paper 07-02. International Institute for Environment and Development, London.