POLICY BRIEF: Climate Change

Why Community Based Adaptation Makes Economic Sense

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OVERVIEW

Climate change interventions require decision making in the face of uncertainty. New research conducted by UK economics think tank nef (new economics foundation) on behalf of CARE International in Garissa, Kenya, found that, investing in community based adaptation (CBA) makes strong economic sense, even in a volatile and evolving environmental context. In virtually all scenarios studied the economic, environmental and social benefits of CBA – where vulnerable communities make informed development and risk management decisions and actions in response to climate change impacts – far outweigh their costs, suggesting they are efficient and effective even in the absence of adaptation projects at the national level. These findings make a compelling financial case for CBA both in conjunction with larger-scale interventions and as standalone activities.

CBA is a wise investment

Using case studies from two communities in Garissa, North East Kenya, we found that the full stream of benefits (economic, social and environmental) of investing in CBA under numerous scenarios outweigh the investment costs. Results were controlled for sensitivity of assumptions, notably of discount rates, and accounted for risk and uncertainty relative to future patterns of climate change in Arid and Semi-Arid Lands (ASALs). **Under the most realistic scenarios, investing $1 in adaptation generates between $1.45 and $3.03 of wealth accruing to the communities.** Even when using a high discount rate the costs of intervention were **2.6 times lower on average than the costs of not intervening** to address climate change and extreme weather events.

KEY MESSAGES TO POLICY MAKERS

- CBA is a wise investment: its environmental, social and economic benefits outweigh the costs in virtually all modelled scenarios;
- CBA in the face of uncertainty suggests it is an economically-efficient and well-suited response to climate change;
- Economic diversification is not always a solution; interventions need to be thoroughly assessed, require dynamic planning and must be compatible with ecological characteristics;
- Adaptation can be viewed as a flexible approach to avoid "mal-adaptation" and the costs associated;
- CBA benefits are likely to be enhanced by national level interventions: use alongside national adaptation strategies and focus on bottom-up approaches to create synergies with top-down approaches;
- Incorporate both "hard" and "soft" measures in adaptation policy design to maximise value and impact;
- Co-produce adaptation strategies with communities to complement, rather than compete with, locally established coping strategies;
- Build regional strategies that are compatible with communities' socio-economic capabilities as well as local ecological characteristics to build resilience across social, economic and environmental capital.

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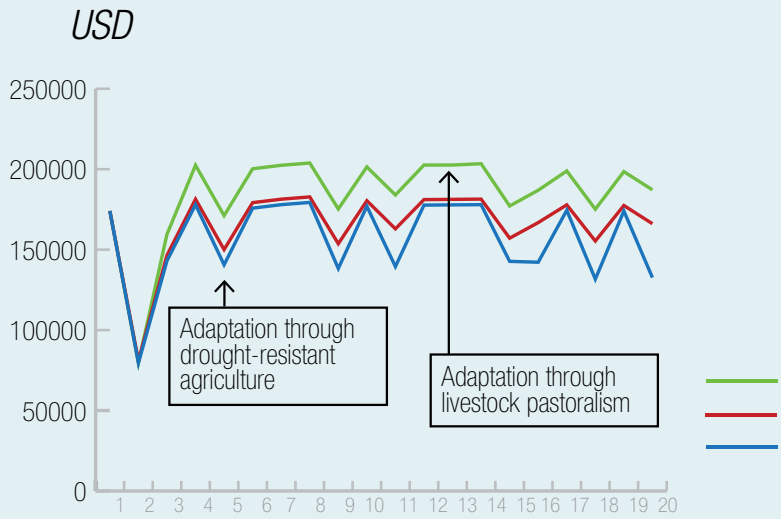
Often, uncertainties regarding future climate change impacts, particularly at a local level, are invoked to justify inaction. If one decides to invest in some adaptation measures based upon uncertain climate predictions, and these predictions turn out to be wrong, then this investment will cause economic loss. This is what is commonly referred to as "mal adaptation". Our results suggest that under virtually all future scenarios, including an extrapolation of current prevailing conditions, investing in CBA is still efficient. In fact, a community-based, empowerment-led, strategy might be better suited than top-down adaptation to deal with large uncertainties. Empowering people to make decisions based on knowledge of uncertainty as well as climate forecasts can allow communities to deal with any eventual future adversity and to adapt socio-economic activities to an evolving environment, whatever this might be. Within this framework community empowerment can play a prominent role by constituting an answer to the problem of uncertainty, notably through the generation of a sufficient economic surplus.

Diversification is not always a solution

Broadly speaking, productive diversification is thought to be an essential component of any adaptation strategy. In the case of Kenyan ASALs, for instance, many suggest that the focus should be put on shifting from livestock pastoralism to drought resistant agriculture, or even to other higher value added crops. This could provide more potential sources of income and thus constitute a form of insurance for communities when one source of income fails. While diversification is evidently a sensible route it is important to question the appropriate mix between different options as well as the potential conflicts over resources (land, water,

Figure 1: Wealth evolution under different adaptation scenarios
This figure represents the evolution of total wealth (i.e. economic, social and environmental capital) of communities between 2010 and 2030 under three different adaptation scenarios. The higher-bound scenario models the strengthening of livestock pastoralism alongside a modest diversification (25%) towards drought resistant agriculture. The lower-bound scenario models in a more radical shift away from livestock pastoralism to drought resistant agriculture. These findings suggest that wealth maximization over the next twenty years is obtained through the higher-bound scenario i.e. the strengthening of livestock pastoralism with a modest productive diversification.



etc.) arising from different land use choices. If diversification means a competition over scarce resource use then its sustainability must be questioned. Our findings suggest that **the optimal option for Kenyan ASALs could be an enhanced support of livestock pastoralism combined with a modest diversification to drought resistant agriculture.** Indeed we found higher overall benefits under this scenario and relatively lower benefits (albeit still positive) under a more radical shift away from livestock pastoralism. This is due to ecological reasons: firstly, switching to drought resistant agriculture can degrade sensitive ecosystems and secondly, the sustainability of water resources from the river Tana and the Merti Aquifer could be undermined if agriculture were to be generalized. As such, decision-makers should be aware that **diversification needs to be carefully assessed so as to be compatible with ecological characteristics**, rather than applied "across the board". Similarly, if deciding to strengthen pastoralism, then numerous measures are required to make it economically viable for communities. These measures can range from livestock banks and community insurance schemes to livestock vaccination programmes and to negotiated land and water use agreements between pastoralists and agro-pastoralists.

Adaptation interventions require flexibility and dynamic planning

In light of our above assertions, when combining the issue of uncertainty with the question of diversification, policy-makers should focus their efforts on providing enough flexibility over time through dynamic planning at all appropriate levels. This is less about spurring one specific rigid form of transformation and more about broadening potential directions, i.e. broadening the adaptive capacity of communities to respond to change, whatever this change may be. For example, enhancing the agricultural knowledge and training of communities can allow them to switch more easily to drought-resistant agriculture in the future – even if the ecological and social conditions are not immediately available.

Coordination between national and local level interventions can enhance CBA benefits

National and provincial adaptation interventions are necessary to increase the economic capabilities of communities and societies in order to support them with the necessary economic and infrastructural resources to deal with climate change impacts. However, an increase in economic capability is often dependent on components that require adaptive capacity (such as access to information and capacity to collectively process information). Local interventions can also generate the qualitative change required for communities to deal with unexpected future developments, for example, by strengthening institutional decision-making processes to support a change in production practices or distribution of wealth within communities. In short, **while large-scale adaptation aims to provide the material means for resilience (through investment in infrastructure), community-based adaptation ensures these means can be mobilized rationally across time (through knowledge of how to utilize new infrastructural conditions and embed them in social norms and community decision making).**

National and sub-national adaptation strategies and policies can either magnify the benefits of community-based adaptation or hinder them. Magnifying the benefits entails two aspects: firstly, infrastructural investment, such as investment in asphalt roads, can spur the benefits of community-based adaptation by linking agricultural and livestock production to markets. In our model, this would sensibly reduce, for instance, post-harvest losses if communities decide to invest in drought-resistant agriculture. Secondly, giving a clear policy signal about production choices on a sub-national scale could steer communities towards either livestock investment or an agricultural shift. Proposals for steering production patterns in Kenyan ASALs in a sustainable direction have already been formulated; for instance, a research paper commissioned by IFPRI found that increasing returns from livestock in Kenyan ASALs is a realistic objective either through export-led or regional import substitution strategies. Such a development could potentially enhance the benefits of CBA and give a clear signal to communities to focus on livestock activities rather than moving towards agriculture or other activities.

Adaptation strategies need to be co-produced with communities

Incoherent national and regional strategies can hinder local development and local adaptation strategies, especially if implemented in a top-down fashion. For example, land enclosures or land concentration with disregard towards pastoralist communities can cause conflicts over access to resources and critically limit the adaptive capacity of communities. In this case, regional policies could well compete with the interests of pastoralist communities. Consequently, **national and sub-national decision makers should design regional strategies by taking into account local adaptation patterns in a bottom-up fashion rather than expecting communities to adjust to top-down decisions.** Joint development of policies looking at community to ASAL-wide issues and interactions are essential to avoid mal-adaptation. This is of particular importance given the scarcity of resources in the area, notably water, but also of land suitable for pastures and agriculture.

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"Soft" adaptation is as important as "hard" adaptation: an intelligent strategy must move on both fronts

"Hard" and "soft" adaptation interventions are often perceived as distinct strategies. Our study suggests that intelligent policy-making should focus on both. "Hard" adaptation focuses on adapting infrastructure and economic production to expected climate change impacts. "Soft" adaptation seeks to increase communities' knowledge and awareness of environmental transformations and therefore support communities to embed this knowledge in their decision making processes and institutions. In practice both are required as they are in fact interdependent and walk hand-in-hand. By increasing infrastructural and productive support, "hard" adaptation spurs the economic capabilities of communities and can therefore indirectly contribute to qualitative change such as tackling unequal wealth distribution or enhancing education, knowledge and awareness. On the other hand, the management of infrastructural and productive change is dependent on "soft" components, for example access to information and the capacity to collectively process information through communal institutions. It is also worth considering that a lack of "soft" adaptation measures could negatively impact any wealth generation created by "hard" measures in terms of uneven distribution of resource. One such consequence would be that the resilience of the most disempowered members of communities, notably women, is in fact not enhanced. In summary, if communities undertake "hard" adaptation measures without having an awareness of the potential future impacts this means that they could make the wrong decisions in terms of infrastructural and productive change. These often difficultly-reversible investment choices could once more result in mal-adaptation – a consequence of insufficient focus on "soft" measures.

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Investing in CBA presents numerous "double dividends"

By building adaptive capacity, CBA responds to a socio-economic development objective. In our model, a business-as-usual scenario implies that communities will fall under absolute poverty levels (i.e. one dollar a day per capita in purchasing parity prices) as a consequence of adverse climatic conditions and extreme weather events. The latter will also reduce health and educational levels among populations. Avoiding these future costs is a pre-condition for any successful development policy in Kenyan ASALs. Furthermore, **numerous adaptation measures we investigated can be considered as facilitators of future development interventions and to be compatible with wider economic development.** For instance, empowering communities through institution-building and enhancing decision-making processes means that any future development intervention in these communities will be facilitated by pre-existing social and institutional capitals. Similarly, economic diversification can protect communities not only from extreme weather events but also from price volatility, such as food prices. In short, while adaptation interventions are not one and the same with classic development interventions, the synergies between both can be extremely strong. In particular, resilient development will involve adaptation and vice versa. These potential "double dividends", whereby adaptation enhances socio-economic development, were beyond the scope of our quantitative analysis. This means that benefits of community-based adaptation interventions could be even higher than the ones represented by our findings.

ABOUT THIS RESEARCH

nef (new economics foundation) conducted a forecastive cost-benefit analysis based on empirical and secondary data to examine where no intervention in adaptation occurs against where there is investment in adaptation. In order to forecast changes throughout the next two decades (up to 2030), we constructed a system-dynamics model which represents the interactions between temperature and precipitation changes and the economic, ecological and social capital of communities. The benefits of adaptation are modelled in terms of the avoided losses that would have been incurred by communities in a "no intervention" scenario as a consequence of climate change, as per the Stern Review guidelines. Following the principles of social and environmental cost-benefit analysis non marketed goods (e.g. social capital and ecosystem services) were valued and "monetized" to represent the full stream of economic value.

FURTHER READING

- Full report on this research: Nicholles, N. and Vardakoulias, O. (2012) Economic Analysis of Community-based Adaptation, London: nef
- On local adaptive capacity: Africa Climate Change Resilience Alliance (ACCRA) local adaptive capacity framework, 2010/2011. http://community.eldis.org/.59d669a7/ACCRA%20Local_Adaptive%20Policy_new.pdf
- On sub-national and ASALs investment strategies: Rakotoarisoa, M. et al, (2008) Investment Opportunities for Livestock in the North Eastern Province of Kenya: A Synthesis of Existing Knowledge. Washington DC: IFPRI
- On pastoralism and climate change in the Kenyan ASALs: Nassef, M. et al, (2011) "Pastoralism and climate change: Enabling adaptive capacity", London: ODI
- On governance and natural resources in the ASALs: Pavanello, S. and Levine, S. (2011) "Rules of the Range", London: ODI

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