# Degree of Implementation and Vulnerability of Brazilian Federal Conservation Areas  (WWF Brazil)

## 1.1    Organisation

WWF Brazil, in partnership with IBAMA (the Brazilian Institute of Environment and Renewable Natural Resources)

## 1.2    Primary methodology reference

Lemos de Sá RM, Ferreira, LV, Buschbacher, R, Batmanian, G, Bensusan, NR and Lemos Costa, K (1999) 'Protected Areas or Endangered Spaces? WWF Report on the Degree of Implementation and the Vulnerability of Brazilian Federal Conservation Areas.' WWF Brazil.

## 1.3    Brief description of methodology

This approach evaluated protected areas in Brazil according to two major themes: level of implementation and vulnerability. The analysis is based on responses of protected area managers (park heads) to a questionnaire composed of eight questions related to the protected area implementation and five questions about their degree of vulnerability (see indicators list). With the average levels of implementation and vulnerability, a risk matrix is built where the protected areas are placed into four groups (see Scoring and analysis), according to the level of overall risk, defined as the correlation between the extent of implementation and the vulnerability of the area. The greater the vulnerability and the lower the level of implementation, the higher the risk faced by the protected area in question. The risk matrix is proposed as a planning instrument that will help indicate priorities for the application of human and financial resources to Brazilian protected areas.

## 1.4    Purposes

- ✓    **to assist in prioritisation or resource allocation**
- ✓    to improve management (adaptive management)
- ✓    for accountability/ audit
- ✓    to raise awareness and support

## 1.5    Objectives and application

The objective of the study was to assess the status of the Federal Protected Areas for Indirect Use (IUCN Category I), determine the scale of existing problems, and offer guidelines for the prioritization of actions to complete implementation and diminish the vulnerability of these protected areas (all federal areas more than six years old were evaluated).

The WWF report on the degree of vulnerability and implementation in Brazil's national parks and reserves is the first qualitative and quantitative assessment of the country's conservation areas. WWF worked with IBAMA (the Brazilian Federal Environment Agency) to develop the assessment methodology, which can be adopted by the Ministry of Environment in future studies on the status of federal parks and reserves. The method would also work well at the state and municipal level.

## 1.6 Origins

In 1998, WWF-Brazil prepared this methodology designed to meet the unique needs of Brazil.

Due to concern about the deterioration of natural resources and biodiversity in Brazil, WWF, together with IBAMA, set out to evaluate 86 protected areas, using a methodology that was simple and inexpensive to apply, would gather precise information, and would generate results quickly.

The project also aimed to call attention to the so-called 'paper parks', and to press the government to vote on, and pass a Bill to create a national system of protected areas, which was voted on 2000 as the Law 9.985 of 18 July 2000 – which establishes the National System of Conservation Units – SNUC.

## 1.7 How the methodology is implemented

The methodology used in this study was the result of two workshops involving technical staff from WWF and IBAMA as well as invited specialists. The information in the report was collected in April 1998 by questioning the protected area supervisors. Some of the questions were answered with 'no data' and then IBAMA was asked to supply the information. It is important to note that some data supplied by the protected area supervisors conflicted with IBAMA's official data. Whenever this occurred, preference was given to the protected area supervisor's responses and only items left blank or filled in with the phrase 'no data' were supplemented.

## 1.8 Elements and indicators

The procedure identifies a total of 13 questions/indicators: 8 elements important for evaluating the level of implementation and 5 elements important for evaluating vulnerability.

**Indicators for Brazil MEE methodology**

| A . Implementation | Status of land tenure of the PA |
|---|---|
| | Existence of management tools |
| | Types of use of PA (inside the area) |
| | Percentage of financial resources required that were available for the PA in 1997 |
| | Percentage of total PA area requiring demarcation by survey monument that is not demarcated (excluding rivers and coastlines) |
| | Hired personnel as proportion of staffing requirements (from the federal institution or others) |
| | Availability of transportation and communication infrastructure (internal and external), including permanent equipment and consumable materials |
| | Infrastructure available (Ecological Stations and Biological Reserves: researcher accommodation, laboratory, multipurpose building – National Parks: visitor centre, trails, signposts – In common: administrative building) |
| B. Vulnerability | Degree of isolation of PA from surrounding natural habitat matrix: percent of natural vegetation cover in buffer zone, in a 10 km radius of the PA |
| | Percentage of degraded areas within the PA |
| | Illegal natural resources exploitation within the PA |
| | Predominant land use in the PA's buffer zone |
| | Occurrence of neighbouring development projects conflicting with PA objectives |

## 1.9   Scoring and analysis

A. Responses: each question, except questions 2 and 3 (see note below), was rated from 0 to 4, where the optimum condition is 4, as follows:
(a) 4 points for response 1
(b) 3 points for response 2
(c) 2 points for response 3
(d) 1 point for response 4
(e) 0 for response 5
Note: As questions 2 and 3 had 6 possible answers, the scoring scheme was as follows: 4 points for response 1; 3.17 points for response 2; 2.34 points for response 3; 1.51 points for response 4; 0.68 points for response 5; 0 points for response 6.

B. Implementation: the extent to which the protected area had been implemented was defined as the average score of the responses to questions 1 to 8, on scale from 0 to 4:
(a) precarious situation – 0 to 1.99
(b) minimum implementation – 2.0 to 2.99
(c) reasonable implementation – 3.0 to 4.0

C. Vulnerability: average of the responses to questions 9 to 13, as follows:
(a) low vulnerability – 0 to 1.99
(b) medium vulnerability – 2.0 to 2.9
(c) high vulnerability – 3.0 to 4.0

D. Risk: with the average levels of implementation and vulnerability, a risk analysis was carried out and a matrix was built where the protected area were placed into one of the four groups:
(a) extreme risk: precarious implementation and high vulnerability
(b) high risk: minimum or reasonable implementation and high vulnerability
(c) medium risk: PA with medium vulnerability that haven't been implemented
(d) normal risk: minimum or reasonable implementation and low to medium vulnerability

The $t$ test was used to verify differences between mean scores on implementation and vulnerability and variance analysis was used to correlate: (1) the extent of the protected area against the Brazilian biomes; (2) implementation and vulnerability against the geographic region; and (3) the implementation against the region for the protected area open and closed to visitors.