5 THE DECISION-MAKING PROCESS

When wrestling with problems like deforestation, water pollution, loss of biodiversity and a fragile food supply, decision-makers are presented with a series of major challenges relating to information. Firstly, they must learn how to **discriminate between information sources**, which may carry different messages and vary in quality. Secondly, they must learn how to **integrate different types of information** to formulate a proper perspective on the issues concerned. Finally, they need to clarify information into a series of **practical options** which may be evaluated. To address these challenges fully may require decision-makers to liaise effectively with the scientific community and make appropriate use of information technology.

The unprecedented amount of information which is now available to decision-makers should help them arrive at sounder, faster and more transparent decisions. However, these expected benefits often do not materialise in practice. One reason is that although the amount of environmental information has grown, so has the apparent complexity of the issues which need to be tackled. This is most clearly evidenced in terms of the numbers of stakeholders who now expect to be involved in environment-related decisions, and the challenges this creates in finding a consensus.

Realistically, environmental information is only one factor influencing the way in which decisions on living resources are made, and it is not always the most significant. Personal opinions, political and economic dogma, market pressures, and legal necessities also influence decision-making. However, information has the power to be more objective than other influences, especially when generated by recognised means such as the scientific method. The importance of information to decision-making was noted at the Earth Summit in 1992, in the form of a whole chapter of **Agenda 21** (Chapter 40). The **Convention on Biological Diversity** also places information management as a top priority (see Articles 7 and 17), notably in connection with the preparation of national biodiversity strategies and action plans (Article 6), and reports on measures taken to implement the Convention's goals (Article 26).

The establishment of a modern theory of decision-making is often attributed to Herbert Simon (see for instance Newall *et al.* 1958) who postulated a three-stage process: intelligence, design and choice. In the intelligence stage the decision-maker gathers information relevant to the subject or problem; in the design stage alternative courses of action (options) are identified and their consequences forecast on the basis of available information; finally a preferred course of action is chosen. The

decision-making process is considered to be 'rational' if the choice is based on objective criteria, such as the minimisation of costs or the maximisation of benefits.

Whether truly rational or not, whether supported by computer systems or not, the decision-making process will usually be similar to that shown in Figure 4 (adapted from Brookes *et al.* 1982). Important elements are the information sources, which enable options to be evaluated objectively, and a feedback loop to ensure that the impact of a decision is both monitored and reviewed. The rational argument for conservation and sustainable use of living resources is often very clear. What remains is to raise awareness of this argument over competing interests, so that the 'gut' feelings of decision-makers are influenced by objective, not subjective criteria.

Brookes *et al.* (1982) point out that rationality becomes difficult when subjective concepts such as 'quality of life' and other cultural values influence the decision-making process. In such cases, there is a risk that rational options may be ruled out before they have been properly considered, by virtue of their cultural or personal unacceptability. Of course, subjective influences do not always work in opposition to the environment. Many indigenous peoples, for example, have belief systems which are naturally sympathetic to conservation goals.

Figure 4 The decision-making process