

Ecosystem based Adaptation: Building on No Regret Adaptation Measures¹

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Key Messages

The no-regret approach is an important part of EbA and focuses on maximizing positive and minimizing negative aspects of nature based adaptation strategies and options. No-regret actions include ... *measures taken by communities [and/or facilitated by organisations] which do not worsen vulnerabilities to climate change or which increase adaptive capacities and measures that will always have a positive impact on livelihoods and ecosystems regardless of how the climate changes².*

- Involvement of stakeholders from various levels coupled with indigenous and scientific knowledge, at different stages of implementation decreases the likelihood of maladaptation and promotes ownership and sustainability.
- Climate change and variability impact men and women differently due to their differential roles, thus ensuring gender integration and the inclusion of all segments of society, including ethnic groups and minorities, are extremely important steps at all stages of decision making for no-regret actions as well as long-term adaptation planning.
- A 'do no harm policy' must be part of any no-regret planning and subsequent long-term adaptation planning to ensure that social, economic, and ecological wellbeing is not compromised at any stage of implementation of no-regret actions and avoiding any maladaptation.
- In order to appraise the effectiveness of available options, it is important to undertake economic analysis to facilitate decision making before investing scarce resources meant for enhancing community climate resilience.
- When implementing agencies undertake no-regret actions requiring high financial costs, they are extremely hard to maintain or replicate by communities on their own. In case of inevitability of any such measure to address a prioritized vulnerability by local community, the utmost care must be taken to engage local government and relevant authorities for future financial input.
- Awareness raising and participatory vulnerability assessments ensure that communities learn the importance of no-regret implementation. Being involved in participatory monitoring and evaluation also further increases knowledge, provides options for required changes as well as ensures sustainability and a strong foundation for future climate resilience planning.

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² Working definition of no-regret actions by UNEP, UNDP, and IUCN under the Mountain EbA Project

Adaptation to the negative impacts of climate change is necessary for the continued sustainability of human societies and natural systems. Climate science data combined with the increase in extreme weather events show that both human and ecosystems are vulnerable to these impacts. Therefore, adaptation together with mitigation needs to be an integral part of any climate strategy. Adaptation is needed to deal with those impacts of climate change that are already underway, which (as per IPCC 2001)ⁱ means that both natural and human systems will need to adjust to variability and changes in climate.

It is clear that healthy, well-functioning ecosystems are more resilient to the effects of climate change and as such reduce the vulnerability of people to its impacts. Ecosystem Based Adaptation (EbA) is an approach that uses biodiversity and ecosystem services as part of a holistic adaptation strategy to assist human beings to adapt to climate change, by reducing vulnerabilities and increasing resilience of both human and natural systems.

The no-regrets approach is an important part of EbA and focuses on maximizing positive and minimizing negative aspects of nature based adaptation strategies and options. **UNEP, UNDP and IUCN developed a working definition of 'no-regret' actions under the Mountain Ecosystem based Adaptation Project³ as those, including autonomous measures by communities which do not worsen vulnerabilities to climate change or which increase adaptive capacities; and measures that will always have a positive impact on livelihoods and ecosystems regardless of how the climate changes.**

According to The World Bank no-regret options are "*adaptation options (or measures) that would be justified under all plausible future scenarios, including the absence of manmade climate change*"ⁱⁱⁱ. These are essentially activities that provide benefits even in the absence of climate changeⁱⁱⁱ.

However, there is still a reluctance to recognize the need to implement adaptation strategies and options due to the uncertainty regarding future climate change and its impacts^{iv}. "*Not only are impacts of climate change themselves uncertain but they will occur in a future world that is complex and uncertain as well.*"^v

Previously uncertainty was incorporated into sustainable development through the precautionary principle^{vi}, and the UNFCCC urged parties to "*take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects*". It also urged that uncertainty should not be used as a reason to not take action^{vii}. As such no-regrets actions are a follow up of the precautionary principle, that involves all stakeholders and considers economic, social and environmental contexts, whether climate change events and/ or hazards take place or not^{viii}. The idea behind no-regrets options is to improve the ability of people and nature to cope with climate change impacts and disasters, in order to deal with any potential future issues. The important thing to understand is that it does not deal with correcting one off climate impacts. It means undertaking on the ground activities to improve knowledge and capacity in order to be able to deal with uncertainties^{ix}. This translates to dealing with current climate change as well as building adaptive capacity for future. According to Klein "*adaptation measures that have both immediate and long term benefits can be termed no-regret adaptation measures.*"^x

The World Bank no-regrets approaches help to close the adaptation deficit in areas where underinvestment has led to increased vulnerability and low resilience. In terms of EbA, it means looking at both natural resource management and livelihoods that depend on them.

A step towards making adaptation strategies no-regrets is to ensure that they are not only a part of local, regional and national planning frameworks but are also owned by local communities and responsible authorities. Another aspect to consider is maladaptation, which occurs when options are implemented that have negative consequences that outweigh the benefits of the undertaking the strategy^{xi}.

³ *Ecosystem-based Adaptation in Mountain Ecosystems*, sponsored by IKI-BMUB, is being implemented in Nepal, Peru and Uganda jointly by UNEP, UNDP and IUCN.

The question that arises is what are the reasons for either implementing or not implementing no-regret measures even if they have been identified. This could be due to (i) financial and technology constraints; (ii) lack of information and transaction costs at the micro-level; and (iii) institutional and legal constraints.^{xii}

Examples from Nepal, Peru and Uganda

In this paper we highlight the use and implementation of no-regrets measures in Nepal, Peru and Uganda as part of the Ecosystems Based Adaptation in Mountain Ecosystems. The project is jointly implemented by UNEP, UNDP and IUCN and funded by the German Government. The three organizations complement each other's comparative strengths with a view to achieving a more effective delivery of the planned results. UNEP provides the overall global coordination of the project, while UNDP and IUCN are responsible for country level implementation.

IUCN and UNDP are jointly responsible for the implementation of Component 3 of the project which deals with field implementation in the project sites in Nepal, Peru and Uganda. The Ecosystem Based Adaptation (EBA) Project for Mountain Ecosystems aims to strengthen the capacities of these three countries - which are particularly vulnerable to climate change impacts - using Ecosystem based Adaptation approaches. The project is working to strengthen ecosystem resilience, through the management of mountain ecosystems and their services and to reduce the vulnerability of local communities.

Examples from Burkina Faso, Chile, China, Nepal Senegal and Thailand

Yet another EbA project, Ecosystems Protecting Infrastructure and Communities (EPIC) addresses the role of hazard management as an immediate entry point for longer term adaptation actions based on ecosystem solutions. The project works in six countries – Burkina Faso, Chile, China, Nepal, Senegal and Thailand – on various hazards and the role of ecosystem based measures.

Lessons from Nepal-Ecosystems Based Adaptation in Mountain Ecosystems (EbA Mt)

In Nepal, the pilot site for this project is the Panchase area. Once the three implementing sites were selected, a participatory village level action plan was developed. The plan took into account local community conditions, interests and skills to build the resilience of ecosystems. The planned activities were analyzed with respect to EbA principles and indicators. Based on community suggestions and some EbA criteria, the priorities of the community and those important from the ecosystem resilience perspective were taken into consideration as no regret EbA options. No regret EbA options in different sectors were designed and implemented to comply with the four main principle of EbA, namely additionality, cost effectiveness, building resilience and sustainable use. Based on this the no-regret options implemented included: : i) ecosystems restoration through agroforestry, broom grass plantation, bioengineering, fodder species plantation and conservation of water sources; ii) conservation farming and livestock management through *in-situ* conservation of indigenous species, organic farming, forest resource conservation, biogas, bee keeping and management of invasive species; and iii) sustainable water use and management through improvement of washing spaces, collection and utilization of community tap water, conservation and management of water ponds etc. Gender integration is an important part of the whole project.

The project is being implemented for two years and therefore, there is a limited level of concrete results. However, it is clear that the participatory process adopted ensured the inclusion of various important institutions and other partners. As such their input made important contributions to the action plans and the EbA strategy. The participatory process also helped to translate the EbA plan and strategy into awareness raising and capacity building activities for local partners and the community. Exchange visits also helped to modify and improve field activities where needed.

The project adopted different approaches to ensure that activities that are economically beneficial, environmentally friendly and climate change useful and smart. An initial scoping study, helped to identify important existing institutions. This helped to develop village level action plans, and an overall Panchase EbA strategy.

Participatory planning, implementing and monitoring of project activities minimized misunderstanding among the different stakeholders and developed motivation to start implementation. It further guided the project activities to align with the EbA principles, managed time efficiently for implementation and made activities more cost effective.

Awareness raising and capacity building for local level partners and other stakeholders such as community, groups, and schools, helped to communicate the concept of ecosystem approaches and easily deliver the activities at field level. Establishment of local level EbA learning groups helped to track the learning from implementation in terms of both EbA and other co-benefits (e.g. to livelihoods). An inter project site exchange visit of EbA learning group members and local leaders increased the willingness of the community. Furthermore, information on EbA has been broadcasted by local FM radio and shared in different celebration events, such as world environment day, biodiversity day etc. and supported the establishment of Gurung museum and EbA information center in three different areas.

A major lesson learned is that the key driver of progress is efficient coordination among the partners, especially in projects being implemented through multiple partners. This needs effective mechanisms (including government endorsement). Such participatory processes require considerable time and effort – often under-estimated in project planning. In addition, capacity development on ecosystems adaptation is crucial at all levels of implementation.

From the implementation of no regret EbA options, it is clear that the key drivers of ecosystem vulnerability are both climatic and non-climatic stress. Such stressors included poverty, poor land use practices, increases in temperature and more extreme events. Implementing EbA options that only consider climatic stress would not increase the resilience of ecosystem so both drivers must be taken into consideration.

Lessons from Nepal- Ecosystems Protecting Infrastructure and Communities (EPIC)^{xiii}

A bioengineering project: Reducing Risks from Landslides and flash floods in Nepal is being implemented also in the Panchase region. Three demonstration sites were selected after discussions with local authorities, which all fall within the IUCN's Ecosystem-based Adaptation (EbA) Mountain Project area and are easy to access by road.

A vulnerability and capacity assessment (VCA) was conducted in March 2013 in five villages across Panchase region's three districts. Its methodology assimilated 'bottom-up' qualitative and quantitative participatory approaches – such as semi-structured interviews with 'key informants', transect walks and participatory risk and resource mapping – with 'top-down' quantitative geological assessments, remote sensing and a GIS database. Through this methodological integration, local knowledge and scientific data were combined in order to identify stakeholders, vulnerable households and dangerous areas, as well as facilitating a comprehensive understanding of community relations and coping strategies. The study was conducted at the community and household level and was based on 48 semi-structured household surveys.

In addition to gender disaggregated focus groups, participatory mapping sessions were conducted in the study villages, led by self-selected persons from each community. Participants were instructed to map the most important features of their community and to colour code houses according to interpretations of risk. Following this activity, men and women were again separated to conduct a modified SWOT analysis or 'social mapping' of their resources. This constituted a self-assessment of risks and helped to identify resource threats and priorities. Finally, transect walks were conducted in all villages, accompanied by a self-selected person (usually the village leader) to explain the history and land use of each village.

In order to identify population concerns, people interviewed in the different areas were asked to prioritize their main issues from a list of proposed choices. Unemployment emerged as the main source of concern, followed by education, which correlates with the migratory trends discussed above. Health, sanitation and landslides are also important concerns, with landslides and flooding mentioned by the most affected families in particular. Interestingly, road access is not considered a major concern. This may be due to the fact that most of the villages studied have access to a road, even if only seasonally.

Land management and land use trends were also explored, determining changes in crop production, a tripartite system of forestry management and opportunities and challenges emerging from the traditional land ownership system. Meanwhile, the household survey elucidated links between land management, migration and climate change, concluding that the consequences of land abandonment as a result of outmigration are not yet clear. They may possibly include erosion in former rice fields and more vegetation on previously rain-fed land, but this is subject to further investigation.

Lessons from this project showed that Communities, local government and national level stakeholders have been enthusiastic about EPIC Nepal and its focus on 'eco-safe' roads – a key issue throughout the country – rather than a more general focus on ecosystems and landslides.

The establishment of bio-engineering demonstration sites and nursery enhancement rely on close collaboration with the District Soil Conservation Offices in three districts. The offices are severely constrained in terms of staff and resources, making collaboration difficult at times.

There were uncertainties surrounding the carry-over of funds from 2013, especially for bio-engineering, for which most funds will be needed pre-monsoon, in the second quarter of 2014. There is very little room for cutting back on the bio-engineering sites or costs without jeopardizing the entire project and agreements with the local government.

Lessons from Peru- Ecosystems Based Adaptation in Mountain Ecosystems

In Peru, the Mountain EbA Project site is the Nor Yauyos Cochas Landscape Reserve. The Mountain Institute (TMI) is IUCN's main implementing partner leading the implementation of the EbA measures on the field.

The communities, Miraflores and Canchayllo were selected as a result of the implementation sites selection process^{xiv}. Both communities met the criteria of low levels of social conflict (at internal and external levels), relatively strong social organization, presence of the main ecosystems of the Reserve (grasslands) in their territory and good relationship with the protected area. Also, each community was located in one of the two regions (Lima and Junin) and on one of the two watersheds (Cañete and Pachacayo) of the Reserve, making the selection very convenient for a comparative analysis and for the existing relationship with the two regional authorities.

The EbA no-regret actions chosen by communities, through a comprehensive participatory planning and community level research process include a range of ecosystem management activities to increase resilience and reduce the vulnerability of local people and the environment to climate change. These measures consist of i) Community-based sustainable water management, where high altitude micro-watersheds, wetlands, water courses, and their associated vegetation (mainly grasslands) are managed to provide water storage, groundwater recharge and regulation services; and ii) Community-based sustainable native grassland management to provide improved dry season grazing, to enhance pastoral livelihoods and increase resilience to drought, frost and other extreme events. Each measure is composed of three pillars: 1) institutional strengthening and community organization; 2) capacity building to enhance local and traditional knowledge; and 3) green-grey infrastructure so as to rehabilitate water infrastructure, fences of native grassland and the conservation and restoration of wetlands, grasslands and water courses^{xvii}. To ensure no-regret solutions, the measures are slightly different in each community because they respond to specific local level environmental and social conditions and priorities.

The process for developing no-regrets measures had two phases: i) consultation, diagnosis and design, which led to the selection of no-regrets measures and their detailed design and ii) implementation, which is ongoing. The participatory methods and tools used for each of these included a) interviews and focus groups to identify sites, b) community workshops and exploratory field trips to preselect and prioritize no-regrets measures c) consultations and interviews to analyze prospective no-regrets measures, d) Integrated Participatory Rural Appraisal (IPRA) applying Participatory Action Research (PAR) approach to select and design no-regret measures and e) validation meetings with all stakeholders to validate the no-regrets measures^{xvii}. This helped local and external stakeholders – external experts that participated in the IPRA –

to understand local communities' vulnerabilities to climate change faced now and in the future, discuss priority actions and agree on a way forward to implement those actions to adapt to climate change while promoting innovation at the local level^{xviii}.

A Vulnerability Impact Assessment (VIA) was carried out by project partners. Its main goal was to assess the impacts of climate change in the Reserve and its buffer zone (2012-2030). It makes an integrated analysis of ecosystem services demand and supply based on human pressures on natural resources, which is supported by primary information collected in the field through visits, ecosystem services mapping, group interviews and 334 socioeconomic surveys. The VIA results provide an entry point for discussing strengths and weaknesses to address climate change challenges including data on sensitivity, impact and vulnerability as well as recommendations for implementing adaptation measures^{xix}. It also supports the no-regrets measures designed by local stakeholders with experts support.

The learning from this work relates to the importance of working in a coordinated manner from the beginning since the site is a protected area (reserve), with its own strategic goals and ways of working^{xx}, but it is also a "lived in Protected Area", There are 19 local communities located within the limits of the reserve, divided into 12 districts, with around 14,919 inhabitants^{xxi}. Any activity needs to take into account the needs of both the communities and the Reserve Authority, which acts as a regulator (controlling and monitoring land use) and as a facilitator acting as a liaison between the different stakeholders while taking into account their own goals and strategies. However, capacity building for the Reserve staff on technical aspects and communication and facilitation tools was identified as a need to enable them to play an effective role. Finally, the reserve plays a key role in ensuring the sustainability of the EbA measures in the long term^{xxii}.

TMI team has also assessed several lessons throughout the process to date. Firstly, an important learning was that building capacities and community organization were crucial for the success of the activities. Since the green-grey infrastructure component attracted the most attention from local communities, it provided a platform to generate enthusiasm and teamwork for all components of the project.

Secondly, there are also important lessons about the challenges of working with multiple actors whose visions of the territory and its management may not coincide. The participatory approach and methodology facilitated the inclusion of the perspectives of the different community stakeholders (e.g. farmers, women, youth, and local authorities) and other key stakeholders. Such participatory processes helped to adapt the activities to the local and cultural context^{xxiii}. For example, to respect local structures and spaces for local decision-making increased the process legitimacy, a crucial requirement when building consensus and making decisions about the implementation of the activities.

Thirdly, the differences in the levels of progress in the communities provide valuable lessons about the process of selecting sites for implementing EbA measures. It's necessary to review the criteria and the selection process, especially in terms of demographics.

Lastly, one key focus was to ensure that community organization was strengthened. This was not so easy in practice as: a) communities were eager to see concrete results; b) it was essential to use the dry season to make progress with the construction considering the strong rainy season and the project's relatively short implementation time; and c) the demand of local labor and time to implement the infrastructure did not allow the project to carry out other components fully.

Lessons from Chile - Ecosystems Protecting Infrastructure and Communities (EPIC)^{xxiii}

The EPIC project in Chile: Quantifying and Improving the Protective Capacity of Forests Against Snow Avalanches site in Chile is the Biosphere Reserve Nevados de Chillán - Laguna del Laja.

A Climate Vulnerability and Capacity Analysis (CVCA) workshop was carried out from 2nd-6th September 2013 at Valle Las Trancas in the Biobío Region. It was attended by 24 participants, including representatives of local and regional governments, research centers and universities, local business owners, national and local non-governmental organizations and local community representatives. The workshop brought together a range of local and external stakeholders in order to conduct a community-based analysis of vulnerability and adaptive capacities in relation to climate change, seeking to not only

identify current and future drivers of risk, but also to develop concrete measures for DRR and CCA, while promoting innovation at the local level.

Accordingly, four innovations were selected to be implemented by stakeholders – with EPIC’s support – as a means of addressing CCA in these areas:

1. Create a water committee to regulate the sustainable use of water, including water use in the tourism sector.
2. Promote the sustainable management and conservation of native forests.
3. Establish an agency to promote ecotourism and the conservation of the Biosphere Reserve.
4. Promote sustainable energy consumption through innovative architectural design, new lighting solutions and the encouragement of sustainable firewood use.

A baseline study was finalized and action plans were developed for each innovation in order to strengthen and promote the practices identified by local and external stakeholders. A strong commitment to follow up on actions set in motion by the workshop was expressed, and different stakeholders offered to organize themselves to lead the implementation of the proposed innovations.

The participants expressed that the workshop had been instrumental in promoting a sense of community and collective action. They felt that they had been able to make a valuable contribution to the CVCA and had brought their knowledge and expertise to the learning and decision-making processes.

Some of the lessons learned were that while collaborations had been promising thus far, there were difficulties regarding project administration and workplans had to be changed. There is also a need to clarify to which degree the CVCA priorities should be addressed.

Lessons from Uganda Ecosystems Based Adaptation in Mountain Ecosystems (EbA Mt)

In Uganda, the site was the Mount Elgon ecosystem and 3 river micro-catchments were prioritized for implementation of EBA options, in line with the high risk areas identified by the Vulnerability Impact Assessment (explained below). These include rivers Ngenge, Sippi and Kaptokwoi.

IUCN applied a participatory approach, using various tools and methodologies (such as Climate Vulnerability and Capacity Assessment CVCA, CRiSTAL, and GIS mapping) to ensure involvement of the communities and policy makers in analyzing vulnerability and capacities to adapt to climate change. These approaches were also instrumental in enhancing capacities of local governments and partners, mapping of the ecosystem goods and services, and participatory identification of high risk areas and prioritization of adaptation actions. A Vulnerability Impact Assessment (VIA) articulated past and forecast future climate variability in the Mt. Elgon ecosystem and thereafter, recommended strategic priorities for monitoring and management of adaptation options. The VIA focused on the links between ecosystems and people to enable Ecosystem Based Adaptation and also produced maps of vulnerability to the most relevant types of climate change impacts of local communities and the ecosystem services that support them in the Mt. Elgon region.

GIS mapping was applied and supported the generation of no-regret activities through providing specific information about the quality of soils, water, land and future change projections. For example, agriculture expansion, poor land management, deforestation and grazing were identified as the key causes of soil degradation in the area. Soil degradation is a major problem and can often result in land-slides, making the region very risk prone. The GIS mapping and analysis work provided a number of recommendations upon which most of the no-regret activities were generated. These included i) creating buffer zones along the main rivers and streams to allow for restoration of natural vegetation, and contribute to improved water quality, thereby reducing the rate of soil loss and degradation; ii) promoting integrated watershed management practices in order to control soil erosion, reduce soil degradation, reduce water pollution risk and increase crop productivity; iii) integrating agro-forestry systems in the farming systems for reduced pollution loading and providing domestic energy for households; and iv) an incentive scheme was

introduced to enhance community and ecosystem resilience and adaptation to climate change in all the three catchments.

The learning from Uganda shows that communities have realized a number of benefits from the no-regret activities. These range from increased yields and income from the climate smart interventions promoted by the project. Farmers who used to incur losses due to crop failure caused by drought can now access water even during the dry season through improved water protection and irrigation technologies. Various soil and water conservation technologies have been adopted by farmers and this has reduced the soil erosion and flooding. Most important is the ability of the no-regrets options to build on the local knowledge and support the use of local resources to support adaptation, hence making it cost effective and affordable. This has increased acceptance of the interventions not only by the communities but also the local leaders and policy makers who feel they are easily transferable across the communities. The fact that the project has provided these guided interventions in terms of mapping out the high risk areas and proposing specific interventions to avoid maladaptation is the a plus for the no-regret activities.

Better governance of natural resources is evident in the bye-laws which have been developed, with clear structures within their village environment plans to implement them. These have been integrated in the monitoring of performance in order to receive the revolving fund which is an incentive for households implementing communally agreed restoration targets. This level of self-organization and mobilization has promoted better governance of their resources and promoted social cohesion which is key in building social resilience. However, a good incentive scheme should cover the entire targeted community so as to be more effective. In the project area, those enrolled under the incentive scheme are trying to implement the agreed climate smart interventions, while those not enrolled are not involving themselves effectively because they feel left out. It is due to this that IUCN introduced the Community Environment Conservation Fund (CECF) which encourages participation of all members within the community and empowers the local leaders to play their role of monitoring and supporting communities to access benefits from such interventions (Box 1).

Box 1 - Community Environment Conservation Fund (CECF)

Administered under the 'Building Drought Resilience' project in the Upper Aswa sub-catchment in Northern Uganda, the Community Environment Conservation Fund (CECF) has so far been disbursed to 98 villages, translating into 2,426 households engaged in ecosystem restoration. As a result, a total of 109.9km (out of over 350km) of the Aswa River and its tributaries have been demarcated, and are under natural regeneration to enhance ecological and socio-economic benefits.

Each village is assigned a fixed amount to enable its members to access micro credit, on condition of the community's commitment to the sustainable management of natural resources within their territory. In particular, appropriate actions were to be carried out in 3 priority areas, i.e. management of water sources, river/stream banks restoration, and re-vegetation of the micro-catchments.

To promote availability of, and access to, clean and safe water, 196 water sources have been protected. To diversify livelihood options and re-vegetate the degraded catchments, communities have established tree nurseries with a capacity of over 400,000 seedlings.

The 'Building Drought Resilience' (BDR) project in the Upper Aswa basin (Upper Nile water management zone, Uganda) and Lower Tana Basin (Kenya) is funded by the Austrian Development Cooperation and is being implemented in partnership with the Directorate of Water Resources Management in the Ministry of Water and Environment.

Source: IUCN Uganda

http://www.iucn.org/news_homepage/all_news_by_theme/global_policy_news/?13817/Communities-that-make-a-difference

In Uganda participatory planning with all stakeholders was an important aspect of the project success to ensure ownership and sustainability. It not only resulted in providing a reference point to check progress, but also as a monitoring tool. This helped communities to adjust their interventions, and integrate key lessons emerging to ensure that they achieve their vision. In addition, the tools (such as CVCA, CRISTAL, poverty assessments and VIAs) were undertaken with communities who were then able to appreciate the level of threat they were facing, and the rate of depletion of the key ecosystem goods and services. This participation acted as an eye opener to the communities to change their behavior and promote good practice in order to continue using the ecosystem to support their livelihoods.

Lessons from Burkina Faso Ecosystems Protecting Infrastructure and Communities (EPIC)^{xxiv}

The project Strengthening Ecosystem-based Disaster Risk Reduction and Climate Change Adaptation Strategies in West Africa, Burkina Faso is being conducted in Yatenga and Lorum provinces in Burkina Faso's Northern region. This covers an area of 16,130 km² and represents 6.5 per cent of the national territory. The study site includes 6 villages within 4 municipalities.

A workshop to assess vulnerability to climate change and adaptive capacities was conducted in Ouahigouya, in Burkina Faso's Northern region. It sought to improve communication between local government departments, NGOs, community members from the six participating villages and other stakeholders, in order to identify concrete actions to promote local innovations and strengthen community resilience. The workshop provided a space for communication and mutual learning among the different groups of actors at the local level. The methodology 'Promoting Local Innovations' (PLI) was used to facilitate the exchange of experiences between stakeholders. Through this social learning process, ideas of local communities and external actors were merged, leading to the identification and definition of concrete measures to promote local solutions to cope with climate change. The output of the workshop was an action plan clearly describing activities, responsibilities and resource requirements for the implementation of innovative measures for CCA. Overall, the innovations identified by each village to achieve their visions of a sustainable future can be summarized into two main initiatives:

- a) Soil restoration through endogenous techniques (Zai and stone bunds).
- b) Replanting for increased vegetation cover and riverbank restoration (against erosion and siltation).

Following an assessment of information gaps, which could inhibit the activities required to achieving community visions, action plans were developed with the intention of strengthening and promoting innovative practices identified at the rural community level. These action plans – designed by the communities themselves – will be used as a dashboard for supporting and developing the selected innovations within the EPIC project.

Some lessons learned were to understand how to reconcile basic needs amongst households with high poverty levels. Furthermore, building strong partnerships with all stakeholders seems difficult as the technical services especially are used to working independently.

Conclusion

The above examples show that increasing knowledge and understanding of no-regret actions is a very important step in the implementation of EbA. Further, involvement of stakeholders from various levels, coupled with indigenous and scientific knowledge, at different stages of implementation decreases the likelihood of maladaptation and promotes ownership and sustainability.

Community ownership is extremely important for the success of activities and the overall project and as such participatory planning is a crucial aspect of no-regret actions. In the examples provided above, activities were jointly selected by stakeholders from all levels and this resulted in enhanced ownership.

Climate change and variability impact men and women differently due to their differential roles, thus ensuring gender integration and the inclusion of all segments of society, including ethnic groups and

minorities, are extremely important steps at all stages of decision making for no-regret actions as well as long-term adaptation planning.

A 'do no harm policy' must be part of any no-regret and subsequent long-term adaptation planning. Hence, using community based environmental and biodiversity impact assessment, gender impact assessment and any other relevant impact assessment tool to ensure that social, economic, and ecological wellbeing is not compromised at any stage of implementation of no-regret actions would be invaluable in avoiding maladaptation.

An important measure most organisations working in the adaptation sector either fail to undertake entirely or do not give adequate attention to is the carrying out of cost-benefit analysis of no-regret adaptation options. In order to appraise the effectiveness of available options, it is important to undertake economic analysis to facilitate decision making before investing scarce resources meant for enhancing community climate resilience. This data will also help in carrying out a comparative analysis of the available options and approaches and thus contributing towards replicable cost-effective options.

Another crucial point is that at times implementing agencies undertake no-regret actions requiring high financial costs for implementation and/or maintenance. While these measures contribute towards local social, economic and ecological resilience, they are extremely hard to maintain or replicate by communities on their own. This aspect needs to be considered while designing no-regret actions. In case of inevitability of any such measure to address a prioritized vulnerability by the local community, utmost care must be taken to engage local government and relevant authorities for future financial input.

The examples cited in this paper indicate that awareness raising and participatory vulnerability assessments also ensure that communities learn the importance of EbA no-regret implementation and ardently participate in activities. Being involved in participatory monitoring and evaluation will also further increase knowledge, provide options for required changes as well as ensure sustainability and a strong foundation for future climate resilience planning.

Given the different definitions and interpretations of no-regret options what must be kept in mind is that we are actually looking for optimal solutions to climate change. These include options that maximize benefits while minimizing losses or negative results.^{xxv}

As the above mentioned projects progress further, lessons will be learned that would provide a knowledge base on the success and effectiveness of the no-regret EbA measures. On ground implementation of activities and their sustainability will aid in the identification of the most optimal options and approaches for replicability.

The various activities being implemented as part of Mt. EbA and EPIC projects are similar in nature. They look to ensuring that ecosystem functions and services are conserved and effectively managed such that the human communities dependent on them can become more resilient to both climate variability and climate change - both for the short and the long terms, with as little negative impacts as possible. This in essence is what no-regret adaptation is.

Box-2

As an example, Sri Lanka used the vulnerability analysis based on the IPCCs framework of exposure, sensitivity and adaptive capacity. One of the best strategies that was implemented was the "the restoration of the ancient tank storage system in the country, to provide 'insurance' against climate variability in the most vulnerable districts (primary agricultural)". In addition farmers recycled household wastewater and decreased groundwater use. These are clearly no-regret measures, which provided benefits by making communities resilient.

Source:

<http://www.irinnews.org/report/98230/call-for-no-regret-climate-adaptation-strategies>

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