# Strategic Conservation: A Review of Protected Area Management

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## ABSTRACT

*When considering the legal provisions, Sri Lanka processes a sound legal framework for conservation of ecologically sensitive, biodiversity rich areas, whether it falls in a state land or otherwise. However, being one of the most densely populated countries, ever growing human populations and their needs create a "formal" socio-political pressure for opening up pristine habitats for development. In the "informal" frontier this creates issues such as encroachment, garbage disposal, illegal and unsustainable resource extraction etc. Sanctuaries, being a mix of private and state lands, with unclear boundaries, are much more vulnerable for development pressure compared to other National Reserves despite their richness in biodiversity and importance in ecological services.*

*Management plans are considered to be the documents providing directions for Protected Area managers. In Sri Lanka, Management Plan Preparation was mandated by the FFPO. Hence Management Plans have the status of a legal document. However Management Plans are not available for all the PAs in Sri Lanka. In fact, existing ones are considered to be out dated. However in general the conventional management planning approaches fail to provide sound management strategies in dynamic environments. All the sanctuaries in Sri Lanka do not have approved management plans. Proposed Strategic Conservation approach provides a conceptual framework for analysis of the conservation propensity and development propensity of biodiversity rich, sensitive and threatened areas. Using the proposed approach, possible strategies could be grouped in to four clusters and implemented in the light of eight capability roles that an agency can perform. It could be used as a complementary or supplementary approach to the conventional management planning in order to address specific problems faced by PAs such as Sanctuaries.*

***KEYWORDS:*** *Protected area management, Management planning, Wildlife management, Strategic conservation*

## Introduction

Considering the richness in biodiversity and the tremendous pressure on the same Sri Lanka is considered as one of the biodiversity hotspots in the world (CI Facts, 2005). Aiming at conservation of the biodiversity for the future, Protected Areas (PAs) are established by the State. However, ecologically important landscapes do not always falls into the state owned lands (Fisher, 1995). In areas both bio-diversity and people are present; it is not feasible to designate them as PAs, as PAs need to be fully state owned land. This is a common scenario in many countries in Asia, as the region is rich in biodiversity with a booming population pressure.

In Sri Lanka, legal protection for ecologically sensitive, biodiversity rich areas is derived from several legislations i.e. Fauna and Flora Protection Ordinance (FFPO), Forest Ordinance (FO), National Environment Act (NEA), Coast Conservation Act (CCA) etc. However, most prominent legislation, in both legal strength and breadth of the coverage is the FFPO (1937). FFPO provides legal protection for ecologically important areas that are designated as PAs. According to FFPO (1934) PAs are primarily two categories i.e. National Reserves and Sanctuaries. Biodiversity rich state lands could be designated as National Reserved under section 2(1) of FFPO (1937), but biodiversity rich areas with a mix of state and private lands could not be designate as National Reserves under the section 2(1) of the FFPO (1937). However, they could be designated as Sanctuaries as per the the section 2(2) of FFPO (1937).

When considering the legal provisions, Sri Lanka processes sound legal framework for conservation of ecologically sensitive, biodiversity rich areas, whether it falls in a state land or not. However Sri Lanka is one of the most densely populated countries (United Nations, 2008). The ever growing human populations and their needs create a "formal" socio-political pressure for opening up of natural landscapes for development projects (Marasinghe *et al.*, 2012). In the "informal" frontier this leads to encroachment, garbage disposal, illegal and unsustainable resource extraction etc. Sanctuaries, being a mix of private and state lands, with unclear boundaries, are much more vulnerable for development pressure compared to other National Reserves despite the richness in biodiversity and ecological sensitivity.

This is not an uncommon scenario in many Asian countries. In addressing the issue of managing overall state of biodiversity in Thailand, when the area under official protection is a low figure and designation of land as PAs is infeasible, Sato (1997) proposes "buffer zone" approach to be the solution. Sato (1997) pointed out that "buffer zones" in Thailand fall under two contradicting national polices: land reform and forest conservation. Taigor and Rao (2010) revealed that, in the National Chambal Sanctuary in India, wildlife habitats have been considerably altered due to various human activities even in the core areas of the sanctuary.

Sarker (2009) found that the wetlands in Bangladesh are degrading due to enormous population pressure. People's livelihoods in the wetland areas are largely dependent

on the wetlands. Sarker (2009) proposes that the government needs to manage wetlands through an adaptive collaborative management system. Kafle, Balla and Paudyal (2007) stated that the biodiversity value and socio-economic use of Ramsar Sites of Nepal is very high and found out that, there is close interaction between local communities and lake ecosystems. They also reveled that this interaction has caused significant disturbances and threats to the wetland ecosystem and associated biodiversity.

In practical situations, the pressure for conservation is weaker compared to socio-economic pressure for development. When the socio-economic pressure coupled with political dimensions it often exaggerated itself and over throws the conservation demands. Sato (1997) argues that the Thailand's government policy to distribute land for the landless contradicts with the government policy to expand its PAs up to 25% of the total land area as there is not enough land to provide for the landless other that the forest reserves. In Sri Lank, same state of affairs could be expected as the land availability for settlement and development is becoming a critical factor and the similar land policies exist in Sri Lanka (Mahinda Chinthana, 2006). According to the People's Alliance for Right to Land (2012) it is apparent that the contradictory situation highlighted by Vandergeest (1996) and Sato (1997) in Thailand is prevailing in Sri Lanka.

In this context, one of the most and pressing challenge faced by the conservators is how to balance economic development with natural resource conservation (Sato, 1997) and make management recommendations on biodiversity rich landscapes with mix ownership of lands such as Sanctuaries. In designation or regularizing biodiversity rich, ecologically sensitive areas, there are no clear scientific criteria to define lands that should be given to people and lands that should be protected (Sato, 1997).

There are no scientific criteria to prescribe management strategies either. Due to this fact all the sanctuaries in Sri Lanka does not have "Management Plans". This inadequacy leads to the notion that Sanctuaries are less important and encroachments, pollution, sand mining, clay mining, garbage disposal etc are lightly taken. Moreover, exclusion from the legal protection is taken as the wisest solution. It seems conventional Management Planning approaches are failed in this context.

In light of this, the objective of this article is to propose an alternative approach for developing strategic management plans for sensitive, dynamic and fragile PAs, which are influenced by anthropogenic pressures, through identification and evaluation of the internal and external characters of the PAs, development of strategic options and strategic implementation of the same.

**Management Planning**

Management Plan is a document which sets out the management approach and goals (Thomas and Middleton, 2003). According to Thomas and Middleton (2003),

it sets out a framework for decision making over a given period of time for the considering PA. Nature of the plan depends on the purpose of which they are to be used and the legal requirements. Most often, the process, the objectives, and the standards are usually being established in legislation or otherwise (Thomas and Middleton, 2003).

Generally management plans are criticized as unusable or not used by the relevant organizations although much time and efforts is put into planning process by them. They are comprehensive and bulky and not referred by the mangers. This may be due to the nature of the report or the incompatibility of the proposed strategies with the existing circumstances. Most often such plans are over enthusiastic and when it comes to implementation most of the actions are impracticable. However in general their preparation is supported by most conservation agencies (IUCN, 1992) and considers that the Management Plans bring many benefits to PAs and to the organizations or individuals charged with their management and, without them, serious problems can arise (Thomas and Middleton, 2003)

Young and Young (1993) argues that, if there is no general Management Plan, preservation, development and use activities in a park will occur in a haphazard basis, often in response to political pressures with little consideration as to the implications for the future. The result is likely to be lost opportunities and irreversible damage to park resources and values.

In countries, such as Australia (*Environmental Protection and Biodiversity Conservation Act 1999*), and England and Wales (*Environment Act 1995*) managers of PAs are obliged to prepare Management Plans by law. Such legislation provides the managing organizations with a statutory instruction to prepare plans. In Sri Lanka Management Plan Preparation was mandated by the FFPO (1934) by its amendment in 2009. Thus in Sri Lanka, Management Plans have the status of legal documents and provide the PA managers with the mandate to manage parks and expend public monies. However Management Plans are not available for all the PAs in Sri Lanka. In fact, existing ones are considered to be out dated.

**Issues in Conventional Planning**

In Sri Lanka Management Planning approach in early years were influenced by the concepts in the manual for management planning authored by Sawarkar (1995) and published by Wildlife Institute of India. Later, the developed plans were revised using the fundamental guidelines proposed by Thomas and Middleton (2003). Hence existing management plans of Sri Lankan PAs have extracted much of the flavor from Thomas and Middleton (2003) approach and rest from Sawarkar's (1995) approach.

When considering the Sawarkar's (1995) approach, it focuses on data collection and inventorying, objective setting and strategy identification and monitoring. Objective setting of PAs, choice of strategies were predominantly a technical exercise and

monitoring was considered as a mean of ensuring correct implementation of the activities in the management plan. Prepared management plans were for 10 years and contain a load of technical details with three volumes i.e. Part1: Existing Situation, Part2: Proposed Management and Part3: Appendix and Maps. The people's involvement was considered, but identified only Non Timber Forest Product (NTFP) extraction and other similar uses as their impacts. Management Reviews are identified as a mean of correcting management decisions. The change in the environment that can affect the PA Management was categorized as ecological changes and change in human perception.

Guidelines proposed by Thomas and Middleton (2003), proposed a circular process in Management Planning with three phases. Preparation of a Management Plan, Implementation of the plan and Monitoring and review of the plan are the three steps (Figure 1).

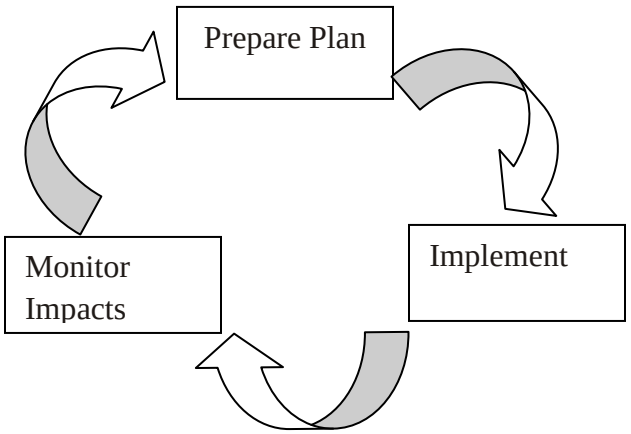


**Figure 1: Management Planning Process**
Source - Thomas and Middleton (2003)

The entire cycle comprises of thirteen steps starting from pre planning to decision to review and update the management plan. In this approach also, public consultation was identified as a vital step but contrast to the Sawarkar's (1995) process, the prepared plan is subjected to public opinions. However in Thomas and Middleton (2003) approach the outcome is a similar technical document as mentioned in Sawarkar's (1995) process although the formatting is different.

In both the approaches, if the environment is fairly stable, the human needs are simple, they are expressed directly and straightforwardly, and the bureaucracy of the implementing agency is rigid and resistance to socio-political pressures, the final outcome would be satisfactory. Internal factors of the implementing agency, such as funding constrains and staffing capabilities are also not considered in both the approaches. Both the approaches have not proposed a mechanism to address

issues regarding conflicting national strategies, conflicting agency goals, and conflicting view towards the parks by developers and conservationists.

**Strategic Conservation**

Protected areas are designated and managed for achieving many objectives set out by the stakeholders. A greater importance is placed on the needs of the future generation by the present generation on behalf of them. However those objectives could not be achieved if proper decisions were not made. Such decisions are to be made under numerous pressures both from internal and external environmental factors.

Strategic Conservation could be defined as "the major initiatives taken by the decision makes of a conservation agency aiming at the conservation objectives of a given landscape on behalf of the stakeholders, involving determination of policy, objective, management activity etc. and resource allocation subjected to the internal and external environmental factors both for of the site and the agency". The three cornerstones of the proposed Strategic Conservation approach are: (1) Strategic Conservation Analysis; (2) Strategic Selection of conservation options, and (3) Conservation Strategy Implementation (Figure 2).


**Figure 2: Strategic Conservation Approach**

Since Strategic Conservation approach is proposed for sensitive and highly threatened landscapes, such PAs needs to be stratified in to homogeneous areas considering the similarities in the importance or threats and all the analysis need to be done for each of such individual homogeneous land parcels.

***Strategic Conservation Analysis***

In strategic Conservation Analysis, site related aspects, expectations of the stakeholders, justification for conservation, negative anthropogenic pressure and availability of resources and competencies of the implementing agency needed to be assessed. They could be categorized in to three groups as shown in Figure 3.

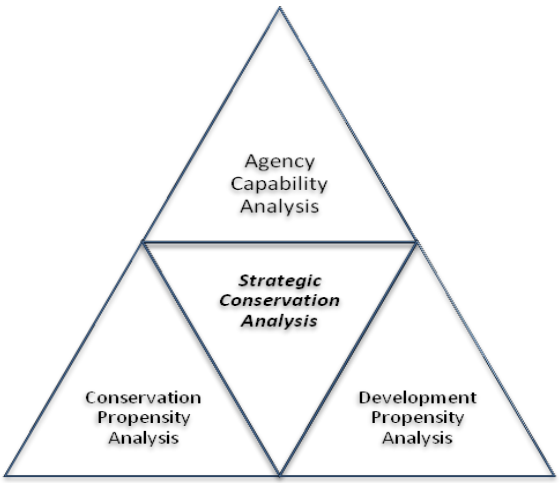


**Figure 3: Strategic Conservation Analysis**

In Agency Capability Analysis (ACA), funding availability, level of legal empowerment, political priority, technical capabilities of the staff and the compatibility of the organizational structure need to be identified. In Conservation Propensity Analysis (CPA), all ecological and biodiversity related factors that justifies the conservation and legal protection of the site needs to be identified.

In Development Propensity Analysis (DPA), all the factors of the task environment needed to be evaluated. Task environment of a PA is the external environment which affects conservation goals. Amalgamating all the factors affecting above three facets, indexes i.e. Agency Capability Index (ACI), Conservation Propensity Index (CPI) and Development Propensity Index (DPI), could be generated in order to facilitate quantitative evaluation. Defining the methodology for developing those indexes area future research areas.

***Strategic Selection of Conservation Options***

Basis for strategies will be evident after the evaluation of conservation propensity of a PA. Strategic options could be generated on the contemporary scientific knowledge and the tacit knowledge of the organization. Such tacit knowledge base will be discovered or exposed with the agency capability analysis. Strategy evaluation and selection could be done considering the outcome of the development

propensity analysis. A Conservation Strategy Selection Criteria (CSSC) matrix could be used in grouping the management alternatives. Interaction of CPI and DPI results the CSSC matrix and four strategic windows could be identified (Figure 4) as hotspot cluster, focus cluster, enrichment cluster and burden cluster. The generated strategic options should be grouped into the four clusters accordingly.

| | | **Conservation Propensity (Reflects Ecological Importance)** | |
|---|---|---|---|
| | | ***High*** | ***Low*** |
| **Development Propensity (Reflects Anthropogenic Pressure)** | ***High*** | Hotspot Area Cluster | Burden Area Cluster |
| | ***Low*** | Focus Areas Cluster | Enrichment Area Cluster |

**Figure 4: Conservation Strategy Selection Criteria (CSSC) Matrix**

***Conservation Strategy Implementations***

So far the conservation strategies generated considering the outcomes of CPA are clustered considering the CPA and DPA interactions within the spatial dimension. However this could not be practical in implementation if the agency capability is ignored. Hence, the strategies required to be evaluated with the outcome of the ACA. Management changes, resource allocation, adjustment to organization structure and design needs to be done in order to fully implement strategic selection (Figure 5 and 6).

As shown in Figure 5, when agency is politically, financially and technically capable, high development pressure could be tolerable. However the strategies should be implemented with negotiations and agreements as it will ensure the stakeholder support at all stages for long term conservation strategies. When the development pressure is low, the agency can play the sole implementer's role and implement all the management activities at its will. When an agency is low in capability of influence and the development pressure is high, it requires communication with other stakeholders to correctly position the PA and Agency and gain the required level of support including funds, technical and legal capabilities to implement conservation activities. When both the development

pressure and the capability of the agency are low agency could focus more on building relationships with the other stakeholder agencies and create alliance for conservation.

| | | **Agency Capability (Reflects power and capacity of the Agency)** | |
|---|---|---|---|
| | | ***High*** | ***Low*** |
| **Development Propensity (Reflects Anthropogenic Pressure)** | ***High*** | Negotiator | Communicator |
| | ***Low*** | Sole Implementer | Team member |

**Figure 5: Pressure-tolerance Capability (PC) Matrix**

| | | **Agency Capability (Reflects power and capacity of the Agency)** | |
|---|---|---|---|
| | | ***High*** | ***Low*** |
| **Conservation Propensity (Reflects Ecological Importance)** | ***High*** | Full-fledged Technocrat | Outsourcer |
| | ***Low*** | Rebuilder | Subsistence Conservator |

**Figure 6: Conservation Capability (CC) Matrix**

In situations where agencies are high in capability and conservation propensity is high, such areas should be subjected to full technical conservation strategies (See figure 6). If the conservation Propensity is low, agency could implement

rehabilitation activities such as habitat enrichment in a vigorous approach. If the conservation propensity is high and the capability of agency is low, agency should focus on outsourcing conservation activities. However, when both the conservation propensity and the capacity are low only option is to sustain the status quo of the area until the capacity is built.

The four conservation strategy clusters implemented within the eight capability options of the conservation agency paves a way towards strategic management of threatened, sensitive PAs. Once establish the strategies could be easily adjusted depending on the changing dimensions of the agency, conservation criteria or the development pressure. Hence the three steps in strategic conservation could be repeated enabling revision of plans within a short time period.

## Conclusion

When the population pressure is increasing in countries where biodiversity is high, it is a common fact that the conservation areas are threatened by the anthropogenic pressures. It is also not possible to designate all the biodiversity rich areas as protected areas with 100% state land ownership. In such situations there must be a mechanism to conserve biodiversity rich landscapes with mix of ownerships. It is a general understanding that the conventional management planning approaches fail to provide sound management strategies in a dynamic environment. In this context proposed Strategic Conservation approach provide a conceptual framework for analysis of the conservation propensity of a given area and its development propensity excreted as socio-economic-political forces.

Using the proposed approach, possible strategies could be grouped in to for clusters and implemented considering eight capability roles that an agency can perform. Strategic conservation analysis, strategic selection of conservation, and implementation of conservation strategies are three circular activities that can be repeated in order to cope up with the temporal dimension. This strategy could be used as a complementary or supplementary approach to the conventional management planning

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