

Rocky roadmap to the future

PEOPLE DOMINATE MOST ECOSYSTEMS of which they form a part, and have a great variety of effects on the different environments they occupy. One of the principal responsibilities of the sciences is to quantify, understand, report and advise on the extent and implications of this domination of the planet, so as to benefit society as a whole and give it a future worth having. We must therefore applaud the initiative and courage of the Department of Environmental Affairs and Tourism (DEAT) in commissioning and publishing *South Africa Environment Outlook**.

This report provides a wide-ranging and sobering assessment of the evolving condition of the environment and natural capital in South Africa. It forms a basis for stimulating discussion and, one hopes, action at many levels. Here are key statistics engagingly explained in a lucid text clarified with innumerable tables, maps and graphs, with explanatory notes, references and glossary in its 371 pages. It is a challenging work of reference, commentary and reflection.

All the usual suspects and victims have a place in this book. South Africa's economic growth, as that of countries elsewhere, has been achieved at a high, indeed ecologically unsustainable, cost in natural resources. This cost takes the form of habitat degradation and loss, declining quality of indoor and ambient air, water deficits in expanding areas of the country, invasive alien species, socio-economic inequality, the pathologies of rapid urbanization, polluted aquatic ecosystems, the over-exploitation of marine stocks, the contamination of urban and rural life with the waste products of industry, and so on. The uncertain prospect of climate change appears likely to exacerbate these trends; even a modest rise in temperature is expected to increase variability and intensity of rainfall, especially in the western parts of the country, which are expected to become drier. The ecological structures of the subcontinent would be placed at increased risk.

Measures are therefore needed of the capacity of ecosystems to provide goods and services, so that we know if environmental sustainability is being attained. Two

criteria for this purpose are the ecological footprint and the environmental sustainability index. While useful at best for comparisons only, the human footprint for South Africa, according to *Environment Outlook*, is more than double that for Africa as a whole, and rising. The country's sustainability index compared with the NEPAD countries is also poor (South Africa ranked 20 out of 40 of these other nations in 2005), no doubt reflecting Africa's most productive economy. South Africa's ranking has slipped in both measures in recent years, implying increasing pressure on the environment.

What has been done. . . .

Government deserves credit for introducing legislation, policies, standards and programmes that bear on environmental affairs. In the past decade, the National Water Act, the National Environmental Management Air Quality Act, the Biodiversity Act and the Protected Areas Act, amongst others, have become law. They all give recognition to the interdependence of socio-economic wellbeing and environmental health. The World Summit on Sustainable Development, hosted in Johannesburg in 2002, led to the negotiation of international commitments, to monitor and protect the state of the local biosphere. The National Environmental Management Act enshrines the rights of citizens to have access to information on the state of the environment.

Unfortunately, these progressive steps have not been rigorously implemented, complied with, or enforced. This is partly because of a critical lack of capacity to apply legislation, particularly at local government level, where there is a shortage of skilled people, not only in sufficient numbers but also in terms of expertise in the work they are expected to do. The problem is compounded by conflicts of interest, as well as unresolved lines of responsibility and insufficient coordination, between the different tiers, and departments, of government.

South Africa has a long tradition of environmental monitoring, illustrated, for example, by the CSIR's multi-faceted cooperative scientific programmes active in the 1980s, and, more recently, by the South African Environmental Observation Network (SAEON) initiative. Our universities and science councils have a proud record of research in environmental studies, conservation biology and the like, and the DEAT's State of the Environment report

of 1999 summarized this kind of work. Other government departments, provincial administrations and municipalities have reported on environmental matters for which they have responsibility. Data collection and analysis, and the difficult task of integrating increasing volumes of information, must influence whatever regulations and standards are to be imposed. The fact that we observe a general degradation of the environment makes monitoring especially important. It means, crucially, that scientific assessments have to be full, appropriate, reliable, adequately funded, and efficiently communicated to policymakers and the public.

. . . and remains to be done?

The *Environment Outlook* is a call to action. Pursuing a business-as-usual policy, the book makes clear in one of its future scenarios, will guarantee progressive declines in the main measures of the country's environmental health. There is therefore no time to waste. So what is to be done?

Future actions have somehow to break the link between economic growth—which is a prerequisite for socio-economic stability and wellbeing—and the demand for natural resources. Energy must be used more efficiently and technologies must be cleaner. This means rethinking the way resources are distributed, managed and used. The final chapter and an appendix list a raft of suggestions for what can be done at different levels of society. Options for future action can pose dilemmas, however.

Government obviously plays a central role—through its laws, by initiating research and technological development programmes, and the educational system, for example—but it can and should do only so much. In recent months we have seen its support for multi-billion rand, capital-intensive projects (for novel nuclear and coal-fired power plants) in the energy field, whose benefits society is expected to reap in a decade and more. Whether these are indeed the most cost-effective and environmentally benign technologies to address the problem of energy supply in the future is outside the scope of the DEAT's review.

Environment Outlook proposes that local communities should become increasingly responsible for guarding their ecosystems. This is not going to be easy in a country where, although poverty levels are declining, almost half the citizens live in poverty; where over one in three South Africans over the age of 20 has either not completed primary school or received no formal schooling; and where a quarter of all adults are functionally illiterate. These perhaps are

**South Africa Environment Outlook: a report on the state of the environment*, Department of Environmental Affairs and Tourism, Pretoria. The process that led to its publication was managed by Johannesburg-based SRK Consulting. Printed copies of the full report, and an abbreviated version in the form of an executive summary, both launched in June, are obtainable from wdesmore@deat.gov.za. The report is also available on CD-ROM and on the department's website (www.deat.gov.za).

not the best conditions in which to protect the environment from the ground up, yet they present abundant opportunities to improve people's quality of life and save natural resources through the introduction of new, cheap technology (to replace the widespread use of inefficient coal-burning domestic fires that pollute urban air and create such a health hazard, for example).

And how is the private sector to play a role, as a major user of ecosystem services and in a powerful position to influence

environmental change? The mining industry, for instance, is under financial pressure to supply minerals for the local and especially the export market. What is the tradeoff between jobs and foreign exchange earnings on the one hand, and the price to be paid in degraded land, polluted water courses and, in the case of coal (the second-largest foreign exchange earner after gold), the generation of greenhouse gases? At what stage does expensive but efficient precision irrigation get introduced more widely in agricul-

ture—a primary consumer of water in a country facing deficits—to secure food supplies and reduce the demand for fertilizer that ends up poisoning our rivers?

Having eliminated any thought of complacency about the future of our environment, the *South Africa Environment Outlook* reminds the reader that this country has a robust economy, good environmental policies and laws, and the ability to harness science and technology in the service of sustainable economic development. Read it for yourself and see if you agree. □