LEARNING BRIEF

3

Making the economic case for Ecosystem-based Adaptation

GLOBAL ECOSYSTEM-BASED ADAPTATION IN MOUNTAINS PROGRAMME

Using Cost-Benefit Analysis to promote EbA

From 2011 to 2015, the global Ecosystem-based Adaptation (EbA) in Mountain Ecosystems Programme (hereafter referred to as the Programme) has been testing EbA measures in pilot mountain sites in the Himalayan foothills of Nepal, the Andes in Peru and Mount Elgon in Uganda.

Ecosystems provide a variety of services, underpinning human well-being and socio-economic development. Various investments can be made – i.e. EbA measures – to maintain or enhance these ecosystem services in order to help people adapt to anticipated climate change. Proving the cost effectiveness of these measures is essential to making the case for EbA to stakeholders, ranging from local communities and planners to national level decision-makers and donors. This learning brief highlights how cost-benefit analysis (CBA) can be used to make the economic case for EbA.

CBA is a decision-making tool that can help evaluate the economic feasibility of a proposed intervention that results in certain benefits and costs. It identifies potential direct and indirect physical impacts of an intervention, quantifies them and values them in monetary terms across a relevant timeline and then evaluates them using specific tools like net present value (NPV)[1]; the internal rate of return (IRR)[2]; and/or a benefit-cost ratio (BCR).[3] CBA can be used to estimate the cost of EbA measures and compare this with the benefits provided by retained or enhanced ecosystem services. If the benefits exceed the costs, it may make economic sense to invest in these measures. The overall net benefit or cost can then be compared with that of other options, or with the path of non-intervention. CBA thereby offers a relatively objective way to choose between various competing alternatives by weighing their relative costs and benefits. The results from a CBA can provide evidence for an optimal adaptation option that decision-makers should invest in.

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based on a decision of the German Bundestag

Case Studies 1-3 in this brief present some of the CBA work carried out by the Programme, while the final section provides some general lessons learned about applying CBA to EbA. The information is a summary based on the Programme's legacy report, Making the Case for Ecosystem-based Adaptation: The Global Mountain EbA Programme in Nepal, Peru and Uganda.

A MEMBER OF THE PANCHASE WOMEN'S NETWORK HARVESTING AMRISO/BROOM GRASS IN PANCHASE, NEPAL.
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Applying Cost-Benefit Analysis to the Mountain EbA Programme

CBA for climate change adaptation is typically done as part of a planning process for deciding between alternatives for climate change adaptation. Under this Programme, however, the CBA was instead applied to EbA measures already under implementation in order to test their economic validity against BAU approaches that allow degradation to continue, or other alternative adaptation options (e.g. using infrastructure to adapt). In all three country cases, the CBA sought to understand if EbA would be the optimal choice, and to understand the deciding factors and circumstances. As a result, the findings could be used to guide decision-making on future EbA investments.

In terms of scope, the CBA focused on entire communities in Nepal and Peru, as EbA measures are implemented primarily on communal land. In contrast, in Uganda individual farmers were the focus, as they own their land and tend to take decisions at household level.

In Nepal, the CBA methodology was applied to various EbA measures addressing landslides and erosion: 1) Plantation of broom grass (*Thysanolaena maxima*) in degraded grasslands; 2) Plantation of Timur (*Zanthoxylum armatum*) on private land; 3) Construction of gabion walls and revegetation along the banks of the Harpan River; and 4) proposed siltation dams on the streams of Harpan River. The first three interventions are currently being implemented in the project area, while the CBA for the siltation dam was carried out to measure the feasibility of the possible investment. Case Study 1 provides a brief summary of the CBA of broom grass cultivation. For more information on the other case studies, see Kanel (2015).

The CBA conducted in Peru focused on the EbA measures implemented in the community of Tanta in the Nor Yauyos Cochas Landscape Reserve. Programme interventions here are focused on wild vicuña management, animal husbandry and sustainable grassland management, in order to generate hydrological and other ecosystem service benefits that help the community and downstream water users adapt to climate change.[4] As a result, livestock is now separated in grazing areas with natural and built fences, and the wild vicuñas are allowed to roam in the northern part of Tanta. These measures to manage grazing and rangelands are expected to lead to increased vegetation cover, reduced loss of soil cover and enhanced water infiltration capacity, which in turn will help maintain water provisioning and regulation services in the face of anticipated climate change impacts (see Case Study 2).

In Uganda, farmer households needed to be convinced that adopting EbA practices, such as soil and water conservation measures, reforestation and riverbank management, will lead to higher revenues and better yields for their farms over time, under current and projected climate change scenarios. The CBA compared the outcomes of farmers implementing these EbA practices vs. farmers not practising EbA (BAU scenario) – see Case Study 3.

As outlined in all three case studies, the CBA findings show that all the Programme-supported EbA interventions are more profitable and viable in terms of benefit-cost ratios than the business as usual scenarios. These results therefore make a strong economic case for EbA to decision-makers.

Case Study 1 | Cost-benefit analysis of broom grass cultivation in Panchase, Nepal

Based on Kanel (2015), Rossing et al. (2015) and Case Study 7 in UNDP (2015a).

Introduction and methodology

The Panchase region is characterized by a high degree of outmigration, particularly by young men. As a result, approximately 30 percent of the land originally used for cultivation in the region is currently abandoned, including overgrazed and unproductive grasslands and crop terraces. This land is vulnerable to rising temperatures and unstable rainfall patterns that are drying up water sources, changing vegetation characteristics, and making landslides more frequent and severe.

Broom grass (*Thysanolaena maxima*), an indigenous plant commonly known as Amriso or broom grass, is a popular plant in Nepal that has proven to be useful as part of an EbA approach. It can thrive on dry lands, thereby helping rehabilitate degraded lands; and improve slope stability with its strong web-like rooting system, reducing soil erosion and landslides. Amriso can also provide an alternative source of income for sustainable livelihoods. There is large market for the sweeping brooms made by the plant panicles, while the leaves of the plant can be used as livestock fodder and the stems as fuelwood. The programme is therefore supporting the Panchase Women's Network to scale up Amriso plantations on marginal, barren land.

The CBA involved two scenarios of project or investment outcomes – one with the broom grass cultivation intervention and the other without it (Business as Usual (BAU) scenario), which concerned cultivating a shorter grass on degraded grassland, and harvesting it only for fodder. Costs for BAU included annual rental fee of the land; yield of grass from the degraded grassland; cost of harvesting and transportation of the grass to the household. Benefits included the value of the grass for household use. Given that this grass does not have strong root systems, which bind the soil, no additional benefits would be provided for soil conservation in the face of changing rainfall patterns.

The methodology included a desk study, expert and stakeholder consultations. Data was gathered from pilot sites with the project team and stakeholders on the types of ecosystem services and their values, through various market and non-market (including applying valuation techniques such as benefit transfer, replacement cost and avoided damage cost) mechanisms.

Benefits included the sale of brooms and bundles of broom grass; household use of leaves for feeding livestock, including in the dry season; household use of stems for fuel, reduced soil erosion and reduced sedimentation downstream as a result. Similarly, the cost of the EbA interventions was calculated based on the types of financial disbursement made by the project for each EbA intervention, and the breakdown of such costs and other costs borne by the stakeholders and beneficiaries in the project area. These included initial costs of land preparation and weeding; rhizomes as planting materials; training costs for the women's network; and wages for maintaining the broom grass plantation. Economic analysis was carried out to estimate benefit-cost ratio, internal rate of return and cost-effectiveness of the EbA interventions. For more detailed information on methodology, see Case Study 7 in UNDP (2015).

Results of analysis

Table 1 presents the results for the discounted present value of benefits, costs and the three decision criteria (NPV, BCR and IRR) that relate to the two scenarios. It should be noted that the net impact of EbA is the difference between the BAU scenario and the EbA. Since the net present value is significantly higher for the EbA scenario than the BAU (about nine times higher) and the ratio of benefits to costs for the EBA scenario is 1.3, the EBA intervention of broom grass proves to be relatively profitable. Other decision criteria also suggest that the EbA scenario is preferable to the BAU scenario – the internal rate of return of 21 percent is higher than the discount rate of 10 percent, which is the assumed cost of capital. In conclusion, the cost-benefit analysis revealed that broom grass plantation remains a viable and profitable investment compared to business as usual.

Table 1 | Economic analysis of broom grass plantation (Nepali Rupees per Ha)

Profitability indices	Without project (BAU scenario)	With project (EbA scenario)
Discounted annual net benefit	(-NRs 3,528)	
Net present value (NPV)	-NRs 29,618	NRs 277,392
Benefit cost ratio (BCR)	0.9	1.3
Internal rate of return (IRR)		21%
Calculated with a discount rate of 10 % and a life span of 15 years		

Case Study 2 | Cost-benefit analysis of sustainable grassland management, vicuña management and animal husbandry in Tanta, Peru

Based on case study by Elgegren & Abanto (publication forthcoming) and Case Study 9 in UNDP (2015a).

Introduction and methodology

The cost-benefit analysis (CBA) was carried out in the District of Tanta within the Nor Yauyos Cochas Landscape Reserve. This is a mountainous area in the High Andes formed primarily of wetlands and grasslands. The area has potential for commercial grazing of alpacas and sheep, although current management practices have led to overgrazing, soil erosion and an increase in invasive plants. The supported EbA measures include vicuña management, combined with animal husbandry and sustainable grassland management, in order to generate hydrological and other ecosystem service benefits that help the community and downstream water users adapt to climate change.

A conventional CBA was carried out, extending the scope to both market and non-market benefits generated by the EbA measures. The CBA studied two scenarios: i) without the EbA measures (BAU); and ii) with the EbA measures. BAU was defined as the continuation of current livestock management characterized by overgrazing and sharing of pastures by livestock and vicuñas, with loss of vicuñas as a result of sharing limited, overgrazed land. Both scenarios assumed the impact of climate change over time on temperature, soils and water availability, which ultimately impact on Tanta's carrying capacity.

Eight ecosystem services were valued in terms of change in productivity: i) food for domestic cattle and vicuña; ii) provision of alpaca fibre; iii) provision of (sheep) wool; iv) provision of alpaca meat; v) provision of sheep meat; vi) provision of beef; vii) provision of vicuña fibre; and viii) provision of water for agricultural purposes. Carrying capacity was also valued for food for domestic cattle and vicuña. Sources for estimating productivity changes included studies and consultations with technical field staff. The analysis used a 4 percent discount rate over a time horizon of 20 years.[5]

Tanta was divided in two different project areas: i) community farm, where domestic cattle (cow, sheep and alpaca) are raised; and ii) vicuña management, where vicuñas are managed in the wild. The main costs of the community farm include: i) equipment and inputs, e.g. fences, trucks, slaughter house, veterinary services, etc.; ii) labour, e.g. infrastructure construction and maintenance, shepherding, etc.; iii) training; iv) internship programme; and vi) provision of technical assistance. As for the vicuña management, the main costs were: i) inputs for basic chaccu (the act of temporarily gathering wild vicuñas to shear them); ii) shearing equipment; iii) labour for chaccu and shearing; iv) training; and v) internship programme.

Results of analysis

The CBA revealed that the EbA measures were a viable and profitable investment compared to the BAU scenario. Table 2 shows the profitability indices. The internal rate of return (IRR) is not included because the net benefit is not negative. The net present value (NPV) is twice as much in the case of the project (EbA) scenario, compared to the BAU scenario. While both the BAU and EbA scenarios have a BCR greater than 1, making both profitable, the BCR is much higher at 2.71 for the BAU scenario, compared to 1.27 for the EbA scenario. Figures for discounted net benefits over the 20-year evaluation period also revealed that the figures become positive under the with–EbA scenario as early as year 2 (2016) and keep well over the flow of discounted net benefits of the alternative scenario through the end of the period. This is another strong indication that the EbA scenario is preferred economically over the without–EbA scenario..

Table 2 | Economic analysis of grassland management, vicuña management and animal husbandry in Tanta (Peru)

Profitability indices	Without project (BAU scenario)	With project (EbA scenario)
Net present value (NPV) Soles	S/. 1,381,862.61	S/. 2,391,004.37
Net present value (NPV) US Dollar	$ 486,571.34	$ 841,902.95
Benefit cost ratio (BCR)	2.71	1.27
Internal rate of return (IRR)	NA	20%
Calculated with a discount rate of 4% and a life span of 20 years (2014-33)		

Note: The Peruvian Nuevo Sol (PEN) is the currency of Peru.

Case Study 3 | Cost-benefit analysis of different farming practices in Mount Elgon, Uganda

Based on UNDP (2015b) and Case Study 10 in UNDP (2015a).

Introduction and methodology

In Mount Elgon, Uganda, the programme focused on catchment management, combining soil and water conservation measures, reforestation and riverbank management. This was done as part of a broader adaptation strategy to address expected climate change impacts, mainly soil erosion, landslides, drought and flooding. In making the case for EbA, households needed to be convinced that adopting these EbA practices would make them more resilient, while resulting in higher revenue and better yield from their farm over time, including under projected climate change scenarios.

The economic assessment made use of a profitability analysis (a gross margin analysis) that fed into the broader cost-benefit analysis (CBA). The CBA was used to show the net present value of farmers implementing the above EbA practices, defined as 'EbA farming practices', vs. farmers not practising EbA (BAU scenario) in the Mount Elgon landscape. The net present value projections were calculated with a discount rate of 12 percent over a life span of 15 years. The data used to evaluate the outcomes for each of these farmer types was constructed from a set of data obtained from real farmers, gathered across 12 sub-counties in all 4 programme districts. Each farmer was classified as either an "EbA-practising farmer" or a "non-EbA-practising farmer." Overall, 770 people were interviewed, of whom 375 were EbA-practicing farmers, while 395 respondents were categorized as non-EbA-practising farmers. The analysis of farm level revenue was used as input to the CBA to measure the effectiveness of each type of farming practice.

Given the focus on private landowners at the household level in Uganda, household level primary data was needed in order to evaluate the impact of EbA interventions. This required sampling of households undertaking the various EbA interventions that were to be evaluated (e.g. digging trenches or drainage channels, constructing grass bunds, and agroforestry with indigenous trees). The sample had to be chosen to reflect these particular activities undertaken by a farmer, which classified him or her as an EbA farmer. There was also a need to represent upstream, midstream and downstream project interventions in the sampling, and a spread in terms of varying benefits and/or measures that were adopted. For more detailed information on methodology, see Case Study 10 in UNDP (2015).

Challenges arose concerning how to appropriately classify and identify an EbA farmer versus a non-EbA farmer. Making this distinction was essential so as to be able to estimate the impact on productivity and profit of adopting an EbA strategy on a given farm. Farmers enrolled in the Mountain EbA programme were not the only farmers practicing EbA-type measures on their farms and this needed to be captured. This required a detailed survey that was stratified to reflect a range of activities of farmers in the districts.

Results of analysis

The results of the cost-benefit analysis (the net present value) showed that the measured EbA practices were not only viable, but also that the viability can be sustained in the long run, even at the relatively high 12 percent discount rate. The practice of EBA was viable throughout the landscape with the exception of the midstream areas in Kapchorwa and Kween Districts, where poor absorption of EBA practices, rather than the use of the EBA practices per se, seemed to result in this apparent limitation. Even in the areas where EbA practice was not viable, the failure to achieve positive outcomes was more a result of partial or flawed implementation of EbA practices, rather than the EbA practices themselves.

The findings further highlighted that livelihood-related EbA practice should be linked to strong commodity value chains to enhance the monetary income for farmers. Additional applied research is needed to identify more synergies between the EbA measures, ecosystems and climate change adaptation based on existing livelihoods. There is also a need for increased focus on both subsistence and commercial crop enterprises, including stimulating increased crop diversity.

AN EBA-PRACTISING FARMER IN UGANDA BENEFITTING FROM HEALTHY AND ABUNDANT CROPS FROM CLIMATE-RESILIENT AGRICULTURE.
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Lessons on doing cost-benefit analysis for EbA

Undertaking cost-benefit analysis can be challenging for a number of reasons. Quantifying and estimating monetary values of any commodity can be difficult. This is even more difficult when ecosystem services and environmental resources are considered. Many environmental goods are either extremely problematic to value in practice, or confidence in the values/methodology used may be low. This requires careful selection of economic methods. It also requires caution in avoiding underestimating and overestimating benefits and costs.

Conceptualizing total benefits from an EbA measure can be difficult for an economist who is not familiar with the biophysical nature of the project site. For example, for the CBA of broom grass cultivation in Nepal (Case 1), initial focus was on the economic value of livelihood benefits. Bringing in the ecosystem benefits took time. An argument was gradually built up about the value of the roots' soil binding and water retention capacity as ecosystem services that can help adapt to climate change. Undertaking a cost-benefit analysis for EbA measures is thus likely to require more extensive background research on multiple benefits than is normally the case when doing CBA.

Quantifying benefits in a CBA is also challenging. Certain data on benefits, such as those relating to ecosystem functions, can be hard to obtain. For example, making a comprehensive assessment of how grassland management, water retention capacity and soil erosion are interlinked in Tanta in Peru (Case 2) required not only observation but detailed monitoring and scientific expertise.

Lack of data can also lead to an undervaluation of the benefits provided by EbA. The experience of the Programme has shown that, while ideally site-specific data would be used in undertaking cost-benefit analysis for EbA interventions, proxy data from other, similar sites, can be used when necessary. In the case of broom grass, understanding its production process and yield was important, as well as the ecosystem services the plant provides. However, implementation in Panchase had only recently begun and could not be used to gather needed data. Projects in other parts of the country that had invested in broom grass were therefore used to evaluate the investment for this project. This is a standard technique in CBA, known as benefit transfer. In this case, the yield of the broom grass as observed in another location was assumed to be the same on average as at the project site, based on observed similarities in climatic conditions.

Time is an important factor, too. It may take too long to generate the necessary information on benefits for the CBA for it to be of value to a specific decision-making process. The economist thus needs to make a tradeoff between delaying to include more benefits vs. proceeding with only the available benefits that are easily calculated. For instance, in Peru, estimates of the water retention/infiltration capacity provided by partners were not identified in time to be incorporated in the final CBA report and therefore had to be left out.

It is further challenging to incorporate climate change considerations into the cost-benefit analysis. In order to do so, it may be necessary to build on other studies that have already estimated the anticipated impact of climate change on the specific project area. In many cases, however, this information is not available or only available at the national or regional scale, requiring further work to be downscaled to the project site.

Finally, it is not always easy to capture all benefits. For example, In Nepal, the broom grass scenario also provides additional benefits, which were not quantified and included in the CBA. As broom grass grows quickly and requires minimal time and effort to plant and maintain, cultivating this plant is a good fit for the women's demanding schedules and increasing workloads in an area with high male outmigration. An unanticipated benefit is that, by involving women from different castes, not only are the involved women being empowered; the cooperative broom grass cultivation is also helping to break down caste-determined social and cultural barriers. As a result, the EbA scenario becomes even more attractive if these additional benefits are accounted for.

REFERENCES

Elgegren. J O & Abanto, D (publication forthcoming). Cost-benefit analysis for sustainable grassland management, vicuña management and animal husbandry in Tanta, Peru.

Kanel, K 2015. *Cost-benefit analysis of EbA interventions: Case studies from Panchase Project Area.* Draft, unpublished.

Rossing, T, Chhenjum Sherpa, N & Egan, A (2015). *Challenging gender roles and crossing castes: Promoting women's livelihoods through broom grass cultivation in the Nepal Himalaya.* UNDP.

UNDP (2015a). *Making the Case for Ecosystem-based Adaptation: The Global Mountain EbA Programme in Nepal, Peru and Uganda.* UNDP, New York.

UNDP (2015b). *Natural Resource Economic Analyses for the Ecosystem Based Adaptation (EbA) Project in Mount Elgon Ecosystem:* Draft Report. Uganda, Ministry of Water and Environment. Unpublished

END NOTES

1 **Net present value (NPV):** This is the difference between the discounted benefits and discounted costs of an intervention. An intervention is said to be desirable if the sum of discounted benefits is greater than the sum of the discounted costs.

2 **Internal rate of return (IRR):** the internal rate of return is defined as the discount rate that makes the stream of benefits equal to the stream of costs. The internal rate of return is compared to the discount rate to decide if the intervention is beneficial or not. An intervention with an IRR that is higher than the discount rate is considered a good one. Technically, this implies that the return from the intervention is higher than the cost of capital that goes into it.

3 **Benefit cost ratio (BCR):** The benefit cost ratio is the ratio of the discounted stream of benefits and the discounted stream of costs. A benefit cost ratio of 1 implies that the benefits are equal to the costs.

4 For more information, please see Case Study 5 in UNDP (2015).

5 This follows the practice of the Government of Peru on the use of 4 percent discount rate for the evaluation of climate change mitigation projects, the prescription of the UN Economic Commission for Latin America and the Caribbean (ECLAC) and other countries globally. The Mountain EbA Programme also did calculations using a discount rate of 9 percent, as that is the rate applied by the government of Peru for project types other than climate mitigation projects. For more information on the results of these calculations, see UNDP (2015).

INFORMATION ABOUT LEARNING BRIEF SERIES

This brief is part of a series of learning briefs produced by UNDP. These briefs draw together experiences and lessons learned from working on ecosystem-based adaptation (EbA) within the global Ecosystem-based Adaptation (EbA) in Mountain Ecosystems Programme from 2011 to 2015. The content also draws on lessons generated by the broader global EbA community of practice. The briefs are designed for practitioners, including local government representatives, civil society organizations and other actors working on climate change issues. They will also be useful for policy makers and donors engaged in planning and allocation of resources for adaptation action.

The Programme is a partnership between UNDP, UNEP and IUCN, with funding from the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). This global partnership also involves national and regional government agencies, civil society and local communities in Uganda, Nepal and Peru. By promoting the use of sustainable management, conservation and restoration of ecosystems, as part of an overall adaptation strategy, the Programme aims to reduce the vulnerability and enhance the resilience of fragile mountain ecosystems and their local communities to climate change impacts.

LEARNING BRIEF SERIES

This learning brief is part of the following series:

1. Introduction to Ecosystem-based Adaptation: A nature-based response to climate change;
2. Generating multiple benefits from Ecosystem-based Adaptation in mountain ecosystems;
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ACKNOWLEDGMENTS

The following colleagues provided valuable suggestions, reviews and contributions: David Abanto, Edith Fernandez Baca, Jorge O. Elgegren, Keshav Kanel, Moses Masiga, Paul Nteza and Yalamber Rai.

Special thanks to Caroline Petersen for her detailed review, technical guidance and ideas.

DESIGN AND LAYOUT

Phoenix Design Aid A/S, a CO2 neutral company accredited in the fields of quality (ISO 9001), environment (ISO14001) and CSR (DS49001), and approved provider of FSC™ certified products.

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Source: Mountain EbA Programme (2014)