

Global environmental problems and local poverty

By Siri Eriksen

[Siri Eriksen is a researcher at CICERO. E-mail: siri.eriksen@cicerio.uio.no]

Trees and wild plants provide impoverished farmers in Kenya and Tanzania an alternative subsistence base in times of drought. These kind of local interactions tend to be ignored when climate changes are discussed at the global level.

The Intergovernmental Panel on Climate Change (IPCC) recently released a report that claims that the world's poorest populations will be the hardest hit by climate changes (IPCC 2001). The relationship between poverty and climate impacts has been known for some time – and poverty has often been connected to a lack of capacity to adapt to climatic changes (Adger & Kelly 2000). Moreover, poor people often live in risk-filled environments and subsist on natural resources that are negatively affected by climate changes (Kates & Haarman 1992, Blaikie et al. 1994). The IPCC's new emphasis on the poverty issue represents a fundamental shift in focus from climate impacts as a purely natural scientific phenomenon to climate impacts as a development issue. This shift has important consequences for the design and implementation of climate measures.

Climate impacts and development issues

Traditionally, climate has been seen as a *global environmental issue*, while poverty has been perceived as a *local development issue*. Thus there may be an initial contradiction between basing climate measures on international environmental agreements, such as the Climate Convention (UNFCCC), and taking poverty issues into account in these measures. Commitments, funding mechanisms, and policy measures established in the wake of climate agreements have been designed from the perspective of climate as a global environmental problem. Generally, a top-down approach to resolving climate issues, rather than a bottom-up approach has been taken. Some critics believe that perceiving environmental problems as global and designing global frameworks to address them implies a form of globalization that represents a new type of imperialism – one where the North gains control over natural resources and steers the development in the South under the guise of global environmental considerations (Mater 1999).

Much of research into development issues represents the second basic view, namely that poverty is a development problem where the best solutions are shaped through local participation and policy measures are adapted to local conditions. In other words, this research takes a bottom-up approach to the problem, even though some of the basic causes of

Global environmental problems and local poverty

poverty can be global (Chambers 1983). In terms of environmental research, there has been an increasing focus on the interrelationship between environment and development, and how nature and society affect each other through a complex interplay (Boudie 1993, Leach & Mearns 1996, Smith & O'Keefe 1996). This approach also implies that global environmental changes can have very different impacts on different local communities.



Conservation of the baobab tree (*Adansonia digitata*) on cultivated land represents one climate adaptation in arid regions in East Africa. The fruit is a useful source of nutrition during drought years.

The IPCC's suggestion that poverty plays an important role in determining how climate changes will affect various populations has two important consequences for policy design principles: The first is that those who are most vulnerable to the impacts of climate change should be the primary target of mitigation policy; poverty issues should be taken into account as a central element in climate measures. The second consequence is that policy design must take into account that the impacts of climate changes and possible effective measures to reduce vulnerability vary both from place to place and from time to time because social conditions change. It will be just as important to identify how adaptability can be improved among various social groups as it will be to identify physical climate impacts. Measures should therefore be prepared in cooperation with the local population, where their priorities and conception of the problems become the center of focus.

Local interactions between various environmental problems

An important aspect of local adaptability to environmental change is the interaction between various environmental problems at a local level. To an impoverished farmer, the degradation of several natural resources that together form his or her subsistence base is considered a

Global environmental problems and local poverty

single problem, even though the causes of the degradation are considered to be separate phenomena at a global level. Environmental problems that are addressed separately at an international level – such as climate, biodiversity, and desertification – must at be tackled holistically at the local level.

There are several practical examples of the interaction between several “different” environmental issues in locally adapted measures. One study in two arid agricultural areas (one in the Kitui district in Kenya and the other in the Same district in Tanzania) shows that biodiversity in the form of local tree and plant species distributed throughout the farms represents an alternative income source for poor farmers when crops fail. For example, local wood is used to make stools, kitchen equipment, chicken coops, and so on. These products are sold on the local markets. Lumber is also used to burn charcoal, which is sold to urban areas and cities. Leaves and seeds from certain trees are used as feed for goats and cattle. Drought-resistant indigenous fruits are an important source of nutrition for both children and adults when there is little food. Thus preservation of local knowledge and biodiversity in cultivated areas helps enhance adaptability and reduce vulnerability to extreme climate events such as drought and flooding (Eriksen 2000). Preservation of the natural vegetation is also useful in combating desertification.

Moreover, particular ridges and hills covered with natural vegetation in dry areas have great value with respect to biodiversity. These areas often have different compositions of plant and animal species that otherwise are not found in the surrounding lowlands (Gachathi 1995). These ridges, which have higher precipitation than the lowlands, form important parts of local watersheds. In addition, there is a better microclimate (local temperatures and moisture) around these forested areas, particularly in arid regions that are dependent on the forests as water sources. Where ridge vegetation is well preserved, forest streams will often be active also during the dry season (Eriksen et al.).

A similar case of where climate and biodiversity measures have been coordinated is in the northern coast of Vietnam and described by Nguyen Hoang Tri and colleagues (1998). Preservation of the natural mangrove forest with its species diversity is important for local sources of income, for example, wood and honey production. The mangrove forest is equally important for protection from cyclones and typhoons. The coast is hit by between one and twelve typhoons per year, and there is great uncertainty about how the frequency and magnitude of these will be changed in connection with global warming. The mangrove forest protects agriculture against flood damage from cyclones and reduces the maintenance costs of the dikes. Preservation of this forest represents a type of climate adaptation.

These examples illustrate that the interaction between various “global” environmental problems can result in different impacts in different places. To reduce the vulnerability of the poorest populations, policy measures should be adapted to local conditions and address several different environmental problems at the same time.

Measures under the Climate Convention

The Climate Convention requires developing countries to adapt public policy, government, and legislation to accommodate climate measures, both to reduce emissions of greenhouse gases and to adapt to possible climate changes. The Climate Convention from 1992 and the Kyoto Protocol from 1997 have two mechanisms that are particularly relevant with respect to

implementing measures directed at developing countries. The Global Environment Facility (GEF) is the Climate Convention's funding scheme, designed to assist developing countries in developing climate strategies and integrating climate considerations into public policy, government, and development plans. The GEF is also supposed to fund preparation and implementation of practical measures, but until now no such GEF supported projects have been implemented. Most of the GEF's financial assistance has been directed at greenhouse gas emissions rather than enhancing local adaptation to climate impacts. As the poorest populations are responsible for very low greenhouse gas emissions but are nevertheless the most vulnerable to possible climate changes, it is thus a challenge to adapt the GEF to support measures designed to assist the poor. To truly integrate poverty considerations – which, for example, can be connected to local property rights – into environmental measures is also a great challenge because the GEF is essentially not a development fund but rather an environment fund. The GEF was established to fund measures specially directed at biodiversity and climate, and development measures are defined as outside its mandate.

The Kyoto Protocol's *Clean Development Mechanism* (CDM) is another important mechanism to finance measures in developing countries. This mechanism is designed to enable industrialized countries to meet their commitments to the Kyoto Protocol by financing development projects that reduce emissions of greenhouse gases in a developing country. Negotiations are still ongoing with respect to the regulatory framework of the CDM, but pilot projects have already been implemented. It is important that the CDM provide feasible solutions that benefit poor developing countries and that the CDM projects are not designed on the premises of the industrialized countries in a top-down fashion.

Another important source of funding for environmental measures in developing countries is development aid organizations such as NORAD or the World Bank. Since climate issues have previously only minimally been seen as an important development issue, only a few such organizations have paid attention to climate impacts. It will therefore be a challenge both to increase the awareness of the climate issue among these organizations and to enhance the cooperation between these organizations and the UN system in the design of policy measures. This is particularly important because development organizations have valuable experience with how locally adapted measures can be implemented to reach the poorest populations.

The focus on poverty and local development is an important step forward in combating the negative impacts of climate change, but at the same time presents tremendous practical challenges. The question is how meaningful local solutions can be found to global problems.

References

- Adger, W.N. and Kelly, P.M. 2000. Social vulnerability to climate change and the architecture of entitlements. *Mitigation and Adaptation Strategies*, 4: 253–266.
- Blaikie, P., Cannon, T., Davis, I., and Wisner, B. 1994. *At risk: Natural hazards, people's vulnerability, and disasters*. London and New York: Routledge.
- Chambers, R. 1983. *Rural Development: Putting the last first*. Longman Scientific and Technical, London.

Global environmental problems and local poverty

- Eriksen, S.H., Gachathi, F.N.M., Muok, B., Ochieng, B., Owour, B. (forthcoming). Synergies in biodiversity and climate change: The case of hilltop forests in Kitui, Kenya.
- Eriksen, S.H. 2000. Responding to global change: Vulnerability and management of local agro-ecosystems in Kenya and Tanzania. PhD thesis, University of East Anglia, Norwich, UK.
- Gachathi, F.N.M. 1996. Conservation priorities in the arid and semi-arid lands: The case of the hilltop forests of Kenya. In van der Maesen, L.J.G. (ed.) *The biodiversity of African plants*. Dordrecht: Kluwer Academic Publishers. pp. 313–316.
- Goudie, A. 1993. Environmental uncertainty. *Geography* 78: 137-141.
- IPCC 2001. Draft (19 February 2001) *Summary for Policymakers. Climate change 2001: Impacts, adaptation, and vulnerability*. Approved by IPCC Working Group II in Geneva, 13–16 February 2001.
- Kates, R.W. and Haarmann, V. 1992. Where the poor live: Are the assumptions correct? *Environment* 34: 4–11, 25–28.
- Leach, M., and Mearns, R. 1996. Environmental change and policy: Challenging received wisdom in Africa. In: Leach, M. and Mearns, R. (eds) *The lie of the land: Challenging received wisdom on the African environment*. Portsmouth and Oxford: Heinemann and James Currey. pp. 1-33.
- Mater, M. 1999. Global environmental-change discourse: The Southern critique. In: Brah, A., Hickman, M.J. and Mac an Ghail, M. (eds) *Global futures: Migration, environment and globalization*. Houndsmills, Basingstoke: Macmillan Press. pp. 70-82.
- Nguyen Hoang Tri, Adger, W.N. and Kelly, P.M. 1998. Natural resource management in mitigating climate impacts: the example of mangrove restoration in Vietnam. *Global Environmental Change*, 8(1): 49–61.
- Smith, N. and O’Keefe, P. 1996. Geography, Marx and the concept of nature. In: Agnew, J., Livingstone, D.N. and Rogers, A. (eds) *Human geography: An essential anthology*. Blackwell Publishers: Oxford and Cambridge (USA). pp. 282–315.