

Workshop Final Report

Managing Uncertainty: Risk and the Precautionary Principle in Biodiversity Conservation and Sustainable Use



Credit: TRAFFIC

**Held as part of the Fourth Regional Session for Africa of
the Global Biodiversity Forum, Southern and Eastern
Africa
Dar es Salaam, Tanzania
June 9th-11th 2004**

WORKSHOP STATEMENT

TOWARDS BEST-PRACTICE GUIDANCE

The following points emerged from discussions at the workshop on “Managing Uncertainty: Risk and the Precautionary Principle in Biodiversity Conservation and Sustainable Use”, Dar es Salaam, African Regional Global Biodiversity Forum for East & Southern Africa. 9th-11th June 2004.

Biodiversity is fundamental to the health of the planet and long-term sustainability of human life. Livelihoods cannot be detached from the biodiversity which supports them. Biodiversity conservation and natural resource policy and management needs to be anticipatory, recognise the limits of scientific knowledge, and be responsive to potential, uncertain environmental risks. The precautionary principle, when used appropriately, promotes the conservation and SU of biodiversity, which is essential to the long-term sustainability of all life. The livelihoods of those directly and indirectly dependent on biodiversity are central to effective biodiversity conservation as a whole and to implementation of the precautionary principle.

The precautionary principle, and precautionary approaches to NRM and conservation, involve action to avert unknown or poorly understood environmental harms. The precautionary principle is needed to “balance out” a prevailing over-emphasis on requiring clear scientific evidence to support action to protect the environment.

Traditional indigenous knowledge systems of conservation and management of biological resources contain many precautionary elements.

The precautionary principle can be misused. It should not be understood as solely a negative principle that only restricts people’s access to and use of biodiversity: the interpretation of “when in doubt, don’t”. Depending on the context, the precautionary principle should be understood as supporting proactive, adaptive and dynamic management interventions, as well as restrictive actions. Application of the precautionary principle should be proactive and solutions-oriented. Application of the precautionary principle should form part of an adaptive management process based on assessment of available information, including indigenous and traditional NRM knowledge and practices, science, and socio-economic context, with an emphasis on gathering more knowledge and increasing information available for management, and reassessment of precautionary decisions in the light of new information.

Conservation and natural resource management, particularly where scientific and technical resources are limited, must typically operate in the face of uncertainty and in response to multiple and complex risks. It is unrealistic to wait for scientific certainty before taking action, or to require that management actions pose zero risk. NRM and biodiversity conservation situations often involve multiple and complex risks, and application of the precautionary principle should be based on careful assessment of alternative courses of action, including the proposed precautionary action itself. Irreversibility is a particularly important criterion.

Precautionary decision making involves making decisions that cannot be unequivocally based on science, so necessarily involves values and judgements of risk, threat and required action. As such it is important for reasons of equity as well as effectiveness to include stakeholders in precautionary decision making, including in particular those who bear the burdens of precautionary restrictions. Precautionary decisions favour biodiversity conservation and sustainable use in the long term over short term interests of a small group.

Use of the precautionary principle is often highly inconsistent and reflects power relations between groups, with poorer or marginal groups often bearing the burden of precautionary restrictions, but precaution being ignored by, or not imposed on, more powerful groups.

WORKSHOP PROGRAMME

Venue: White Sands Hotel and Resort

Wednesday June 9th

Opening Plenary

Biodiversity Conservation, Natural Resource Management and the Precautionary Principle

Chair: Barney Dickson Rapporteur: Markus Burgener

Rosie Cooney The Precautionary Principle Project	The Precautionary Principle in NRM and Biodiversity Conservation: Issues and Problems
Yolan Friedman Endangered Wildlife Trust, South Africa	The Precautionary Principle in Practice: Endangered Wildlife Trust Examples
Everisto Mapedza London School of Economics, UK	Precaution in the Designation and Management of the Mafungautsi Forest Reserve in Zimbabwe

How Do Law and Policy Frameworks Deal with Risks to Conservation and Natural Resources?

Chair: Nyasha Chishakwe Rapporteur: Markus Burgener

Cormac Cullinan EnAct, South Africa	The Precautionary Principle in Environmental Law in South Africa: An Assessment
Norah Namakambo Uganda Wetlands	Precaution and Wetlands Conservation in Uganda
Milu Muyanga Tegemeo Institute of Agricultural Policy and Development, Kenya	Impacts of Precautionary Charcoal Burning and Conservation Policy: Integrating Household Food Security with Natural Forests in Kenya

Thursday June 10th

Precaution, Livelihoods and Development

Chair: Markus Burgener Rapporteur: Barney Dickson

John Mugabe NEPAD	Conservation, Livelihoods and Risk Management
Rob Barnett Consultant, Kenya/Wild Living, UK	Impacts of Precautionary Wildlife Law and Policy on Contribution of Wild Meat to Rural Food Security and Livelihoods in Kenya
Dawn Hartley CARE Tanzania	The Eastern Arc Mountains: Applying the Precautionary Principle to a complex poverty-environment nexus

Precaution, Science and Sustainable Natural Resource Management

Chair: Rosie Cooney Rapporteur: Nyasha Chishakwe

Markus Burgener TRAFFIC East/Southern Africa	The Role of the Precautionary Principle in Securing Sustainable Fisheries for East and Southern African Coastal States
Zwane Nonhlanhla University of Zimbabwe	The Relationship Between Indigenous Knowledge Systems (IKS) And The Precautionary Principle In Water Resources Management And Environmental Conservation
Peter Lent University of Fort Hare, South Africa	The Translocation of Large Herbivores: Risks, Rewards and Application of the Precautionary Principle in the Eastern Cape Province, South Africa

Implementing the Precautionary Principle in Biodiversity Conservation and Natural Resource Management

Chair: Barney Dickson Rapporteur: Rosie Cooney

How should the precautionary principle be implemented to support both biodiversity and livelihoods? Review and discussion of draft guidance for best-practice

Friday June 10th

Presentation and discussion of workshop statement in plenary.

WORKSHOP SUMMARY by Rosie Cooney, *The Precautionary Principle Project*

“Managing Uncertainty: Risk and the Precautionary Principle in Biodiversity Conservation and Sustainable Use”, Dar es Salaam, African Regional Global Biodiversity Forum for East & Southern Africa. 9th-11th June 2004.

The need for precautionary action

In general, participants saw a clear need for anticipatory and preventive action to avert serious and irreversible environmental threats, including uncertain and unproved environmental threats. Attention was drawn to the current rates of loss of biodiversity and habitats, and examples of extensive environmental and economic costs where threats had been ignored or inadequately managed, including introduction of alien species and fisheries overexploitation. The intimate interlinkage of biodiversity and rural livelihoods in Africa meant that threats to biodiversity also threatened livelihoods. In the context of urgent priorities of supporting livelihoods and combating poverty, and global emphasis on achievement of the Millennium Development Goals, discussion therefore focussed on how to understand and implement the precautionary principle in ways that secured effective biodiversity conservation while also supporting livelihood and poverty alleviation goals.

The PP and sustainable development

The relationship of the precautionary principle to sustainable development was not clear. One participant questioned whether the “precautionary approach”, at least as interpreted in a protectionist manner, was compatible with sustainable development. By contrast, South African environmental legislation includes a version of the precautionary principle as part of the definition of sustainable development.

The precautionary principle, law and science

One participant pointed out that the precautionary principle (PP) represents a radical departure from the traditional legal approach, which relies on clear evidence of harm or damage. Participants did not see the precautionary principle as unscientific or anti-science, rather, it was suggested that the PP has developed as a legal and policy response to the recognition that scientific understanding is frequently partial and limited.

What do we identify as “precautionary” NRM/conservation policy and practice?

Sometimes application of the PP is explicit and unambiguous. In other circumstances it may be implicit. For instance, many view certain policies or management interventions as precautionary, whether the PP is explicitly mentioned or invoked or not. This raises the question of how we should identify or specify what constitutes application of the PP in the context of biodiversity conservation and natural resource management (NRM).

Formulations developed in developed regions, such as the European Union, typically emphasise the PP as being part of a process involving considerable scientific review and risk assessment. This may not be particularly relevant to biodiversity conservation/NRM in developing countries. One of the factors making a workable definition somewhat ambiguous is that, particularly in less developed countries, there is virtually always a great deal of uncertainty about both the status quo (status of resources, species distributions, harvesting rates etc). For instance, in the case of the important near-shore and coastal fisheries, one participant pointed out that in southern Africa there was in general very little known about the status of resources, harvesting rates, trade volumes, sustainability, or the socio-economic context of harvesting. Decisions in biodiversity conservation/NRM will typically be made that seek to minimise uncertain threats to the resource/biodiversity: should these all be identified as applications of the precautionary principle? This issue was discussed but not resolved.

A further question is “what type of uncertainty is necessary for the precautionary principle to be relevant?” In the traditional paradigm of the precautionary principle, there is uncertainty about the cause-and-effect relationship between some activity/emission/substance and a harm. In the biodiversity conservation/NRM context there is often little uncertainty that the practice in question, for example, conversion of forest to agricultural land, cause some harm to biodiversity. There is no uncertainty about the causal link. However, there is often great uncertainty about extent of damage, particularly to less obvious ecosystem services such as clean water production, and the point at which such services will be degraded or lost.

Who bears the costs of precautionary policy and management?

It was pointed out by many at the workshop that one of the problems is not that precaution is used, but that there is great inequity in terms of who bears the burden of precautionary restrictions on use of wildlife, with precaution being imposed on the less powerful, and easily evaded by the powerful. For example, the approach of Zimbabwe toward private and communal lands was contrasted in one presentation. While little evidence was available on impacts of resource use, policy toward private land owners emphasised self-policing and investment, while toward communal land, policing and restrictions were emphasised. This approach did not help to alleviate poverty, and in fact probably exacerbated it.

Who defines risk and uncertainty?

This question, strongly related to the above, was raised in several presentations and in discussion. It was suggested that some of the inequities sometimes associated with (strongly protectionist) precautionary interventions arose because relevant risks and uncertainties were defined by powerful groups, often central bureaucracies, rather than those living with and reliant on biodiversity.

Precaution and economic interests

The economic interests at stake in practice influence the degree to which the precautionary principle is likely to be applied to avert potential harm. For instance, the powerful economic interests involved in the case of GMOs in South Africa were suggested to be largely responsible for the apparently low level of precaution adopted. Fisheries provides another example, with little evidence of a precautionary approach being taken to the data-poor, high-value, orange roughy fisheries off the southern African coasts. These fisheries were largely being “mined”: overexploited and crashing. In one presentation on Lake Victoria fisheries, the possibility was raised that lack of a precautionary approach in the booming export commercial industry may be causing negative impacts on artisanal fisheries.

Precaution and protectionism

The precautionary principle in the context of biodiversity conservation and NRM is typically understood to argue in favour of strict protection, emphasising strict protected areas, and tight restrictions and prohibitions on use or consumption of wildlife and biological resources. This approach, which can be characterised as “when in doubt, don’t”, was examined in several presentations. One participant discussed approaches to forest management in Zimbabwe, focussing on a particular reserve. In particular, he highlighted that authorities, in the absence of knowledge of impacts of human resource use, had assumed that access and use of resources was destructive, and in consequence forest management had emphasised evictions and policing, and had not involved any elements of decentralisation or co-management. One participant examined Kenya’s wildlife policy on consumptive use, highlighting that in response to poor information and threats of overutilisation, the authorities had imposed a complete ban on consumptive use of wildlife. While this approach was conceived and is often viewed as a precautionary approach to wildlife harvesting and trade, he emphasised that the consequent limited incentive for landowners to husband wildlife had resulted in severe declines in population numbers.

Decentralisation, co-management, and involvement of resource users in resource management

Some evidence was presented to counter the notion that protectionist approaches should necessarily be seen as more precautionary than decentralisation or co-management arrangements, which allowed for use, and involved communities in management of the resource. One participant made the point that ownership of the resource, and/or involvement in management, plays a critical role in acceptance of and support for application of the precautionary principle. In South Africa, for instance, it appears that the introduction of co-management arrangements for artisanal mussel harvesting has led to communities recommending precautionary measures, including temporary moratoria and quota recommendations lower than those of conservation officials at the start of the project. In general, the workshop supported that, at least where sustainable use was possible, resource harvesters and users should be involved in management, and that imposition of a precautionary approach which excluded them was unlikely to be successful.

Misuse or abuse of the precautionary principle

During the workshop several ways in which the precautionary principle could be abused were suggested. With respect to management of the forest reserve in Zimbabwe, the precautionary stance, (assuming the worst), may have functioned to justify maintaining central agency control and avoiding decentralisation of control to the local level. A similar dynamic was suggested to be at work in Kenya with respect to wild meat policy: a highly precautionary stance to consumptive use may have justified maintenance of centralised control. The precautionary principle was seen by one as “a politician’s best friend, and an effective way to maintain a power base”.

What is the real precautionary strategy? Cost and benefits

In general, participants thought that to automatically equate precaution with top-down, tighter restrictions on the use of wild biological resources is mistaken, despite this being an appropriate response in some limited situations. The problem with this approach, in conservation terms, is that it tends to focus narrowly on the risks and threats of utilisation so that the precautionary principle is invoked to restrict access to and use of resources. This may ignore the threats associated with tight restrictions or maintenance status quo, which include, as pointed out in various presentations, restrictions being unenforceable, illegal and unmonitored trade continuing, lack of incentives for good management or to combat the conversion of wild land to agriculture. For instance, in one presentation it was argued that excessive, “precautionary” restrictions had led to the failure of formalisation of wildlife cropping, and to continued illegal and exploitative use. This approach may also ignore the benefits that could be gained by less restrictive approaches, such as gaining the support of communities for conservation and their active involvement in management and enforcement, establishing incentives for sustainable use of wild species etc. These, broader risks and benefits should be incorporated into decision-making.

The real “precautionary approach”, it was suggested, should be seen as the one that minimised threats to biodiversity, whether that involved protectionist or non-protectionist conservation approaches. One presenter pointed out, in the context of near-shore harvesting of marine resources, that the “precautionary approach” could be in fact to make no intervention, noting that interference could lead to conflict, greater competition due to perceived threats to control and ownership, and ultimately greater pressure on the resource.

Socio-economic impacts of precautionary policy

Use and application of the precautionary principle can have major implications not just for conservation, but for livelihoods, food security, poverty alleviation and economies. It was clear that failure to take a precautionary approach could have major detrimental impacts. One presentation highlighted historical lack of adoption of a precautionary approach to large herbivore introductions in former homelands Ciskei and Transkei, and the current major economic damage resulting. Likewise, the resource security of orange roughy fisheries had been jeopardised by lack of precaution and “boom and bust” fisheries overexploitation.

One presentation analysed precautionary elements with Uganda's wetlands policy and management framework, and emphasised that the need to adopt a precautionary approach did not mean ignoring all values apart from strict biodiversity conservation. Wetlands management required balancing the needs of the many uses of wetlands, including biodiversity conservation, transport, agriculture, livestock grazing, harvesting plants and animals, ecotourism, etc.

However, a number of presentations highlighted instances where the precautionary approach to biodiversity conservation had been applied without consideration of livelihood and food security needs, and had had serious impacts as a result. For instance, one presentation examined policy responses to charcoal burning in Kenya. In this situation, sustainable use of the forest resource is crucial in the long term to support the livelihoods of the rural poor. However, charcoal burning is relied on at times of crisis to provide an income. The participant emphasised that an approach that balanced short and long term livelihood and food security needs and environmental sustainability was crucial. However, in this case a blanket ban on charcoal burning had been imposed, an approach which sought to avoid environmental harm, but ignored livelihood and food security needs. In this case this meant the measure, in fact, was widely ignored and largely unenforceable. Precautionary interventions, like any conservation interventions, should seek to holistically address food security and livelihood needs, as well as conservation needs, in order to be pragmatic and effective, as well as for basic equity reasons.

Precaution in response to which risk? And whose needs and livelihoods should be considered?

Understanding and applying a precautionary approach is made even more complex by the fact that in the biodiversity/NR context, there are frequently multiple and complex sources of risk, which may impact on different resources over different time scales, with impacts on different needs of different groups of people. For instance, one presentation examined the meaning of a precautionary approach in the context of the contribution of conservation of Tanzania's Eastern Arc mountains to achievement of the Millennium Development Goals. Conservation of the forests clearly contributes to biodiversity conservation at a global level, and at a national level contributes to water supply and electricity needs of urban dwellers and the country as a whole. However, stopping forest conversion, as part of a precautionary approach to conserving these environmental services, may have serious negative impacts on food benefits gained by local people through agricultural conversion. The application of precaution must, somehow, address and balance these different risks and livelihood priorities.

Traditional and indigenous knowledge systems and management practices

Several participants highlighted the importance of incorporating indigenous knowledge systems (IKS) and traditional management practices into policy responses to environmental management in the face of uncertainty. Many IKS emphasised restraint and self-regulation in the use of natural resources. For instance, one participant presented the example of traditional restraints on use of an important catchment in Swaziland. She pointed to the relevance of IKS (including practice, sayings, legends, proverbs, etc) in averting potential environmental damage, highlighting that IKS often existed where scientific knowledge was absent, and that IKS provided a "platform" for safeguarding resources against environmental harm. Many participants agreed that IKS was often overlooked or ignored in environmental policy interventions based only on scientific information, and that much useful understanding was left out of the equation as a result. This was increasingly important, as growing populations, poverty and pressure on resources was in many areas leading to the gradual breakdown of IKS and traditional resource management practices. In addition, local resource use practices were often negatively affected by commercial resource exploitation which did not adhere to similarly precautionary self-regulation, and government sanctioning of such commercial exploitation undermined traditional management. For instance, a participant outlined a proposed case study on artisanal and fisheries regulation in Lake Victoria. He raised the issue that traditional management may include precautionary restrictions on fishing harvest, seasons and locations, but that artisanal fisheries were being severely impacted by commercial export-oriented fisheries.

How should the precautionary principle be applied?

Using the PP in a constructive, solutions-oriented manner

It was clear from presentations that the PP can be used to secure major biodiversity conservation gains. For instance, one participant presented examples of relying on the PP when working with industry, to convince them to modify practices and infrastructure that appeared to (but could not be conclusively demonstrated to) be causing declines in threatened species. In these examples, the business concerned had adopted an implied policy of “mitigate when in doubt”, subject to various considerations including cost effectiveness. In this example, it was emphasised that a key factor allowing the PP to be accepted as a basis for conservation interventions was the strong cooperative relationship established between the conservation organisation and the business. The presenter emphasised that where there is no hard evidence, the credibility of those calling for precautionary action is crucial. “Shouting on the sidelines” using the PP was unlikely to be successful—instead conservationists should be careful and pragmatic about using it.

Using the PP within a management framework

In presentations and discussion several participants highlighted that many of the problems with the PP arose because it was imposed as a reactive “one-off” measure, not within an ongoing management framework. Environmental threats were faced with the approach of “when in doubt, don’t”, and maintenance of the status quo or reactive restrictions and bans on use or resource access. Such decisions were often a “panic” reaction to possible environmental threats: rather than instituting a management framework including ongoing information-gathering and responsive management measures, a highly restrictive measure based on precautionary grounds was instituted without being backed up by further management. For instance, in the case of Kenya’s wild meat policy, the presenter pointed out that bans had been instituted as a reactive, panic response to a perceived conservation crisis, but without a management framework. As a result, they were unenforceable and ineffective. He contrasted this approach with a strongly pro-active, solutions-oriented approach to the same issue adopted by some southern Africa countries, involving building local capacity for wildlife management, decentralising control, and supporting sustainable consumptive use. In the case of wetlands management in Uganda, by contrast, the presenter emphasised that management included many elements, including education and awareness, building institutional capacity, and seeking information and understanding of both relevant science and socio-economic context.

Precautionary principle, information gathering and adaptive management

There was a strong feeling in the meeting that the precautionary principle should be used as an approach as part of a proactive adaptive management process. Such a process should emphasise the continual gathering of information relevant to management, and that this information should be in a form that was simply collectible and usable by local communities. Lack of information should not be used solely as a basis for restricting all use and maintaining the status quo.

The principle in action: some “on the ground” applications in Southern and East Africa

One presentation outlined the current status of the precautionary principle in South African law, including, importantly the “South African version” of precaution in the National Environmental Management Act (NEMA). This version contains many elements of the “international” version. NEMA includes the requirement that development be sustainable, and characterises sustainable development as requiring *inter alia* that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions. This was generally thought to be a pragmatic and constructive version of the precautionary principle, which avoided the double negatives and lack of positive guidance of many versions. While there had been some positive uses of the principle to counter potential environmental harm, the presenter emphasised the variable and politically-influenced nature of its application. With respect to the introduction and spread of GMOs in South Africa, for instance, it was difficult to

distinguish any use of the precautionary principle. In this case, in the face of scientific uncertainty and potential harm to biodiversity, not even EIA had been carried out.

In the fisheries context, the SADC Fisheries Protocol requires states to apply the precautionary principle so as not to cause excessive transboundary adverse impacts, involving 'the application of caution to the conservation, management and exploitation of fish stocks and aquatic ecosystems when information is uncertain, unreliable or inadequate.' The South African Marine Resources Act contains reference to apply precautionary approaches, and the Namibia Marine Resources Act involves precautionary elements: e.g. where biological sustainability of a resource or harvesting method is unclear, extension of exploratory rights are limited. With respect to near-shore resources, considerable uncertainty surrounds almost every aspect of the fisheries and their socio-economic context. Most are artisanal, and food security and livelihoods are involved. Mozambique has instituted a precautionary ban on all harvest of live reef species as there were concerns about overharvesting, but is still little information on the resource or on the socio-economic impacts of the ban. With respect to off shore resources, there is little evidence for a precautionary approach being taken in practice. These stocks are commercially exploited by foreign states and coastal states in the case of South Africa and Namibia. Here is comparatively better knowledge of stocks, but doesn't necessarily translate to less exploitation, particularly as IUU fishing is a major problem. Orange roughy provides an example of lack of adequate precaution being implemented, with fisheries following a classic "boom and bust" pattern of exploitation.

WORKSHOP PARTICIPANTS

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PRESENTATION ABSTRACTS

1. Dr John Mugabe (NEPAD)

Case Study: The Precautionary Principle and Sustainable Use of Lake Victoria's Biological Resources

Lake Victoria, the world's second largest freshwater lake, is shared by Kenya, Uganda and Tanzania. It is surrounded by lakeshore savannah, which is subject to low and unreliable rainfall. Because there is little arable land, agriculture is at the subsistence level. Thus fishing is the main economic activities for the people living around the lake. And fish is a primary source of protein in the area. However, the locals are increasingly loosing access to and control of the fishery resources, and their socio-economic and nutritional standards are declining rapidly.

One of the key features of the Lake Victoria ecosystem is the narrow range of species of fish. The lake, which only some 14,000 years ago was home to some 400 species of cichlids (small indigenous species of fish), is now basically a three-species aquarium: the dominant Nile perch, the small sardine-like omena (*Rastrineobola argentea*), and ngege or Tilapia (*Oreochromis niloticus*). It is experiencing a major and irreversible ecological transformation.

The introduction of the Nile Perch (*Lates niloticus*) in 1959 has contributed to the irreversible ecological change of the lake. It has also generated new social and economic activities, some of which are putting additional pressure on the already fragile ecosystem. These changes are taking place in a policy environment of economic liberalization largely characterized by the rapid opening up of local economies to internationally competitive enterprises. Local social and economic institutions—mainly informal agencies in the form of households, fishermen, fishmongers, women groups, and local traders—have, however, considerably limited (and sometimes diminishing) capacities to engage in the exploitation of Lake Victoria's fisheries. Of urgent public policy concern is the impact of the growing export of fish to the international markets on the food security and the local livelihoods of the lake's riparian communities.

Prior to the introduction of the Nile perch, fishing in Lake Victoria was predominantly artisanal and largely for local consumption. Trade in fisheries was localized—with exports to neighboring markets. Today both fishing and associated export of fishery resources are industrialized and getting more integrated into the international market not easily accessible to the local fishermen and their households.

By 1998 Lake Victoria's fisheries were generating an estimated foreign currency to the tune of US\$ 290 million a year. More than 100,000 had been employed either directly in fishing or as labourers in the factories. However, the growing capital-intensive factories could easily erode employment opportunities for the local people. Evidence is being adduced to show that already some of the local people are being displaced from employment as a result of the emerging export industry. Women who traditionally represent 75% of those engaged in artisanal (small-scale, non-commercial) processing of fish are increasingly being marginalized. Production, processing and marketing have become more and more technology-dependent, making it difficult for artisanal fishermen to stay in the industry. Tens of thousands of fishermen and fishmongers have lost their jobs and incomes in recent years.

What are the implications of the international trade in Lake Victoria's fisheries in general and the Nile perch in particular for the food security status and for local livelihoods of local riparian households? Empirical evidence generated by IUCN research project on the socio-economics of the Nile perch trade vividly show that the growing export of the Nile perch and the commercialization of the dagaa are undermining the survival of the households. More than 90 percent of the quality fish is processed and exported to the international foreign markets. According to Abila and Jansen (1997), "the only Nile perch available in the local markets are the juveniles or that rejected by

factories due to poor quality." Local households do not have access to quality fish necessary for the building and sustaining their protein base.

This case study will explore how the precautionary principle can be integrated into international trade in Lake Victoria's fisheries. It will specifically:

- (a) identify or trace precautionary principle statements in national fisheries legislation—whether and extent to which current conservation laws and programmes promote the application of the principle;
- (b) identify and study cultural underpinnings and related social institutions that invoke the precautionary principle—e.g. traditional fishing permits are local instruments for invoking the principle; local interpretation of the principle among fishing communities, etc.
- (c) whether and how the application of the principle affects food security and fish exports;
- (d) does the application of the precautionary principle undermine trade in or export of fish? Can it be applied to balance trade with local food security? and
- (e) Can (and how) the principle be applied to regulate the introduction of alien species in Lake Victoria?

2. Mr Rob Barnett (Wild Living)

Impacts of Precautionary Wildlife Law and Policy on Contribution of Wild Meat to Rural Food Security and Livelihoods in Kenya

Kenyan law and policy relating to wild meat consumption and trade is generally viewed as highly precautionary. Ownership and control of wildlife is retained by the state and hunting, utilisation for food, and marketing of wild game species for meat is heavily restricted. As a consequence, legal production of wildlife meat through ranching and cropping is largely unprofitable and in decline, with the bulk of the high quality meat produced sold as animal food, particularly dog food. At the same time, however, Kenya's growing population, particularly the rural poor, relies for a substantial proportion of its protein needs on wild meat. This is overwhelmingly illegally and unsustainably harvested, with the resource now in rapid decline. The aim of this study is to examine the impact of precautionary wildlife legislation and policy in terms of food security and livelihoods for rural poor in Kenya. Particular attention will be paid to the influence of tenure and governance arrangements on potential community benefits from game ranching and cropping schemes.

3. Mr Markus Burgener (TRAFFIC East and Southern Africa)

The Role of the Precautionary Principle in Securing Sustainable Fisheries for East and Southern African Coastal States

The majority of East and Southern African coastal states face food security problems and while having significant coastal and off-shore marine resources, either generally lack the capacity to exploit the off-shore resources or with respect to near-shore resources, frequently lack the capacity to carry out comprehensive stock assessments or manage these fisheries effectively. In light of these dynamics, the use of the precautionary principle in fisheries management, including its reflection in relevant international and regional agreements such as the SADC Fisheries Protocol and the Indian Ocean Tuna Convention will be examined. Fisheries management practices as well as the relevant national legislation and policy of South Africa, Namibia and a number of East African coastal States will be assessed to determine to what extent the principle is referred to, whether it is implemented and if so, whether it has been a useful tool in securing the sustainable use of marine resources. The socio-economic, and political dynamics of a number of coastal States in the region will be discussed, highlighting to what extent these dynamics affect implementation of the precautionary principle.

4. Dr Rosie Cooney (The Precautionary Principle Project)

Applying the Precautionary Principle in Biodiversity Conservation and Natural Resource Management: Issues and Problems

Tackling risk and uncertainty poses major challenges to environmental law, policy and management. Challenges are particularly acute where risks to biodiversity must be balanced against risks to livelihoods, income, trade or food security. The precautionary principle, or precautionary approach, is an important and widely adopted approach to uncertainty, emphasising acting to avoid environmental harm before, or in the absence of, scientific certainty about the nature, likelihood or causation of the threat. It has now been incorporated into a very wide, and growing, range of law and policy instruments at international, regional and national level, including the CBD, CITES, the African Convention on Conservation of Nature and Natural Resources, regional fisheries agreements, and many national environmental and resource use laws. However, precaution remains highly controversial, sparking controversy in, for instance, the WTO, the CBD, CITES, and WSSD, with developing countries in particular voicing concerns about impacts of its widespread adoption. The precautionary principle raises issues around potential conflicts between conservation and livelihoods/development, misuse for trade-protectionist ends or to promote animal-rights concerns, and debates around sustainable use or incentive-led vs protectionist conservation approaches. In the context of conservation and sustainable use of biodiversity, there is little consensus on the acceptance of precaution, little shared understanding of its meaning, inconsistency in its implementation between different sectors, issues and regions, and little information on its practical impacts. This leads to confusion and controversy, and can result in poor conservation outcomes and negative livelihood and development impacts. The Precautionary Principle Project is a collaborative initiative of research, dialogue and policy development. It seeks to develop better understanding of issues surrounding precaution, and develop best-practice guidance for its application in NRM and conservation in a manner that respects both conservation and development priorities. This workshop will review and discuss case studies and analyses of precaution in practice across a range of NRM areas, including fisheries management, alien invasive species, utilisation and trade of wild species, protected area management, and sustainable forest management, and develop recommendations for its operation. The outcomes will contribute to the development of "best-practice" guidance for application of the precautionary principle and feed into ongoing project activities including development of case studies, further regional consultations and workshops and inputs into relevant policy arenas, including the IUCN World Conservation Congress and CITES.

5. Ms Yolán Friedman (Endangered Wildlife Trust/Conservation Breeding Specialist Group)

The Precautionary Principle in Practice: Endangered Wildlife Trust Experiences

The Precautionary Principle is an important aspect of managing uncertainty and requires that environmental harm be avoided as far as possible before, or in the absence of, scientific certainty about the nature, extent or cause of threat, by adopting a precautionary approach. This Principle must however be carefully applied, and the consequences carefully considered when potential risks to biodiversity conflict with the needs of human livelihoods, trade or food security. In less developed countries, and especially, in mega diverse countries such as South Africa where natural resources are varied and seemingly plentiful, and yet face a precarious future in the absence of concerted conservation action, the application of a precautionary approach is both essential and potentially controversial.

The Endangered Wildlife Trust (EWT) is one of the largest conservation non-governmental organisations in southern Africa and operates through a number of specialist Working Groups and Strategic Partnerships, established to develop the necessary expertise and capacity to address critical conservation issues. The EWT, as a pioneering force in many successful conservation initiatives in sub-Saharan Africa, has applied a precautionary approach in many instances where it was considered that without instituting concerted conservation action, or adapting or halting an activity deemed to pose an environmental threat, biodiversity losses would be unsustainable and potentially irreversible. Over its thirty year history the organisation has amassed a wealth of

conservation experience and this paper will cover a selection of case studies in which the Precautionary Principle has been used to good effect in striving to conserve threatened species and to prevent further biodiversity loss.

6. Dr Dawn Hartley (CARE Tanzania)

The Eastern Arc Mountains: Applying the Precautionary Principle to a Complex Poverty-Environment Nexus

There are 8 Millennium Development Goals (MDGs) of which 3: eradicate extreme hunger and poverty (MDG1); ensure environmental sustainability (MDG7); and develop a global partnership for development (MDG8) are directly relevant to conservation programmes in Tanzania. Tanzania is a signatory to all major conservation conventions, including the CBD and the Precautionary Principle is an enshrined element of that convention. Proposals to implement the Precautionary Principle have caused conflicts between the conservation lobby that supports strict protectionist approaches to conservation and development professionals promoting poverty alleviation. This has polarised the community-based versus protection arguments within conservation.

This paper explores these issues as they relate to the Eastern Arc Mountains, which support a network of catchment forests, which are of global importance to biodiversity conservation and underpin key aspects of Tanzania's economy. The Eastern Arc Mountains also support substantial populations of poor forest edge agriculturalists.

We show that focusing on achieving the poverty alleviation objectives, in isolation of the national and international contexts, would result in endorsing the clearance of forests for agriculture by the local communities. This would likely result in short term income-based improvements to local livelihoods and make a direct contribution to MDG 1. However, the loss of the water catchment function would have major impacts on both water supply and hydro-electrical power generation (MDG 7), in particular resulting in the loss of water availability to major cities, such as Dar es Salaam, Tanga and Morogoro; and affecting national power supplies directly. These impacts would likely cause a much greater increase in urban poverty (MDG 1) than the short-term gains for rural poverty would achieve through forest clearance and increased agricultural production. This, in turn, would have a long-term negative impact on the National economy, captured under MDG8.

In addition, the loss of the Eastern Arc Forests would result in the extinction of numerous Tanzanian endemic species in direct contradiction to Tanzania's commitments under the CBD.

We conclude that using an holistic approach to use of the precautionary principle, i.e. not just looking through the local livelihoods lens, would result in the maintenance of the Eastern Arc Mountain Forests to achieve both national poverty alleviation and international biodiversity conservation goals.

7. Dr Peter Lent (University of Fort Hare)

The Translocation of Large Herbivores: Risks, Rewards and Application of the Precautionary Principle in the Eastern Cape Province, South Africa

Translocations of ungulates and other large mammals has proceeded in South Africa with little regard to the precautionary principle and the possible consequences, except for efforts to limit spread of diseased individuals of some species. The Eastern Cape Province has been one of the major recipients of many extra-limital ("afro-exotic") species. These introductions have been made in response to the economics of a rapidly growing game farming industry but have not been limited to private farms and reserves. Some provincial conservation areas as well have introduced, maintained and traded in exotics, partly in response to pressures to become more self-sustaining economically. This has been especially true in conservation areas of the former homelands (Ciskei and Transkei). Other provincial nature reserves have resisted these pressures. The ecological consequences of these translocations are poorly understood and the problems of leakage

(escapes) to surrounding areas, including conventional agricultural areas, are not well documented.

Applications of precautionary principle may also be important in decisions regarding re-introductions of species, as well as introductions. Prior to these re-introductions consideration should be given to changed ecological circumstances, size of area receiving the introductions, and possibilities for leakage into surrounding communal or commercial agricultural lands.

8. Dr Everisto Mapedza (London School of Economics)

Precaution in the Designation and Management of the Mafungautsi Forest Reserve in Zimbabwe

'Science' has been used as a basis of the precautionary approach in the management of natural resources such as forests. Increasingly, manufactured challenges and uncertainties are the sources of the ever-increasing risk in a globalised society. How do resource managers strike a balance between a precautionary approach in order to sustainably manage natural resources whilst at the same time promoting local livelihood strategies? How can sustainable resource management improve livelihoods without offering perverse incentives for the local communities? This paper will look at the reservation of the Mafungautsi Forest, which was perceived to be a solution for harnessing the siltation of Kariba dam, which was built on the Zambezi River. The forest was reserved in 1954 before the Precautionary Principle gained currency but the implied arguments for its designation then, and current arguments for maintaining it as a gazetted forest, clearly leans on the precautionary principle. The basis for designating these areas was based on ecological grounds and the need to protect the catchment area for the Zambezi River. Mafungautsi Forest Reserve is the second largest forest reserve in Zimbabwe measuring 82 000 hectares. Surprisingly, current forest management strategy assigns very little effort to try and carry out an ecological study to ascertain the impact of the current management strategy on the Zambezi River and biodiversity of the forest. Protectionist approaches are viewed as providing a solution to guard against the risk of siltation of rivers in Zimbabwe.

9. Mr Milu Muyanga (Tegemeo Institute of Agricultural Policy and Development)

Impacts of Precautionary Charcoal Burning and Conservation Policy: Integrating Households Food Security with Natural Forests in Kenya

This case study aims at appraising impacts of precautionary restrictions on charcoal production and trade on poor rural households food security and livelihoods on one hand, and poor urban households fuel needs on the other hand, with special consideration paid to the forests conservation policy (Kenyan forest cover stands at 2 percent) and democratic system of government.

Charcoal burning has been a source of income and one of the survival strategies adopted by Arid and Semi Arid Lands (ASALs) households in Kenya. Yet, charcoal is sold for a pittance by the locals, for example between Kshs 20 and 70 while in Nairobi a bag it fetches between Kshs 350 and 450 (1US\$=Kshs76). Kenya consumes an estimated 2.4 million tonnes of charcoal per year, generating around Kshs 23 billion per year. Eighty-two (82) percent of Kenya's urban population depends largely on charcoal as source of energy. Environmentalists are quick to condemn charcoal for the destructive trail it has left across Kenya's woodlands and forests. Food security is very much dependent on environmentally responsible, and sustainable, use of the world's forests. However, inappropriate use of forests and forested land is threatening food security. The Government's attempts at banning charcoal burning in natural forests over the years have been regularly frustrated by the rising need for fuel. Charcoal production in ASALs as been revealed to be one of the coping mechanisms adopted to counter the negative effects of occasional localised rainfall failure and transitory food insecurity (Muyanga et al, 2003).

Charcoal burning is stands illegal in books. But, in towns, charcoal is sold openly on the streets. The Government, being democratically elected and subscriber to certain international conservation

conventions, has been faced with some tough choices to make. Abiding to these conventions the government might decide to ban charcoal production at the expense of the poor rural and urban households depending primarily on the product as alternative income and cheap energy source respectively. It could opt to become 'welfarist' by allow charcoal production and trade to thrive. This scenario will surely expose the poor rural households to higher scales of chronic food insecurity in the future as a result of depleted forest cover. This option would be appealing given the possibility of the political establishment not living long enough to see the long-term ramifications of this option. The government has opted to 'closing one eye' and to allow the practice to continue unabated.

As a precautionary measure, a local NGO operating in Kitui District has taken up the challenge of harmonize the poor rural households welfare concerns with forest conservation policy. It has seemingly taken supply side approach in a persuasive manner. Kitui is one of the semi-arid districts of Kenya. The district suffers from lack of sufficient rain. The population is largely poor, as it has no cash crops. Five years ago a local Non-Governmental Organization, Sahelian Solutions (SASOL), came up with a revolutionary method of retaining much of the run-off water in the river valleys by constructing sub-surface dams in collaboration with the local communities. SASOL approached several donors to help in constructing these dams. After demonstrating their effectiveness, the NGO was able to attract funding from SIDA, DFID, and SMAVI of Netherlands. To date, SASOL has been able to construct over 150 sub-surface dams with a recharge area of 37 square kilometers.

SASOL has succeeded in diverting the attention of the local communities from forest destruction activities such charcoal burning by providing alternative and more useful use of their time. During the slack season, rural households are engaged in planting vegetables and fruits for respective families consumption and sale. With assistance from SASOL and through PRA, households have discovered the usefulness of indigenous forests and at the moment are not only protecting them but also have established seedbeds for the same.

One important lesson to be learnt in this case study is that, when there is a conflict and the lives of people are at risk, information flow especially on the understanding and appreciating both short- and long-run socioeconomic costs and benefits associated with the available options is really imperative.

10. Ms Norah Namakambo (Wetlands Forest Division)

Precautionary Principle in Wetland Conservation and Management in Uganda

Sustainable management of wetlands worldwide, and especially in Uganda, is a new venture and has effectively started only in the last 10 or 20 years. As a new branch of environment and natural resources management few tried and tested methodologies are available to wetland managers. Time and research will be needed to test options for sustainability. Until such methodologies are developed, tested and approved, it is prudent to be cautious when deciding what management options are to be allowed. The need for caution is particularly needed in wetlands that appear to have high values in terms of their hydrology, habitat functions and biodiversity.

This paper will focus on ways of strengthening the precautionary principle in wetland conservation and management. It will argue that it is better to be safe than safe than sorry which is the heart of the precautionary principle.

11. Ms Nonhlanhla Zwane (University of Zimbabwe)

The Relationship Between Indigenous Knowledge Systems (IKS) And The Precautionary Principle In Water Resources Management And Environmental Conservation: A Case Study Of Mantsholo Lake In Swaziland

It is the aim of this case study to contribute to the definition of the relationship between the precautionary principle and science as approaches to sustainable development and environmental

conservation within the context of IKS in the Mantsholo Lake and community. The following are the questions that the case hopes to seek answers to:

- What are the beliefs that existed and still exist that are relevant to the conservation of the lake? (State of IKS)
- What developments have been planned and attempted in the past and were there any successes / failures? (Issues and experiences in development of the area around the lake)
- Were the attempted / proposed developments (even upstream or downstream the lake) planned with or without the consideration of relevant social, and cultural / traditional information that might influence conservation or development outcomes? Was there any uncertainty to those who were involved caused by the belief system for the development projects? (Any proof of the application of the precautionary principle)
- Is there any scientific explanation of any of the events or features that are associated with the lake that can be drawn up from scientific knowledge about functions of different eco-systems?

The expected output of the case study is issues, experiences, opportunities and threats to indigenous systems as a result of competition or complementariness between development and the precautionary principle.

The proposed case is viewed as one that demands a precautionary approach inherently and the researcher considers it as one within which the functionality of the principle would require extensive involvement of local institutions and management to ensure sustainable management practices. Knowledge systems that the local people have must be investigated and understood by development planners. Important to note is the fact that for any development effort to be sustainable local social systems must be taken into consideration regardless of how scientific innovations may be.

12. Cormac Cullinan (EnAct International)

The Precautionary Principle in South Africa

This presentation examines the relationship between science, law and the precautionary principle. It examines and assesses the status and application of the precautionary principle in South Africa, with particular reference to the National Environmental Management Act (NEMA), and in regional instruments. It highlights some specific applications of the precautionary principle, and in particular the comparative lack of precaution adopted *vis a vis* GMO cultivation and release in South Africa. Finally, it draws attention to the precautionary elements often present in indigenous and traditional knowledge and resource management.