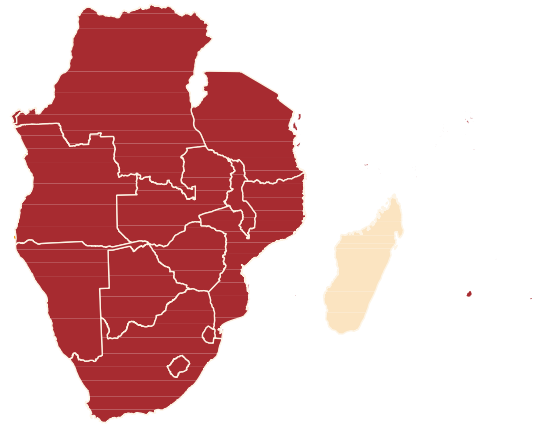


Alex Weaver



# EIA and sustainable development: Key concepts and tools

## Contents

**Introduction**

**Sustainable development ..**

**Environmental impact assessment**

**Challenges for effective use of EIA**

**Conclusions**

*References and other key publications*

## Introduction

Environmental impact assessment<sup>1</sup> (EIA) is recognised as a key support tool for sustainable development. This chapter provides some background to the major challenges to EIA by examining the concepts of sustainable development and EIA within a southern African context. Balancing local socio-economic, political and ecological priorities is particularly challenging. For EIA to effectively contribute to sustainable development in southern Africa, it needs to show that it can contribute to poverty alleviation, employment creation and improved economic development. At the same time EIA implementation occurs within the context of an HIV/AIDS<sup>2</sup> pandemic, limited human and financial resources, abundant but fragile natural resources, a population with a strong reliance on dwindling natural resources and a need to diversify livelihood options.

## Sustainable development

Many African cultures have a strong tradition of viewing nature as the mother of sustenance. This view led to a symbiotic relationship between people and nature, where nature was nurtured and its resources used sustainably. The taboos that shrouded person–nature relations were a reflection of this relationship. Examples included snakes that were regarded as totems for particular clans and could thus not be killed; birds such as the owl, whose killing was believed to bring bad luck; the blue crane that was associated with royalty and was not to be killed; and the leopard, which was only hunted and killed to make a chief's royal blanket (Shimwaayi 1995).

The notion *sustainable development* was only introduced into the global environmental debate in the 1980s as an expression of the interdependence between economic development, the natural environment and people. The most widely accepted definition of *sustainable development* describes it as 'development that meets the needs of the present without compromising the ability of future generations to meet their needs and aspirations' (WCED 1987). In this articulation, sustainable development seeks to establish a path along which development can progress while enhancing the quality of life of people and ensuring the viability of the natural systems on which that development depends (CSIR 2001).

Given the low levels of human development in southern Africa, it is not surprising that the region's goals for sustainable development focus on equity issues. In terms of the Southern African Development Community (SADC) vision for sustainable development (SADC 1996), the region must –

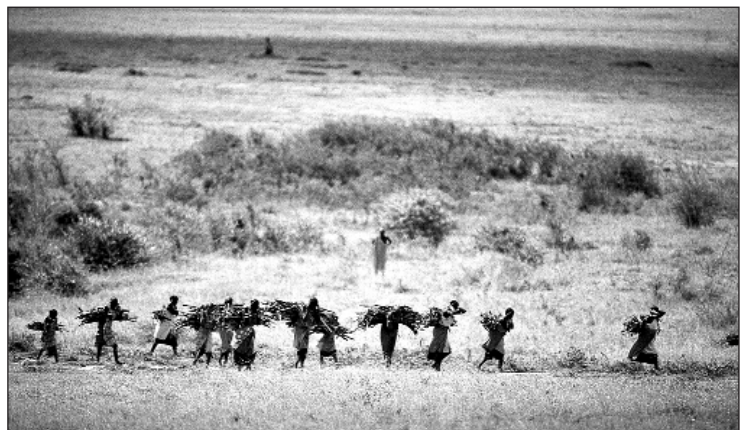
- accelerate economic growth with greater equity and self-reliance

- improve the health, income and living conditions of the poor majority, and
- ensure equitable and sustainable use of the environment and natural resources for the benefit of present and future generations.

A fourth dimension that needs to form an integral part of the three goals identified by SADC to ensure sustainable development, is governance. There is much frustration globally about the lack of progress in the implementation of various global treaties and protocols (Topfer 2000). Similar frustration is experienced at company and local government levels. If we are going to move forward, we must move beyond pronouncing what must be done – we must talk about how it gets done. We must start applying the basic principles of governance needed to meet our objectives. This requires, amongst others, that stakeholders engage transparently to promote participation and form partnerships, and that they are accountable for their actions and decisions (Weaver et al. 2001). Of the 42 recommendations put forward to achieve sustainable development in a recently released report on southern Africa (MMSD 2002), 34 are linked to issues of governance.

The World Commission on Environment and Development (WCED 1987) also emphasises governance and suggests the following basic requirements for the achievement of sustainable development:

- A political system that secures effective citizen participation in decision-making
- An economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis
- A social system that provides solutions to relieve the tensions arising from disharmonious development
- A production system that respects the obligation to preserve the ecological base for development
- A technological system that can search continuously for new solutions
- An international system that fosters sustainable patterns of trade and finance, and
- An administrative system that is flexible and has the capacity for self-correction.



Anthony Bamister (Gallo Images)

Many southern Africans are dependent on natural resources for their livelihoods and well-being. Ensuring that future generations will enjoy the benefits of these resources, is one of the region's greatest challenges.

<sup>1</sup> For the purpose of simplicity, the term *EIA* is used throughout this publication. However, it should be noted that various authors prefer to define the broader concept of *environmental assessment* (EA) into more specific tools, for example, EIA, health impact assessment and social impact assessment. For the purposes of this publication, EIA includes the full range of environmental assessment tools.

<sup>2</sup> Human immunodeficiency virus / acquired immune deficiency syndrome.

## Environmental impact assessment

EIA is 'a process having the ultimate objective of providing decision-makers with an indication of the likely consequences of their actions' (Wathern 1988).

Prior to 1970, project and policy appraisals were based largely on technical and cost-benefit analyses. In January 1970, the US Environmental Policy Act (NEPA) introduced the first requirement and procedure for EIA. Some 30 years later, EIA is undertaken in more than 100 countries (Sadler & Weaver 1999) – some key international benchmarks are summarised in Box 1. During this period, there has not only been widespread adoption of EIA, but also a number of adaptations. Notable adaptations include a shift from the focus on biophysical aspects, to the inclusion of social and economic issues; the inclusion of implementation aspects (e.g. environmental management plans); attempts to address sustainability issues such as biodiversity loss and cumulative effects; and application to higher levels of decision-making such as plans, policies and programmes.

Although detailed steps in the EIA process vary from country to country, there are a number of generic steps which are followed internationally (Figure 1). An explanation of key terms used in the EIA process follows (for more details see UNEP 2002 or CSIR 2003):

- **Screening**

Screening is the process of determining whether or not an individual project proposal requires a full-scale EIA and what the level of assessment should be. In some countries, an initial assessment is used when there is uncertainty regarding the scale of study required or where there is a small amount of information required to take the decision. Most countries have lists of activities for which EIAs are required (e.g. mining or major construction works). In addition, some countries have identified sensitive environments (e.g. estuaries or cultural heritage sites) for which EIAs are needed.

- **Scoping**

Scoping determines the nature and extent of the required impact assessment. This phase entails the identification of issues that are likely to be important during the EIA and eliminates those that are not. Scoping usually involves

interaction between the public, government departments and proponents who assist in the identification of key issues for investigation. The scoping report forms the basis for the terms of reference for the impact assessment (or analysis) phase.

- **Impact assessment**

The objective of this phase is to identify how the activities of the proposed development will impact on the various components of the environment. The impact assessment entails the identification and analysis of impacts, as well as a prediction of the significance of the impacts. Both negative and positive impacts are assessed.

- **Mitigation**

Mitigation entails the identification of ways in which negative impacts can be avoided or minimised to limit costs, and ways in which positive impacts can be enhanced to ensure maximum benefit.

- **Reporting**

A single EIA report is produced and contains the integrated findings of the impact assessment and mitigation studies. This report is used by the authorities in decision-making.

- **Reviewing**

In all jurisdictions, the authorities must officially review the EIA report and decide whether it is of an acceptable standard or not. To improve rigour and ensure that relevant information is captured and reflected, the process often includes review by the public and independent specialists prior to finalisation and decision-making. The Southern African Institute for Environmental Assessment (SAIEA) is the only institution dedicated specifically to providing a professional external review service in the region.

- **Decision-making**

Decision-making refers to the final approval or authorisation of the proposal. It usually includes a series of conditions under which development may proceed. The conditions are often translated into the management plan for the project.

- **Implementation**

If the development is approved, the developer might be required to implement an environmental management plan (EMP) for construction, operation and, in some instances, decommissioning of the project. The EMP is the tool used to ensure that the mitigation actions and the monitoring requirements recommended in the EIA are systematically implemented throughout all phases of the project. This often-neglected aspect of EIA ensures delivery on promises.

EIA processes are fully compatible with the generic development cycle (Table 1). The internationally accepted key

### Box 1: Record of institutionalisation of EIA

- NEPA introduces requirement and procedure for EIA in 1970
- Australia, Canada and New Zealand follow US lead in 1973
- EIA process is established in developing countries in mid- to late 1980s
- European Commission Directive on EIA in Member States (1985, amended 1997)
- World Bank Operational Directive on Environmental Assessment (1989)
- UNECE (Espoo) Convention on EIA in a Transboundary Context (1991)
- Principle 17 of Rio Declaration of Environment and Development (1992) endorses use of EIA as a national instrument

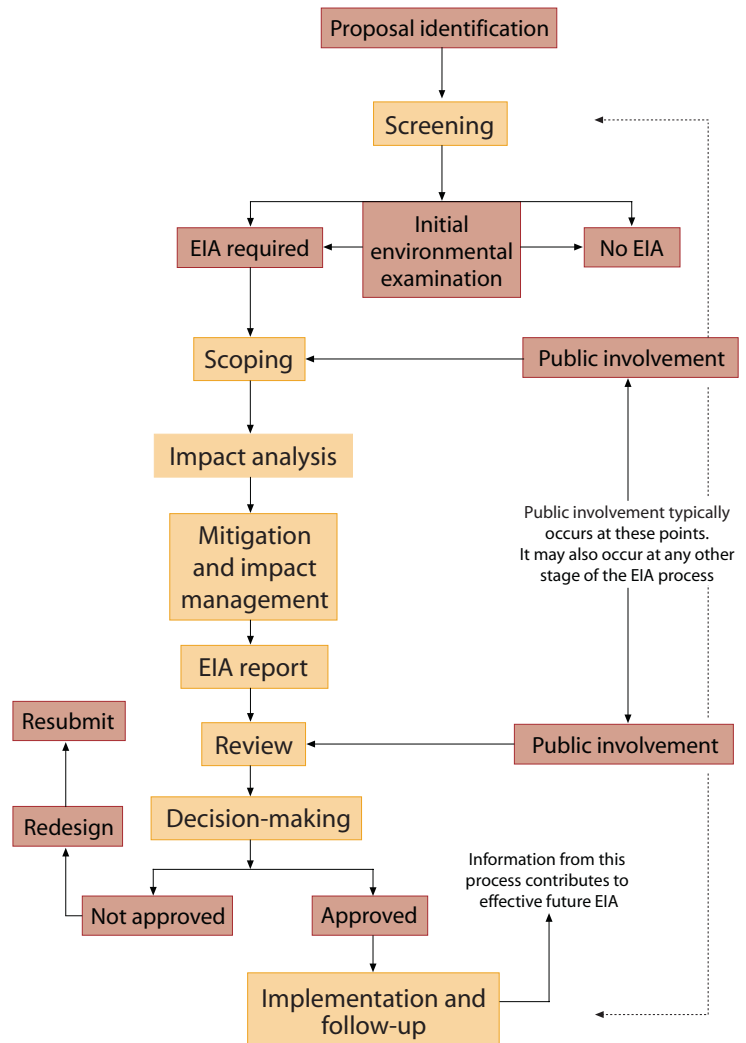
Source: Sadler & Weaver 1999.

**Table 1: Interfacing EIA and the project life cycle**

Project life cycle	EIA life cycle
Pre-feasibility	Screening
Site selection	Scoping
Feasibility	Impact assessment
Feasibility report	EIA report
Board decision	Authority approval
Detailed design	Environmental management plan
Construction	Audit
Operation	Monitor and audit
Closure	EIA for closure

steps of EIA described above (screening, scoping, assessment, decision-making and implementation), are followed in most SADC countries. A key weakness with the process is the lack of a seamless link between the EIA and the implementation phase where environmental management systems, which include a management plan, monitoring, auditing as well as provisions for closure, are required. It is worth noting that mining legislation in South Africa has environmental requirements which focus strongly on implementation. Companies may only commence mining once their closure plan has been approved. This approach has some useful lessons for EIA practice. We need to recognise that EIA is not just intended to ensure legal or

**Figure 1: Steps in the EIA process**



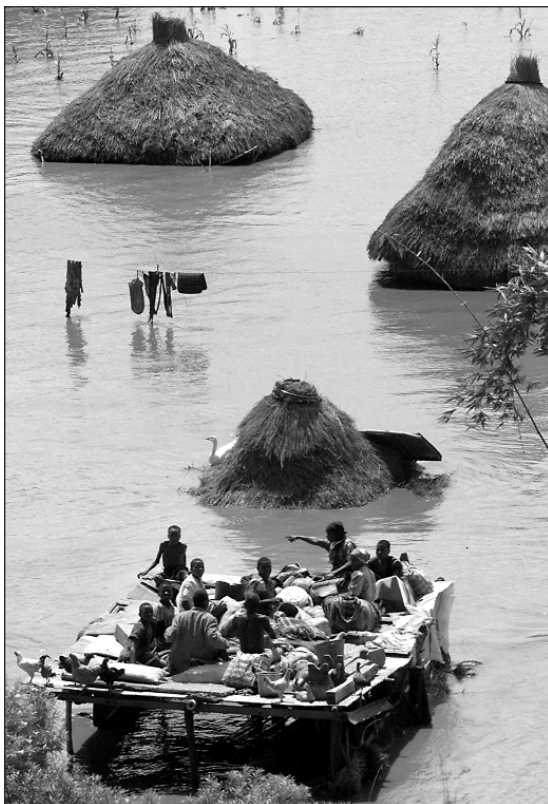
Source: UNEP 2002.

Although the EIA process varies from country to country, there are certain basic steps that are common to all.

donor compliance, but, more importantly, to ensure that projects are implemented in alignment with the principles of sustainable development.

The African Development Bank (1994) points out that the main purpose of an EIA is not to justify the appraisal of a project per se, but rather to provide alternative scenarios which fully reflect environmental costs and benefits. This would in turn facilitate the decision whether to undertake the proposed investment.

By 1996, more than 100 countries worldwide had EIA systems. These vary greatly in terms of procedure and practice. Some are in the form of regulations, others have EIA guidelines, and yet others have systems that are more *ad hoc*. Some countries with well-developed systems lack enforcement in practice (Glasson & Salvador 2000). The scope and methodologies of EIA have evolved greatly over the past decade. Advances include consideration of biodiversity and climate change issues; increasing application to policy, plans and other



Odd Andersen (AP Photo/POOL)

Mozambican villagers sit on their rooftop awaiting rescue after the Limpopo River burst its banks in March 2000. The effects of increasing numbers of people, land degradation and developments along rivers can have disastrous consequences for those living downstream.



Hemer Frankentfeld (PictureNET Africa)

HIV/AIDS is a pandemic with extensive social and economic consequences for southern Africa. The use of condoms is promoted to fight the spread of the disease.

strategic decisions; and review of trade, privatisation and structural adjustment initiatives.

Other tools for development decision-making (such as risk assessment and strategic environmental assessment) either do not have the legal or mandatory status of EIA, or are not yet at the cutting edge of addressing sustainability issues (IAIA 2002). Nevertheless, it is widely accepted that strategic environmental assessment (SEA) is much more likely to promote sustainable development than project-level EIA (Figure 2). This is because most strategic decisions have already been taken once a proponent begins articulating the needs of a specific project. By contrast, alternative options are still very much under debate when policies, plans and programmes are under discussion. By incorporating sustainable development considerations early in the decision-making process, there is a good chance that the subsequent design of individual projects will be more environmentally acceptable and that the project-specific EIA process will be more focused and efficient.

SEA is much more likely to promote sustainable development than project-level EIA.

The creation of environmental policies and programmes in developing countries has been motivated by different factors, and has thus proceeded quite differently than in Western countries where EIA originated. In the West, environmental

policies and programmes resulted from demands by the general population, and thus were 'bottom-up' initiatives. In contrast, environmental policies in developing countries have been 'top-down' initiatives by Governments themselves, partly because of international pressures to respond to environmental problems (Boyle 1998). There is, therefore, less widespread acceptance of EIA by the general public in developing countries, where it is often perceived as being a hindrance to development rather than an aid.

The international emergence of environmentalism and EIA as a key decision-making tool in the early 1970s was closely tied to public participation (and, hence, pressures). Early attempts to introduce EIA in southern Africa were not successful because conservative administrations and the oppressive nature of colonialism and apartheid had historically discouraged public debate and action, especially when the public strayed into the apparently exclusive domain of decision-making (Weaver et al. 2002).

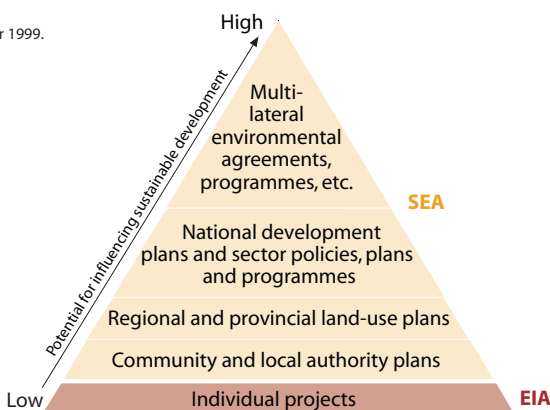
In recent years, individual countries or groups of countries (such as SADC) affected by common problems have undertaken important environmental initiatives. However, change has been slow because many Governments still maintain a virtual monopoly on policy-making. A lack of capacity to implement policy is characteristic of many of the countries in the region and has been a further obstacle to uniform and effective implementation of EIA (Weaver et al. 2002).

SADC's *Policy and strategy for environment and sustainable development* (1996) calls for 'a breakaway from fragmented sectoral approaches to environmental management' and urges the region to pursue 'a single agenda and strategy' and to achieve the consistent integration of EIA in decision-making. In spite of these difficulties, great progress has been made in the implementation of EIA within the region since the Earth Summit in 1992. Most SADC countries have promulgated framework legislation that makes allowance for EIA, and Mauritius, Mozambique, South Africa, Swaziland and Zambia have specific legislation covering EIA, whilst most of the remaining countries are currently developing such legislation.

Professional practice has grown in the region. South Africa, with approximately 600 EIA practitioners, has one of the most active affiliates of the International Association for Impact Assessment (IAIA) worldwide and has recently established a voluntary accreditation system for EIA practitioners. There are examples of excellent EIA practice, which have been audited and stand up well against international 'best practice'. There is also a growing realisation that EIAs need to consider transboundary impacts. In South Africa, advanced tools such as SEA are being implemented to create a better framework within which EIA can be practised; there is also regular use of sophisticated predictive modelling techniques, health risk assessments, and social impact assessments within EIA processes. Public participation processes are particularly well developed in some countries in the region (for example, Namibia and South Africa) with innovative methodologies such as participatory rural appraisal regularly being applied (Weaver et al. 2002).

Figure 2: Levels of planning, EIA and sustainable development

Source: Tarr 1999.



## Challenges for effective use of EIA

Impact assessment tools have been applied internationally to ensure that proposed actions are economically viable, socially equitable and environmentally sustainable (IAIA 2002). The relatively well-developed legislative and policy framework in the region, combined with the great challenges for sustainable development in southern Africa, create the opportunity for EIA to play a leading role.

For EIA to fulfil its real potential, southern Africa needs capacity-building for administrators, practitioners and the public; monitoring of compliance with EIA recommendations; sharing of 'best practice' across the region; linking EIA with the full project life cycle; harmonisation of legislation within the region; and strengthening the links between EIA, SEA, regional planning and other high-level decision-making processes. There is also a need to dispel the impression that EIA is an obstructive process that keeps people in poverty rather than one that ensures future generations will enjoy resource security and a good quality of life (Weaver et al. 2002).

Southern Africa, like most developing-world regions is experiencing rapid population growth, with simultaneous economic growth and industrialisation. Informal and small-scale enterprises have now become a reality, and create a special opportunity for stimulating economic growth in the region. A number of areas exist where small-scale enterprises have potential environmental impacts although in some cases they can be very beneficial, as with waste-collection businesses. Many small-scale businesses create hazardous wastes, e.g. mercury from small-scale gold workings in Tanzania (MMSD 2002), which are discarded in an arbitrary fashion due to lack of regulation and disposal facilities. With the rapid development of micro-finance and its anticipated effects, there is an increasing need to address the environmental impacts of micro-enterprise activities. Thus, micro-financing institutions can apply EIA to evaluate potential impacts of a variety of enterprises, regarding the types of inputs, wastes produced and waste disposal (Lal 2001). A specific need exists to adapt EIA for use in these small-scale enterprises.

The New Partnership for Africa's Development (NEPAD) is a recent initiative by African leaders to eradicate poverty and to place African countries on a firm path of sustainable growth and development. The initiative centres on African ownership and management of resources. It focuses on the provision of essential regional public services such as transport, energy and water supply, disease eradication, environmental preservation and regional research capacity. On the environment front, the initiative seeks to combat desertification, encourage wetland conservation, prevent and control the spread of invasive alien species, improve coastal management, monitor and regulate the impact of global climate change, build transfrontier conservation areas and promote environmental governance that secures institutional and legal structures, planning, training and capacity-building. It is hoped that the initiative will consolidate democracy and sound economic development and management on the African continent (GRSA 2001). There is a

clear link between the intentions of NEPAD and the sustainable development goals of the region. EIA, therefore, has the potential to play an important role in determining NEPAD's successful implementation.

## Conclusions

Southern Africa is blessed with an abundance of natural resources, including a high biological diversity and a variety of minerals. The region also has a number of social and economic challenges to overcome if it wants to meet the aspirations of current and future generations. These challenges include poverty eradication, capacity-building, health (especially HIV/AIDS) and employment creation.

EIA is internationally recognised as a key tool to guide us on a path to sustainable development. Most countries in the southern African region have progressed significantly over the past decade in the introduction of formal systems for the implementation of EIA.

The stage is, therefore, set for EIA to play a more important role. It is key that in its application, practitioners, developers and decision-makers ensure that the important social and economic issues facing the region are addressed alongside the traditional biophysical issues. It is also important that the use of higher level or 'strategic' forms of EIA (e.g. SEA) and sustainable development strategies is encouraged. These tools provide a logical framework into which local, project-based issues typically addressed by EIAs can find context.

If creatively applied, with the appropriate involvement of the interested and affected public, EIA has the potential to elegantly combine science, art and culture in a uniquely African way. The environment in Africa has always been a part of indigenous livelihoods and culture. The challenge is now to converge Western science with African traditions and values, and to hone EIA into a tool to guide us along the path to sustainable development.



Refugees flock to Tanzania. Political stability and fair governance are essential for sustainable development.

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