

2. Protected areas and development: lessons from Cambodia

2.1 Introduction

Past analysis of PAs have been inward looking and concentrated on their conservation management needs – i.e. the protection and maintenance of the natural systems. The PAD review is looking outward at the linkages with key economic sectors and with community development. Conservation will best be achieved through integration of PAs with their surrounding economic landscapes so that they are recognised as a critical development strategy requiring adequate investment. This chapter on lessons from Cambodia is a bridge between a conventional assessment of PA experience focussing on their management and one which explores the relationships between PAs and the economy.

The chapter is intended as a benchmark of experience expressed as achievements and remaining challenges (or things still to be addressed). It is not a strategic document charting options for the future. That exploration of policy options is left to the national protected areas and development report stemming from the PAD Review.

2.1.1 A short history of protected areas, natural resource use and population

The protected area experience in Cambodia is closely inter-woven with the political history of the country and changing attitudes to natural resource use and management. It is also tied to population distribution, movements and growth. The history of protected areas shows that a fundamental shift is occurring in the perception of them as a recreational luxury for the elite, to an essential strategy for economic development of the country.

1883-1953: During the period of French domination from 1883 to 1953 the population was kept fairly stable at 2 to 3 million controlled by cholera, malaria and other health concerns. People lived along the rich flood plains of Tonle Sap and the Mekong Delta. Close to a million people had lived around the Angkor Temple complex to the north of the lake supported by fishing, agriculture and forest products. A cholera epidemic

is thought to have destroyed that community. In 1925, Angkor Wat and the surrounding 10,800 ha of forest were declared a National Park, becoming the first protected areas in South East Asia. The French continued to survey Cambodia, defining important forest and wildlife areas. By the close of the 1950s, nearly one third of Cambodia was classified into 173 forest reserves (3.9 million hectares) and six wildlife reserves (2.2 million hectares). Around 90 percent of the country was uninhabited and the population supported through subsistence livelihoods and sustainable use of common natural resources.

1953-1970: During the monarchy from 1953 – 1970, protected areas were strongly promoted as important economic and cultural national assets. The six national parks and wildlife sanctuaries covering around 12 percent of the country were allocated staff and management resources. Significant tourism and recreational infrastructure was established in some parks, particularly in Kirirom, Bokor and Kep in the south west and accessible from Phnom Penh. The 1965 census found the population had increased to 5 million but still concentrated around the country's productive wetlands.

1970-75: The military "republic" which governed during 1970-75 maintained the protected area facilities but did not add to the system. From the French period the parks and reserves had been made the responsibility of the forestry administration and this arrangement continued to the mid 1970's. The population grew to around 7 million people – with the main increases in the Mekong delta and Phnom Penh which had become a significant urban centre.

1975-1979: Dramatic changes took place during the Khmer Rouge regime from 1975 to 1979. The country closed down and the economy collapsed despite a large community infrastructure program, with the construction of reservoirs and irrigation systems, many never becoming operational. The tourism, recreational and other facilities in the parks were destroyed, including a hydropower scheme in Kirirom. Any notion of protected areas was wiped from the records. The population dropped for the first time in a hundred years. The rate of deforestation during this period has not yet been reliably assessed and it remains a controversial issue. It is certain that a campaign was mounted to encourage the population to convert forest land to agriculture.

1979-1992: From 1979 to 1992, Cambodia remained economically and politically isolated. The State of Cambodia government supported by Vietnam struggled to maintain its authority, but the country was effectively divided and controlled by militia of the four main parties – the Khmer Rouge, Khmer National Liberation Front, Funcinpec and the government's own forces. For 12 years, no protected areas were recognised or established. Large formally populated areas throughout the country became unsafe due to guerrilla action and mines and almost a million people fled to refugee camps and towns. It was towards the end of this period that forest concessions with Russian and Thai companies began to have a significant impact on forest cover, mainly along the border with Thailand and in selected areas relatively close to Phnom Penh. To enhance security, the government cleared forest up to a kilometre either side of all national and provincial roads, and all along the Thai border. The rate of deforestation between 1973 and 1993 was more than 70,000 ha/year. This figure reflects a conversion of forest to agricultural land use, but a significant proportion of forest area was simply so severely degraded as to be re-classified as shrub lands rather than forest type.

1992-1997: With peace in 1992, cutting of forests began on a much larger and more organised scale, and a major new initiative was taken to re-establish Cambodia's national protected areas system. Peace brought with it both protection and increased exploitation. It also brought a major spurt in population growth and associated pressure on natural resources. Twenty years of civil war and socio-economic disruption had eliminated both the traditional and government regulated systems of land and resource ownership and use. Without those systems, all sense of responsibility for sustainable resource management practices had been swept aside. The early years of the decade represented a continued open season on resource exploitation without constraint.

In 1993, His Majesty King Norodom Sihanouk renewed his commitments of 30 years before and introduced a Royal Decree designating 23 areas, covering about 3.3 million ha (18.3 percent of total land area), as protected areas. The new protected areas include areas designated in 1960s and other sites selected to ensure that additional habitats were represented.

From that same year, the new coalition government promoted a major expansion in the use of forests, fisheries and agricultural land through a process of land allocation and concessions to the private sector. By 1999, 30 international companies had been granted forest concessions covering almost 6.4 million ha – that is 63 percent of forest land or close to 39 percent of the country. Agricultural concessions were granted to 46 companies covering 0.7 million ha and located in forested areas rather than the main rice belts. Fisheries concession covered 4 percent. By the end of this period almost 70 percent of Cambodia had been officially allocated to concession holders on the basis of little information, few controls and scarce capacity to monitor and manage resource use within the areas. The rate of deforestation accelerated to over 180,000 ha/year as a result of greater official and illegal harvesting pressure from loggers and local communities. Over the decade, improved technologies increased the speed and quantity of harvest for effort in the fisheries, forestry and agriculture concessions.

Very significantly though, no concessions were granted in the 23 protected areas set up under the 1993 Royal Decree. Forestry and agricultural concessions came right up to the boundaries of many protected areas but not into them.² However, from around 1995, illegal logging commenced within the national protected areas system as prime concession timber became scarce. Often, neighbouring concessions were used as a cover to extract logs. In one case over two years from 1996 to 1998, the Khmer Rouge was given official permission to log a section of Bokor National Park. This political period ended in the 1997 coup.

1998-2002: A fresh election brought greater political stability than Cambodia has experienced in more than 30 years. This, plus mounting international pressure and enhanced management systems and capacities, is beginning to rein in the natural resource extravaganza. Illegal logging within protected areas is diminishing, even though remaining a significant problem. The new government imposed a ban on log exports, cracked down on illegal logging, and cancelled previously issued logging permits and log transportation permits.³ In late 2001, all forest concessions were withdrawn pending the preparation of management plans including environmental safeguards. Sixteen agricultural concessions have been cancelled or withdrawn and fishing lots halved. Also, the new century brought moves by the main natural resource ministry and provincial government to establish protected areas in their own right. The need for effective natural resource management systems including regimes of protection is pressing.

In 1998, a national census found the population has risen to 11.4 million with a continuing high growth rate of 2.4 percent. Further, people are moving – from rural to urban areas, and from areas of high density to those where natural resources are less intensively used. More areas are becoming safe from mines and the government's resettlement and military demobilisation program combined with other demographic trends is increasing pressure on natural resources in and around protected areas.

2.1.2 *The national protected areas system*

The current national protected areas system includes the 23 set up on the king's initiative in 1993 - seven national parks, ten wildlife sanctuaries, three protected landscapes and three multiple use areas managed by the Ministry of Environment. Since then, MOE has designated a Ramsar site along a section of the

² Although the lack of definition of boundaries within the decree means that some concessions do encroach on territory which MOE has since identified as falling within a protected area. For example, agricultural concessions to the south east of Bokor National Park run over into the park.

³ Government Notification (Prakas) No. 1, dated 25 January 1999, on Measures to Manage and Crack Down on Illegal Logging to ensure sustainable forest management

Mekong River and is in the process of setting up a large World Heritage area in the region of the Cardamom Mountains. The proposed World Heritage site embraces two existing wildlife sanctuaries and an adjoining new forest protection area, which is under the Ministry of Agriculture, Forests and Fisheries (Map 1).

In 2000, MAFF set up the Sarus Crane Reserve at Ang Tropeang Thmor in the north of the country and has other wildlife reserves under consideration. A significant innovation in protected area concepts took place with the identification by MAFF of two "gene pool conservation areas". In fact all other major protected areas also serve an important function as gene pools, but highlighting gene conservation as a priority provides a useful emphasis on the development contribution of protected areas as centres of gene storage and maintenance. MAFF has also identified a series of Fish Habitat Conservation Areas around Tonle Sap.

With the emphasis on decentralisation, another important recent development is the establishment of protected areas by provincial governments. The province of Ratanakiri, for example, has proposed ten PAs for its management. Protected areas now cover more than 20 percent of the country, one of the highest in the world, with plans to increase this area to 25 percent over the next five years. Annex 1 lists Cambodia's protected areas.

Given the political turmoil throughout the last decade, it is a very significant that natural resources within the protected areas system are in better condition than those outside it.

2.1.3 *Dependence on natural resources*

Cambodia is a nation acutely dependent on natural resources and the maintenance of natural terrestrial and aquatic systems. Some 85 percent of the population are rural dwellers who depend on agriculture, fisheries and forest products for their subsistence. Harvesting of wood and non-wood products (for example, rattan, bamboo, resins and food) is a critical part of subsistence livelihoods. About 98 percent of rural people and 65 percent of Phnom Penh residents depend upon wood and charcoal as their source of fuel. Almost 60 percent of the people depend on fisheries for their livelihoods and protein needs.

Cambodia is also a very poor country. Per capita incomes in rural areas are some of the lowest in the region with GDP per capita of only \$268 in 1999. An estimated 35.9 percent of the population is poor and the poverty rate is higher in rural areas (40 percent), which is four times higher than poverty in the capital Phnom Penh and other key urban centres (10 percent). Rural households, especially those for whom agriculture is the primary source of income, account for almost 90 percent of the poor.

In general, the more isolated communities close to protected areas are the poorest and most dependent on common forest and aquatic resources.

2.2 National policy framework for protected areas

2.2.1 *National development priorities*

Achievement:

Through the nineties Cambodia went through three phases of significant economic development.

Growth was particularly rapid at the beginning of the decade, with a peak at 7.6 percent in 1995, and an average yearly rate of 6.6 percent over the first four-year phase. The slowdown due to the Asian economic crisis was not dramatic compared to other countries in the region. The Cambodian economy rose by 3.7 percent and 1.5 percent in 1997 and 1998 respectively. Since then, Cambodia has regained momentum, with the economy growing by 6.9 percent in 1999.

The overall development strategies of the government have been articulated in the National Program to Rehabilitate and Develop Cambodia (NPRD-1994); the Five-Year Socio-Economic Development Plan (1996-

2000); the Triangle Strategy; the Royal Government Political Reform Platform for the Second Term 1998-2003; and the Policy Framework Paper (PFP).

Challenges:

Despite occupying more than 20 percent of the country, protected areas are not singled out for their contribution to development or as a field for priority investment despite the economic returns they provide. Yet, as the lessons reviewed here demonstrate, the development functions of protected areas are beginning to be recognised in sector strategies.

Each of the key national development strategies has important implications for protected areas planning and management, and for optimising their development contribution. Three overarching policies discussed later in the section have special relevance:

1. The emphasis on rural development;
2. The rule of law;
3. Decentralisation.

Poverty alleviation is the underlying theme of national development strategies, and increasingly, the importance of protected areas will be measured in terms of their poverty alleviation performance – i.e. their effectiveness in supporting local communities in sustainable livelihoods and forms of sector development which bring local benefits.

The National Program to Rehabilitate and Develop Cambodia⁴

The National Program to Rehabilitate and Develop Cambodia (NPRD) aims to establish the rule of law, ensure economic stability through structural reforms, strengthen capacity building, foster rehabilitation and construction of physical infrastructure, integrate Cambodia's economy into the region and the world, promote rural development and sound environmental management, and optimise the use of natural resources.

First Five Year Socio-Economic Development Plan for 1996-2000⁵

Given the distribution of the population and of the poor in particular, the First Five year Socio-economic Development Plan, 1996-2000 (SEDPI) emphasised rural development. The SEDPI target allocation for public investment expenditures was for 65 percent to go to projects in rural areas and 35 percent to urban areas. During implementation the reverse was achieved: 65 percent of expenditure went to projects in urban areas, and only 35 percent to projects in rural areas. Overall, the targets set for the SEDPI were ambitious and public investments were not allocated as planned, leading to a slow decline in poverty and an increase in income inequality.

Efforts to reduce poverty have focused on stand-alone projects neglecting the broader policy and institutional environment for poverty reduction. Without donor support most of these development projects are financially unsustainable and this may remain the case for decades.

The Government's Triangle Strategy

After the 26 July 1998 elections, a new government identified three key areas of government business:

1. Building peace, restoring political stability and maintaining security.;
2. Integration into the region and normalisation of relations with the international community;⁶ and,

⁴ *National Program to Rehabilitate and Develop Cambodia*, Royal Government of Cambodia February 1994

⁵ *First Five Year Socio-Economic Development Plan 1996-2000*. Royal Government of Cambodia 1997

⁶ Soon after the formation of the new government, Cambodia succeeded in regaining its seat at the UN. As a result, Cambodia is now the 10th member of ASEAN and will join the WTO in the near future.

3. Promoting growth and poverty reduction through four key areas of reform: (i) reform of the armed forces, especially military demobilisation; (ii) public administration reform, geared toward improving the efficiency of the public services; (iii) judicial reform, aimed at strengthening democracy, enhancing the rule of law and upholding respect for human rights; and (iv) economic reform for stability and growth.

The Government's Political Reform Platform

The Political Reform Platform for the Second Term (1998-2003), aims to strengthen human resource capacity, improve community health and widen access by the poor and vulnerable groups to economic opportunities. The economic objectives are to promote sustainable development, maintain macroeconomic stability and foster effective management of natural resources.

Policy Framework Paper

The government's economic objectives are centred on poverty alleviation and economic growth and are stated in the Policy Framework Paper (PFP) of October 1999. The key elements of the strategy are: strengthening revenue collection and enhancing the transparency of fiscal operations, combined with reforms of the civil service and military; increasing public investment with a view to rehabilitating the country's poor social and physical infrastructure, and shifting spending priorities to health, education, agriculture and rural development; and strengthening the legal framework and economic institutions.

Implications for protected areas: The steady reorientation of investment from urban to rural development brings important opportunities for protected areas as they become recognised as critical components of the strategy. Investment in rural regions should mean increased investment in protected areas for the products and services they provide. Over the three years, there has been increased funding for protected areas but it falls short of growth in GDP and in other sectors. Emphasis on rural development without attention to protected areas would work against the government's objectives, as the products and services they provide degrade due to over use and disruption by other development activities.

Commitment to decentralisation of the political system, development planning and budgeting has potential to integrate protected areas into local economies as never before. It provides the opportunity to view protected areas as part of a development landscape linked productively with all sectors.

Increased attention to the rule of law has been critical for the wellbeing of protected areas and will continue to be a driving force for bringing them into mainstream economic thinking. These three "drivers" for development and for PA recognition need to be of central concern to PA managers within MOE, MAFF and provincial government as they seek to consolidate the national PA system.

2.2.2 National environment policies

Achievement:

Within the framework of development priorities, specific policies for protected areas have been spelt out in the National Environmental Action Plan (1998-2002), the National Wetland Action Plan (1997), and the National Biodiversity Strategy and Action Plan (2002).

National Environmental Action Plan (NEAP - 1998 to 2002)

The NEAP was approved by the Council of Ministers in December 1997 and endorsed by the Head of State in January 1998. It provides strategic guidance to public and private stakeholders for integrating environmental concerns into national and local policies, economic decision making and investment planning. With respect to protected areas, the first phase (Year 1 – 2) focused on strengthening the government policy and regulatory framework, specifically the preparing and enacting laws on protected areas management. Phase two (Year 3 – 5) focused on human resource development, mobilising financial resources

(establishing trust funds for protected areas management and biodiversity protection), and finally, the preparation and implementation of protected areas management plans for selected reserves (Preah Sihanouk "Ream" National Park, Preah Monivong "Bokor" National Park, Koh Kapik Ramsar Site, and Preah Soramarith Kosomak "Kirirom" National Park).

Challenge:

Given the political crisis at the time, the goals set for protected areas and biodiversity conservation in the NEAP were too ambitious and were not achieved. Some resource inventory and management planning has taken place but implementation remains weak. For example, there still is no legal definition and classification of zoning systems; physical boundaries demarcation of many PAs have yet to be established and management of private and public sector development in PAs is not properly controlled. The NEAP's value is that, for the first time, it set out specific directions for biodiversity conservation and protected areas, and many remain important priorities.

National Wetland Action Plan (1997)

This plan outlines the cultural and economic importance of wetlands in Cambodia, which cover over 30 percent of its area. The Action Plan states that over 20 percent (36,500 km²) of the country could be classified as wetlands of international importance according to accepted criteria for wetlands assessment under the Ramsar Convention.

Challenge:

The plan alerts planners to areas of high biodiversity significance and provides a framework of actions to include these special sites within the protected areas system and to receive appropriate management attention. Yet, no further wetland areas have been submitted for Ramsar listing since the initial three sites were designated when Cambodia joined the Convention in 1996.

National Biodiversity Strategy and Action Plan (2002)

Achievement:

The NBSAP, more than the earlier policies, bases its strategies on the notion of protected areas as an engine for development. It presents "a vision for Cambodia of equitable economic prosperity and improved quality of life through sustainable use, protection and management of biological resources." The Strategy provides "a framework for action at all levels that will enhance our ability to ensure the productivity, diversity and integrity of our natural systems and, as a result, our ability as a nation to reduce poverty and improve the quality of life of all Cambodians. It promotes the conservation of biodiversity and the sustainable use of our biological resources."

The first section relates to strengthening the protected areas system and the final section to poverty alleviation. The intervening chapters address the role of key sectors in using and conserving biodiversity. Important recommendations relate to cross-sector mechanisms for monitoring the status of biodiversity and implementation of the NBSAP such as:

- Coordinating implementation through a permanent Inter-ministerial Biodiversity Steering Committee and National Secretariat for Biodiversity;
- Preparation of an annual national report on policies, activities and plans aimed at implementing the Strategy;
- Measures to allow and encourage non-government participation in the implementation of the Strategy;
- Regular reporting on the indicators identified for each strategic objective;
- Reporting on the status of biodiversity at the country level; and,
- Revision of the strategy after an initial implementation phase of two years. (MOE 2002a)

Challenge:

Despite the progressive development perspective, when it comes to specifics, the NBSAP tends to fall back onto conventional approaches, especially when it addresses the roles of individual sectors and the issue of poverty alleviation.

2.2.3 *Legal framework for environment and protected areas*

Achievements:**The decade has seen major law reforms for environmental management and protected areas.**

Achievements have been considerable, starting in 1993 with the establishment of the Ministry of Environment. Also, in that year Cambodia went from no protected areas to 23, following a rapid analysis of ecosystems and habitats requiring conservation.

In 1996, the Law on Environmental Protection and Natural Resources Management came into force. The Law provides the basic legal framework for the operation of MOE. The objectives of the law are to protect, manage, and enhance the environment and to promote socioeconomic development in a sustainable way. It places responsibility for environmental action planning, protected areas management, environmental impact assessment, environmental monitoring, pollution control and inspection, and public participation under the Ministry. The law provides the umbrella for follow up sectoral laws, sub-decrees, and regulations for environmental protection and natural resource management. The first was the 1997 Sub-Decree on the Creation and the procedures of the Ministry of Environment, which details the mandate of MOE and its structure. It defines the activities and functions that could be assigned to the Provincial Offices of Environment. Most recently, in 2001, the Royal Decree on the Creation and Management of Tonle Sap Biosphere Reserve was introduced.

In the last decade, the Government of Cambodia has signed ten international environment conventions (Annex 2). In the late 1990s and in the first two years of the new century, various government sectors have introduced laws, decrees and sub-decrees with direct or indirect links to protected areas, such as forestry, community forestry, wildlife, water resources, fisheries, and land tenure. These initiatives are reviewed in a later section of the chapter.

National protected areas legislation now being drafted. Since the NEAP, the MOE has had several attempts at drafting an umbrella protected areas law. But the evolving legislative scene in other sectors especially forestry, left the Ministry uncertain where in the hierarchy of law to place a comprehensive legal instrument for PAs. Now that the approach to PAs in the new forestry laws has clarified, the MOE is reviewing a fresh draft statute on Protected Area Management.

Challenges:

Developing a detailed regulatory framework. Translating the new legislation into specific and detailed field level regulations and guidelines for PA managers will be an important and complex task. For example, regulations are needed concerning zoning, determining boundaries of PAs, rights and responsibilities of local people to use PAs for NTFPs, development of tourism, enforcement, and involving local people and local governments in making management decisions.

Enhancing cross-sector consultation and linkage. The fact that there are now two ministries with protected area responsibilities makes the planning and management of PAs as part of one integrated national system a challenge. There is no legislation for determining the relative priority of different legal instruments or standards for consultation between agencies with common interests (World Bank 2000). Natural resource laws have sometimes created institutional tension and uncertainty concerning functions and authority.

2.3 Institutional framework for protected areas

Achievements:

An institutional framework for protected area management is in place. MOE (with its Department of Nature Conservation and Protection and Provincial/ Municipal Departments of Environment) was given the original mandate over the national protected areas system, but subsequent sectoral laws have brought conservation functions to a range of agencies, particularly within MAFF.

The mandate of MOE is to supervise and manage the environment throughout Cambodia.⁷ The planning and management of the protected area system, and supervision and coordination of conservation work country-wide falls under its Department of Nature Conservation and Protection. There are 23 protected areas units operating in each of the MOE PAs. Presently, the DNCP has 97 staff working in the 5 main offices at the national level. There are 525 staff deployed in 59 protected areas units. The distribution of staff to each protected area ranges from 7 to 35 staff based on need and remoteness of the PA.

The provincial and municipal departments of environment are under the direct control of MOE and are responsible for implementing environmental policy, preventing violations in protected areas and preparing proposals for the creation of new PAs and extension of existing areas in cooperation with relevant departments.

MAFF has a mandate for planning and managing the agricultural, forestry and fisheries sectors.⁸ In 1999, its staff totalled 10,995. There are two main departments having a very significant stake in the protected area system: the Department of Forestry and Wildlife and the Department of Fisheries. The Department of Forestry and Wildlife responsibilities include:

- Preparing policies and regulations for the protection and management of forest resources, and wildlife conservation;
- Participating in setting up measures for environmental protection and developing plans for the management of forests, forest reserves for wildlife, protected areas and reforestation areas; and
- Supporting initiatives on protection and rehabilitation of forest resources and wildlife.

Duties of the Department of Fisheries include⁹:

- Preparing policies and regulations for the protection, improvement and management of fishery resources;
- Participating in setting up measures for environmental protection and developing plans for the management of fisheries and fishery reserves; and
- Supporting initiatives for protection and rehabilitation of fishery resources.

Provincial and municipal Departments of Agriculture, Forestry, and Fisheries are required to protect natural resources such as forests, water, fisheries in cooperation with other relevant agencies.

Increasing role for local government in protected areas. Provincial and municipal authorities are under direct control of the Ministry of Interior. They are the main government authorities at local level playing a key role in promoting economic development and environmental protection and law enforcement in coordination with the departments under direct control of line ministries.¹⁰

⁷ Sub-Decree No. 57 on the Organisation and Functioning of the Ministry of Environment dated 25 September 1997

⁸ Sub-Decree No. 17 on Management and Process of The Ministry of Agriculture, Forestry, and Fisheries, dated 7 April, 2000

⁹ Circular No. 37 on the Role, Responsibilities, and Organization of the Department of Agriculture, dated 15 January 1986

¹⁰ Sub-Decree No. 29 on Limitation of Competence of Province/ Municipality, dated 12 April 1999

Their responsibilities include:

- Preparing provincial and municipal master development plans to protect heritage, environment and natural resources, as well as to ensure social economic development and integration with national plans for social and economic development;
- Preparing and implementing local development programs, determining budgets for these programs and coordinating with national programs;
- Defining the zoning for land use including areas for construction, agriculture, commerce, industry, tourism and public parks;
- Issuing certificates for land ownership and land titles; and
- Building and maintaining rural roads, waterways and canals.

Challenges:

As a greater sharing of responsibilities for protected areas involves more sector agencies and levels of government, the institutional arrangements and authority become confused. The MOE, which is a relatively small government ministry in terms of staff and budget when compared with other sectors, finds that it has little credibility or influence in the field or in cross-sector negotiations.

Overlapping mandates. For example, there is considerable overlap in the mandates and responsibilities of the DNCP within MOE and DFW within MAFF in terms of wildlife conservation and protection, forest management, and law enforcement. In some places, MOE and DFW manage adjoining PAs, and in others DFW is responsible for the management of land abutting PAs managed by MOE. Wildlife trade affects both PAs and forested lands. Regular collaboration at all levels can only improve the effectiveness of both agencies. When PA co-management and advisory boards are formed, both agencies need to be involved. The current wave of legislative and regulatory reforms also must make it more clear which agency is ultimately responsible for which activities and tasks, as well as provide a framework for how the working relationship can be further strengthened.

MOE has few resources and authority to manage the PA system. MOE lacks the resources and authority to fulfil its mandate in managing the original 23 protected areas, let alone play a role in the new areas being set up by other sectors and local government. The situation has improved since amendments were made to the Penal Code, allowing the staff of MOE and PA rangers to function as “judicial police”. Previously, the lack of legal authority was a serious constraint for law enforcement within the PAs. Often, rangers had to rely on the military or forestry officers for support in their enforcement work. Still an umbrella PA law is required to substantiate and clarify MOE’s authority within protected areas.

Lack of information sharing. The complexity in institutional mandates for protected areas is compounded by poor coordination and sharing of data and information between and within government agencies, and between government and NGOs. Information has become a commodity to enhance revenues, but control over its flow works against effective integration in PA planning and management. A legal obligation and mechanism to facilitate information sharing and coordination is needed, especially relating to environmental assessment and survey, and PA planning and management.

2.4 Protected areas and economic development

Achievement:

Initial steps have been taken in having sectors recognise the importance of protected areas in their development strategies. In the long term, the establishment of strong working links and a sense of responsibility within sectors for protected areas is essential to maintaining and enhancing their contribution to development. This acknowledgment of responsibility brings with it a budgetary commitment to pay for the benefits provided by PAs and to ensure that sector activities do not restrict or diminish those values. In

Cambodia, the links between PAs and the sectors are clarifying. More sectors are becoming involved in exploring those relationships and in understanding the role PAs can play in meeting development mandates.

2.4.1 *Protected area links with development sectors*

In addition to MOE and MAFF, the following government sectors have direct responsibilities relating to protected areas planning and management which need to be identified and formally expressed in policies and budgets:

- Ministry of Land Management, Urbanisation, and Construction;
- Ministry of Tourism;
- Ministry of Water Resources and Meteorology;
- Ministry of Foreign Affairs and Trade; and
- Provincial/ Municipal Authorities (and related provincial/ municipal line departments).

Other sectors benefiting from or effecting PA values include:

- Ministry of Rural Development;
- Ministry of Health;
- Ministry of Industry;
- Ministry of Transport; and,
- Ministry of Defence.

The achievements and remaining challenges in building these sector links to PAs are reviewed in this section.

2.4.2 *Reforms in natural resource management effecting protected areas*

Over the past decade major institutional and policy reforms across government are having far reaching effects on the national protected area system.

Achievements:

Establishment of new natural resource planning and management institutions. The creation of new ministries whose mandates have a bearing on protected areas and biodiversity management – for example, the Ministry of Water Resources and Meteorology and the Ministry of Land Management, Urbanisation, and Construction.

The formation of inter-ministerial committees as a means to achieve inter-agency coordination.

These include the National Committee for Forest Management Policy, the National Coastal Zone Steering Committee, the Provincial/ Municipal Rural Development Committee¹¹ and, of special significance, the National Committee for the Conflicts Resolution on Protected Areas Management. Most recently, the NBSAP proposes an Inter-ministerial Biodiversity Steering Committee.

New natural resource legislation. New revisions of the Forestry Law, Fisheries Law, and Water Law, as well as associated Sub-Decrees such as the Community Forestry Sub-Decree have been adopted or are under discussion and preparation, each with direct relevance for protected areas.

Key natural resource sectors are beginning to adopt PAs and regimes of protection as an essential development strategy. This, one of the most significant achievements of the past decade, is discussed on a sector by sector basis in the following sections.

¹¹ Royal Government of Cambodia Resolution No. 2 of 11 January 1999

2.4.3 Forestry

Achievements:

Regimes of protection introduced as a development strategy in the forestry sector. The former National Forest Law was promulgated in 1988. Current reforms to forest policy and forest law introduce the potential for forest concession management plans to become vehicles for biodiversity conservation and the establishment of special protection zones. The depletion of forest resources at around seven times the sustainable harvesting rates required MAFF to urgently embrace protection as an essential pillar in its sector strategy (MOE 2002a).

The Forest Policy is currently being developed by MAFF and is under discussion with related sectors including MOE. The new Forest Law was adopted by the National Assembly in 2002. The effort to strengthen forest policy and the legal and institutional regime for forest management was supported through the Forest Policy Reform and Sustainable Forest management Project, mounted by the World Bank.

Challenges:

All PAs have been subject to varying intensities of logging. PAs are usually surrounded by forest concessions, often masking harvesting, transport, trading and processing of wood from PAs. Illegal activities in forest concessions are common. There are still many small scale logging activities associated with armed groups in protected areas. This is a special problem for PAs near international borders, where small scale illegal logging and transportation of timber and wildlife continues. Unclear physical boundaries between protected areas and forest concessions or other forests also leads to harvesting violation in the PAs.

All PAs are a source of firewood and charcoal for local communities. Wood is the cooking fuel for 98 percent of households in rural areas, and for 92 percent of households overall. Although gathering of firewood in protected areas is illegal it continues with and without informal consent from PA authorities. Introducing community managed systems of protection and extraction may best ensure the sustainable use of this renewable PA product.

2.4.4 Fisheries

Achievements:

Regimes of protection introduced as a development strategy in the fisheries sector. The new Fisheries Policy and Fisheries Law reinforces the importance of fish habitat sanctuaries and seasonal fishing controls in maintaining fish stocks and their diversity. The Department of Fisheries plans to establish fish sanctuaries over 25 percent of critical fish habitat country-wide. The Department is concerned with:

- enhancing the protection and sustainable use of natural fisheries resources;
- extending the institutional responsibilities of fisheries management to fishing communities; and
- encouraging integration of fisheries management with overall rural development in fishing communities.

The sector derives most of its output from Tonle Sap lake, one of the richest fresh-water fisheries in the world. In 2001, the government embarked on an extensive reform of the fisheries sector by improving access by the poor to the fishing lots. The government repealed 495,000 ha of officially auctioned fishing lots, a reduction of 53 percent in the size of the official fishing lots to allow the poor to access common fisheries resources.

These policies recognise the rights of fisheries communities to manage local fisheries and the importance of their involvement in protection of the resource. Further, they emphasise the importance of increasing habitat protection to ensure the sustainable use of the resource. The Draft Fisheries Law is currently under discussion and review. The law will include provision for community co-management and fish sanctuaries.

Challenges:

The criteria for identifying the most appropriate locations for fish sanctuaries are not well developed and existing areas within Tonle Sap are of questionable value as critical fish habitat.

Devolution to communities without adequate capacity building and resources is not leading to better protection. Fish sanctuaries and community fishing areas require agreed management plans, and skills and resources to implement and enforce them.

2.4.5 *Agriculture*

Achievements:

MAFF has identified two “gene pool conservation areas”. While these first gene pool conservation areas cover forest and not agricultural areas, this is a significant step by MAFF in acknowledging the importance of maintaining endemic plant and animal stocks in situ as a sound economic investment.

The very significant PA contribution to the supply and regulation of water for agriculture is recognised. Populations are expanding and bringing agricultural activities to the edge of protected areas, including subsistence plots, market gardens and commercial operations. Every protected area in the country is contributing increasingly as a source of water to this expanding agriculture either directly, through streams and rivers and through irrigation systems, or indirectly through their influence on local climate. Farmers and commercial operators are the first to acknowledge this contribution, although it is treated as a free service. The government has an ambitious program to expand irrigation facilities which will increase the importance of PAs to agriculture as a repository and regulator of water.

Challenges:**To formally introduce regimes of protection as a development strategy in the agriculture sector.**

Crop cultivation in Cambodia is largely dependent on traditional cultivars, old varieties and land races which have evolved over thousands of years within the country. Almost 80 percent of cultivated area is used for local unimproved crop varieties. This traditional agriculture relies on a diversity of rice strains and a diversity of associated rice ecosystem species to provide food security and stable production. Over 2000 different strains of rice are used in Cambodia MOE (2002b).

As modern agriculture methods and hybrids are introduced, government will need to consider establishing protected areas to safeguard the areas of origin and representative samples of local agriculture genetic resources and ecosystems.

Encroachment. Most protected areas in Cambodia are affected by agricultural encroachment especially in the more densely populated southern and western regions of the country. In many cases powerful people and military take the land. MAFF and MOE need to work closely together in addressing this challenge.

2.4.6 *Tourism*

Achievements:

The National Tourism Policy includes the development of infrastructure and conservation of touristic values in protected areas. There is a cooperative initiative between MOE and the Ministry of Tourism to develop a master plan for selected protected areas to promote eco-tourism. The Ministry of Tourism was established by the Royal Decree in 1996 to determine policy, planning, and strategy for tourism development. It has a staff of 1030 and is an important potential resource for the sensitive development and management of protected areas. If the collaborative master plan is completed, the Ministry would be acting in a practical way to identify protected areas as a key development strategy for tourism and investing accordingly.

Local government and communities are recognising the broader development values of PAs especially relating to tourism.

Already in some parks tourism is bringing in significant revenue for local communities. For example, more than 95 percent of the estimated value of current tourism in Bokor National Park (i.e. US \$0.675 million a year) accrues to the 150 or so local hotels, restaurants, food sellers, motorcycle and car operators, which in turn also generates more than \$11,000 a year in local tax revenues. This existing tourism value of Bokor National Park also has substantial multiplier effects on trade, income and employment in surrounding areas of Kampot Province (ICEM 2003a).

MOE has made initial investments in infrastructure in some parks. In Kirirom, for example, some roads have been renovated, a park information centre established, accommodation facilities established, and interpretation signage set in place. Also, some basic equipment has been purchased such as fire-tankers, trucks for rubbish collection and rubbish bins. In Kirirom, these initiatives have contributed to increasing local and international tourism in the park.

Challenges:

A strategy for controlled tourism development is needed for each PA. Tourism can potentially provide large benefits to local communities around protected areas if non-local entrepreneurs and companies do not capture the market.

Few protected areas are accessible. Up front investment of the kind made in Kirirom is needed. In Bokor National Park, for example, the increasing interest of visitors in visiting the plateaux has not been met by investment in road maintenance and PA interpretation facilities.

2.4.7 *Water management*

The Ministry of Water Resources and Meteorology is responsible for management of fresh and marine water resources and meteorology, including defining water resources policy and development strategies to support sustainable use, development, and national and international conservation and protection.¹²

Achievement:

There is growing recognition of the significant contribution of PAs to watershed protection and the supply of clean drinking water. The 20 percent of Cambodia covered by protected areas coincides with many of the most important watersheds and catchments in the country. The maintenance of those watersheds is critical to the recharge and regulation of ground water resources and to the controlled release of surface water so that wet and dry season peaks and troughs are moderated. These roles are beginning to be acknowledged in the policies and strategies of MOWRAM, as they are in strategies for water supply of the Ministry of Land Management, Urbanisation, and Construction, MAFF's Department of Agriculture, and of Provincial and Municipal Authorities.

Challenge:

Recognition of benefits has not led to investment in PAs. So far that recognition has not brought with it a flow of investment from the beneficiary sectors to safeguard and enhance watershed functions. These costs are being left to MOE and MAFF through its forest management functions. Water pricing systems and other economic instruments to manage water supplies are being considered but as a sector revenue stream and not in payment for PA watershed services.

¹² Sub-Decree No. 58 on the Management and Process of the Ministry of Water Resources and Meteorology (MOWRAM), dated 30 June 1999

2.4.8 Energy and industry

The industrial sector is dynamic. During 1993-96, despite domestic political troubles and the financial crisis in the region, the average growth rate was 8.9 percent which continued until 1998 when it dropped to 7.0 percent. Industry led growth in 2000 was an impressive 29 percent. Manufacturing activities (78.5 percent) and construction (18.8 percent) dominate the sector. The water demand from this growing sector is increasing by more than 20 percent each year. So too is the energy demand from sources other than wood. In urban centres such as Phnom Penh and provincial capitals, water and energy supply for industry is becoming a high priority concern. Protected areas are beginning to figure more prominently in the response to this need.

Achievement:

The very significant potential PA contribution to the supply of energy through hydropower is recognised. Cambodia's first two hydropower schemes – one completed and the other in advanced feasibility planning - both lie inside national parks - Bokor and Kirirom National Parks, close to the important urban centres of the southwest. Other schemes have been proposed for Virachey National Park, and Phnom Samkos and Phnom Aural Wildlife Sanctuary.

The Kirirom scheme will have a total capacity of 12 MW, supplying 53 GWh of power per year to Kompong Speu Province and Phnom Penh. This US\$ 25 million investment is planned to be operational in 2003. The Kamchay hydropower scheme in Bokor is planned to have an installed capacity of 120 MW, generating 469 GWh output annually to meet the energy demands for Kampot, Sihanoukville and the Phnom Penh corridor. This US\$ 270 million investment is expected to be operational in 2008. The net benefits from electricity sales from both schemes will be US\$57 million each year (ICEM 2003a).

Hydropower schemes are a renewable energy resource, depending on how effectively the surrounding watersheds are managed. They can also require very significant modification and destruction of other uses and values of protected areas.

Challenges:

When considering hydropower proposals, there is inadequate assessment of other uses of PAs, of potential effects, and of mitigation measures. The experience with the first two hydropower projects has shown that the EIA system in Cambodia is not working effectively, with a minimum of involvement of the MOE and the protected areas staff at the centre and on site. Consequently, the full effects of the projects for other development sectors, such as tourism, and for other values of the host protected areas have not been adequately studied.

No mechanisms for the energy sector and other beneficiaries to pay for the PA services they receive. The economic benefits of the two hydropower schemes will be substantial. Currently the critical role played by the protected areas in maintaining the productivity and life of the projects has been taken as freely provided goods and services.

2.4.9 Health

Achievement:

The significant contribution of PAs to the maintenance of community health and productivity is being recognised. Most local communities living in and around PAs use traditional medicinal plants gathered from them to treat illness. In Ratanikiri province, for example, up to 80 percent of households living close to Virachey National Park primarily use traditional medicinal plants. One hundred types of trees

¹³ Cambodia's public health expenditure as a percent of GDP or of the government budget (in 1998, 0.4 percent and 4.2 percent respectively) is among the lowest in the world (World Bank, 2000)

and two hundred species of ground plants and saplings are used by those villages (Bann 1997). There is a direct link between the maintenance of community health through use of protected areas and associated local economic productivity.

Challenge:

The economic value of traditional medicines from PAs is not known. While it is essential to urgently expand the national system of health centres and care¹³, the continuing role of traditional approaches needs to be better understood as part of the strategy for maintaining and improving the productivity of local communities and reducing indebtedness. The Forest Law 2002 allows for sustainable use of NTFPs – but investment in management is needed reflecting the importance of medicinal plants to local economies. Currently, their value is not understood or internalised in local or national government socio-economic planning. Appropriate allocations for their maintenance within PAs are not made through the health sector and local government budgets.

2.4.10 Transport

Improving the road network is a key strategy of government in reducing rural poverty. Since its establishment in 1993, the Ministry of Rural Development has constructed and rehabilitated 6,956 km of rural roads, 292 bridges, and 2,240 culverts. The rural road system requires continued focussed investment. Most of the national road budget has gone to improvements and maintenance of national roads.

Achievement:

Some expansion of the road network has given greater access to the benefits of protected areas.

Roads are an essential part of the strategy to increase access to the benefits that PAs provide. They are a way to increase the value of PAs and their contribution to the economy. Road improvements in and around some protected areas have increased tourist visitation, improved management access and restoration effort, provided greater access to local communities to gather NTFPs with PA authority supervision, and facilitated enforcement.

Challenges:

The effects of roads on PA values are not adequately assessed. The construction of new roads has not been accompanied by an assessment of their long term economic and environmental impacts or adequate mitigation. Some new and upgraded existing roads have had a major negative effect on PA values, bringing with them land encroachment, new settlements, and illegal harvesting activities. For example, a national road was built through the centre of Snoul Wildlife Sanctuary without adequate environmental assessment. Over the past five years the number of small roads and tracks crossing PAs has increased dramatically, some constructed to provide access for logging and hunting.

Extension of transport system. The road network must be improved. This is essential if protected areas are to be effectively integrated into local and national economies as an important development strategy. But the pace and scale of development activity which new roads can promote is not being controlled to maintain the PA benefits which become accessible. Improving the transportation network to isolated rural regions while eliminating or at least reducing negative impacts on PA values and habitat corridors is one of the most serious challenges to the national protected areas system. The fragmentation of PAs by roads and their ecological isolation from each other and from relatively undisturbed habitat is leading to their steady degradation.

2.4.11 Local development

Achievements:

Protected areas in Cambodia have been shown to contribute significantly to local development through key sectors such as fisheries, tourism, energy, water and forestry. For example, almost 30,000 people live in or directly beside Ream National Park, and population growth rates are nearly 3 percent. With few other sources of income and employment available to them, their livelihoods depend intimately on park resources. Most household income is generated from farming, fishing and forest products collection. Up to 84 percent of households depend on the Park's resources for their basic subsistence and income to a net value of some US\$ 1.24 million a year or an average of US\$ 233 for every household living in and beside the Park. The median family income is only US\$ 316 per year and a third of families earn less than US\$ 200 (ICEM 2003a).

In various protected areas local communities received income from:

- *Harvest rights to some PA products* such as resin, bamboo, fruits, medicinal plants and fish. For example, in the Ya Poey Community Protected Forest, people also are allowed to harvest and sell some plentiful NTFPs;
- *Income supplements:* Some charges from Ream National Park are shared with other stakeholders;
- *Local employment:* Ranger jobs are provided to local people; and
- *Tourism,* such as selling food and beverages, providing lodging, guides, transportation, handicraft sales, and cultural performances. (ICEM 2003b).

PA “buffer zone natural resource management communities” established. MOE has established buffer zone natural resource management communities, for example in Kirirom National Park, where the community is managing the waterfall eco-tourism in their area with the support from the Mlup Baitong Project. Other community management arrangement has been established in Bokor, Ream, Virachey, Boeng Per, Roniem Daun Sam, Aural, Peam Krasop, and Tonle Sap Biosphere Reserve. Based on the early positive experience, the government decided in 2002 to set aside up to 30 percent of all PAs as areas for collaborative management with communities.

Community management of forests within PAs and buffers recognised as an important conservation and development strategy. A community forestry zone is operating successfully in Kirirom National Park on the basis of a “community contract” which involves local people in safeguarding park resources. In the case of the Ya Poey community in Ratanakiri Province, it has established a joint management agreement with the government for approximately 5,000 hectares of its traditional forests.

A ministry is established to promote rural development and has established working links with MOE. The Ministry of Rural Development (MRD) implement programs for sustainable rural development, including rural roads, water supply, health care, community development, and rural economic development at the level of families, villages, and communes. In 1999 the Provincial/Municipal Rural Development Committee was established to facilitate cross-sector collaboration.

The economic value of NTFPs in PAs recognised by local communities and private sector. During the mid 1990's, for example, an internationally owned rattan processing factory was set up on the border of Ream National Park. The local community was encouraged to gather rattan for Riel 100 per stem. The only local source was the Park. For a time the factory and the community benefited but the rattan supply within the Park was quickly exhausted.

Challenges:

Community management must provide incentives for effective control of park resources. In the Ream rattan case, the rattan was not harvested sustainably and the resource collapsed leaving community and Ream National Park worse off. The company closed down its operations. At that time, the community had not been brought into a collaborative management arrangement, NTFP collection was illegal, and there was no incentive for ensuring the rattan was used sustainably.

Migration and resettlement. Migration from areas of dense population to areas of relative natural resource wealth is increasing, as is demobilisation of military personnel and resettlement of families who fled their homes during the troubles. Effective management of planned and unplanned settlement or re-settlement of areas in or near PAs and in habitat corridors is proving difficult.

Some areas within PAs have been converted to private lands due to government policy on the establishment of new districts for the defected Khmer Rouge (for example, the four new districts, Me Lay, Sampeuv Loun, Kamreng, and Phnom Preuk, in Roniem Daun Sam Wildlife Sanctuary, Bantey Mean Chey and Battambang Province)

Continued community exploitation and encroachment despite participatory initiatives. There is a range of community participation initiatives relating to PA management. These pilots are bringing good experiences and lesson for application in other areas, but many are yet to be officially declared and this leads to scepticism within the target community, and continued mismanagement or misuse of natural resources in the PAs. The shortage of supporting budgets and staff is undermining and slowing community participation initiatives. In some PAs, community management is still not established and mismanagement of harvesting and foraging continues unabated.

Providing harvest rights to local communities creates conservation risks, and will take advanced planning, negotiation and other management skills. This is particularly true if even limited commercial sales are allowed. Market forces and incentives are difficult to manage, and often the sustainable level harvests of NTFPs have not provided enough income to satisfy the rapidly modernising material aspirations of local communities. Comprehensive development strategies are needed for local communities associated with protected areas.

Rights to land and resource use. An underlying reason why local communities have mismanaged common resources has been the lack of clear definition of user rights and obligations. The wholesale allocation of large concessions for agriculture, fisheries and forests to commercial interests meant that local communities were alienated from traditional harvesting areas on which they had relied. This alienation meant that the continued use of the areas became illegal, for short term gain, and without concern for sustainability. Also, it forced communities to concentrate on resources within protected areas, which were less intensively controlled than the concessions.

The lack of ownership over private lands accentuated this trend. Currently, only 10 percent of rural families have full legal land titles. In 2000, the World Bank reported that lack of access to land is a major contributing factor to rural poverty and income-earning (World Bank 2000).

Achievement:

A legal and institutional framework to define the rights of land use and ownership is in place. The Land Law was adopted in 2001. It prescribes a comprehensive regime for estate ownership, possession, concessions, successions and contracts of sale. In comparison to the 1993 land law, this law provides clearer description of state property, property rights, and of private ownership of land. Only Khmer citizens are entitled to public property and legal private ownership. This system brings comprehensive obligations on the concerned ministry to safeguard protected areas and environmental quality.

The Ministry of Land Management, Urbanisation, and Construction is responsible for supervising and managing issues of land tenure in particular:¹⁴

- proposing and implementing land management and land ownership policy;
- preparing zoning for economic, social, industrial, tourism, urban and rural development, nature conservation, protected cultural heritage, infrastructure, transportation, public administration, and other areas in cooperation with relevant agencies;
- cooperating with MOE to protect the environment, protected landscape, natural recreation areas and ecosystems and with the Ministry of Culture to protect cultural heritage and historical recreation; and
- issuing land titles and ensuring land conservation.

This new system has important implications for the pressures on PAs from encroachment and extractive uses and on the willingness of communities and users to manage natural resources sustainably.

2.4.12 Inter-sectoral collaboration and conflict resolution

Many sectors now have responsibilities relating to the use and conservation of protected areas for development. The government has introduced a range of institutional mechanisms to promote collaboration among sectors in meeting their mandates. This becomes critical at local level when the conflicts between resource users and between development options become most evident. Often, the activities of key sectors are not undertaken with a strategy for optimising and maintaining PA benefits in the long term. Also, local people and powerful individuals misuse most protected areas. Even the few areas that are actively managed do not escape over-exploitation. These kinds of conflicts can only be resolved through close and concerted inter-sectoral action.

Achievements:

A national system for conflict resolution in PAs set up. In 2000 the National Committee on Discussion, Recommendation, and Conflict Resolution for PA Management was established.¹⁵ The Minister for Environment chairs the committee and leaders of the Ministry of Interior and MAFF are Vice-chairmen. Committee members are leaders from relevant government line ministries - MRD, the Royal Government of Cambodia Armed Forces, the National Police, the National Military Police, the Council of Ministers, the Ministry of Tourism, the Ministry of Justice, the Ministry of Land Management, Urbanisation, and Construction, and the Provinces/ Municipalities. This committee is mandated to:

- Participate in discussions and make recommendations relevant to PA management, their conservation and development;
- Recommend preventative measures and immediately solve violations or anarchic activities occurring in PAs; and
- Participate in discussion, make recommendations and decisions on PA boundary demarcation.

Provincial conflict resolution subcommittees. The Committee is also assigned to create sub-committees in all provinces and municipalities in which PAs are located. The Deputy Governor of the Province or Municipality chairs the sub-committee and the Director of the provincial/municipal Department of Environment and the provincial/municipal Department of Agriculture, Forestry, and Fisheries are the Co-vice-chairman. Members are the directors of all relevant provincial/municipal line departments, including the Commander of the provincial/ municipal Royal Government Armed Force, the Commander of the provincial/municipal National Police, and the Governor of the Districts or Heads of Communes, which are located within or adjacent to the PAs. The Head of the relevant PA unit is nominated to act as Secretary to the Sub-committee.

¹⁴ Sub-Decree No. 62 on the Organization and Functioning of the Ministry of Land Management, Urbanization, Construction, dated on 20 July 1999

¹⁵ Resolution No. 49 on 24 July 2000

In case of conflicts in a protected area, the Head of the PA tries to resolve the problem. If the conflict continues, the PA Head reports the matter to the Sub-committee and the Director of DNCP requesting intervention. At national level, the Committee has proven an important forum for raising critical issues negatively affecting the national PA system. At local level the sub-committees have not been as successful.

Challenges:

Most sub-committees are not active in intervening in PA problems because:

- resources to complete the tasks are inadequate;
- capacity and interest in PA management among members of the Sub-committees is limited;
- understanding of the benefits of PAs to development is lacking;
- coordination among the Sub-committee members is difficult to achieve;
- all members have other responsibilities in their institutions;
- there are no incentives to fulfil Sub-committee mandates; and
- most PA violators are powerful people or armed militias?.

Lack of awareness of the development values of PAs at senior government levels. MOE has been organising a program of study tours and visiting programs involving senior officials in key protected areas such as Kirirom, Bokor, Ream and Tonle Sap Great Lake. But understanding of PA concepts is still limited among senior policy makers and sector agencies.

2.4.13 *Foreign affairs and trade*

The potential of protected areas to promote national development by facilitating and promoting effective international relations is only beginning to become evident in Cambodia.

Achievement:

Protected areas have been a vehicle for cross border collaboration and the fostering of international relations and economic ties. Cambodia is a party to eight international agreements concerned with conservation through protected areas. Those agreements have promoted international relations, influenced the application of development assistance to protected areas and local communities, and brought international attention to the global importance of Cambodia's protected areas system. A third of Cambodia's protected areas lie on international borders with Thailand, Lao PDR and Vietnam which has generated programs of cross border discussions and exchange on protected area management. It has also brought greater awareness of the need for international cooperation in the development of shared resources such as river systems and forests.

Challenges:

International collaboration on cross border management has proved allusive. The location of important protected areas on international boundaries has facilitated cross border traffic PA products and made the maintenance of PAs more difficult. The border protected areas offer both a challenge and major opportunity to manage shared natural systems collaboratively with neighbouring countries for mutual benefit.

Wildlife trade is seriously degrading the values of some protected areas in Cambodia. The hunting of wildlife for trade is prevalent in PAs, particularly those on international borders.

2.5 Protected area management

Thus far this chapter has reviewed the evolving relationship between protected areas and development in Cambodia. In this sense it has been outward looking, exploring the productive links which protected areas have with development sectors in surrounding landscapes and at national level. This final section is more inward looking. It examines the experience in a range of protected area management issues because these are fundamentally important to improving and conserving the development services and products that PAs provide.

2.5.1 *A large and expanding protected areas system*

Achievements:

Expansion of the PA system. The establishment of the 23 protected areas managed by the MOE, the new categories of protected forests being developed by MAFF, and other new forms of provincial and community level protected areas already have been mentioned. Some gaps in the area covered by the protected area system have been filled by recently proposed and/or declared protected areas, such as the Protected Forests in the Cardamom Mountains and the large area in Eastern Monduliri Province along the border with Vietnam.

At the least, the establishment of protected areas, and the boundaries marked on maps, has prevented designation of these important areas for other kinds of development, such as logging concessions, which may have led to long term development losses for short term economic gain.

Physical demarcation of PA boundaries. Some protected areas are officially demarcated on the ground following discussion and negotiation among members of the conflict resolution sub-committees, for example, at Kirirom, Bokor and Ream National Parks. The process of physical demarcation has involved strong facilitation and coordination among relevant government institutions and a reinforcing of their shared mandate to reduce the extensive conflicts relating to PA management.

Suppression and prevention of violations. With the efforts of PA field units, especially their patrolling sections and intervention from national level, violation in PAs have been significantly reduced over the past few years. PA rangers have documented some serious violations and initiated court actions. For example, land encroachment in Kirirom National Park is now under control and several of the more important cases are awaiting court decisions.

Challenges:

Active management of most PAs is lacking. Although a field presence has been established in most protected areas, generally only the most basic management activities have been carried out. In 2001, only about 20 percent of the total area designated as protected was under some form of active management (ADB 2001). While contracted staff numbers have increased since then, management systems are still needed in most PAs.

PA system based on incomplete information. The PA system is mainly based on forest reserves developed in the 1950s, as well as limited information available in the early 1990s. This information was incomplete and uncertain. The PA system needs further review for remaining gaps. Habitats that are considered to be missing or insufficiently covered by the current PA system include lowland evergreen forests, riverine forests, limestone forests and marine areas. Determining how to add examples of these habitats to a protected area system, and which government agency at which level will manage them will be a challenge.

Adjustments to PA boundaries. The boundaries of many protected areas also were established with incomplete information about habitats, species, and traditional uses. Existing boundaries need to be reviewed to see if changes are needed to improve a PA's coverage of a particular habitat, and/or to re-

solve land-use conflicts with local communities and government sectors that might erode or destroy local support. Adding new areas will be difficult, even if other parts of a protected area are released to communities or into the jurisdiction of other government ministries. The final delineation and marking of park boundaries will be a long and complex process that requires sustained commitment and funding. Apart from external boundaries, priority should be given to the definition of core areas for conservation and joint management areas.

Many PAs still face problems in reaching consensus on physical demarcation of their boundaries, due to a lack of coordination in forest land allocation between government line ministries, overlapping areas between PA and forest concessions or land concessions, and conflicts in narrow institutional interests. Many of the Sub-Committees are not innovative or conscientious in addressing the boundary issue.

Maintaining habitat corridors. Another challenge will be to establish habitat corridors between protected areas, particularly where PAs are not large enough to maintain important species in viable populations. This effort will include better integration of conservation policies and development frameworks into socio-economic development planning and implementation. For habitat corridors, the key is to ensure that the use of land does not compromise the ability of fauna to move about the landscape.

2.5.2 *MOE and MAFF partnerships*

An intimate working partnership between MOE and MAFF is essential for the welfare of the national protected areas system. Equally, it will become increasingly important for MOE/DNCP and MAFF/DFW to build partnerships with other stakeholders because:

Achievement:

There has been some progress in developing partnerships between government conservation agencies and other government agencies and local communities.

Challenges:

Central government does not have the resources to do it all. DNCP and DFW alone probably will not have the funds and staffing to maintain the growing national system of protected areas.

The growing importance of the local level. Two stakeholders - local people and local governments, are becoming more important due to decentralisation and growing interest in and support for the rights of traditional communities. Local governments and communities are becoming actively involved in protected area and buffer zone issues and are being given the authority to determine their use. The challenge will be to recognise the right to participate while reinforcing the obligations and accountability that comes with it.

2.5.3 *Staffing*

Achievements:

Staff numbers have increased and local institutional arrangements are in place. When first established in 1993, DNCP had 35 staff. In 2002, the Department had 525 staff posted in the 23 original PAs throughout the country. In each PA, there is a central office with 7 to 35 staff. In addition some PAs such as Kirirom National Park, Bokor National Park, Ream National Park, Virachey National Park, and Boeng Per Wildlife Sanctuary have sub-offices in strategic locations. Some PA Units have set up an efficient organisational structure, including sections for administration, patrolling and enforcement, environmental education and tourism.

Staff expertise has increased. Some staff have received formal and informal training from several sources, particularly conservation NGOs working in Cambodia. Often government staff are formally seconded to NGOs and received on-the-job as well as other, more formal training opportunities. Some have

participated in international conferences, where they exchange information with colleagues from other countries. The knowledge level, abilities and effectiveness of staff, particularly at central level, has increased significantly. Some staff also report improvements in the energy, motivation, teamwork, and overall professionalism in both MOE and MAFF.

Challenges:

Despite these improvements, staff raise the following concerns as disincentives to consistent performance:

- The DNCP staff, particularly in the field lack adequate training;
- Poor government salary (on average: US\$20/month) reduces commitment;
- Many staff are more interested in working for NGOs or NGO-supported projects to increase income;
- The DNCP has limited operational funds constraining staff initiative, for example, for infrastructure rehabilitation and development, interpretation, patrolling and restoration; and
- Many staff feel that there is too much to do and too few to do it.

Field staff lack financial motivation and spend a good deal of their time in alternative livelihoods. Prior to 1999, there were no PAs field staff in place other than those supported through international projects and these numbers were small and fluctuating. It is very difficult for DNCP to add staff given the government's commitment to reducing the size of the public service. Transfers within government are possible, but more than 80 percent of the new field staff are not in permanent government positions. Instead they have one year contracts of around Riel 52,000 or US\$14 a month. This level of income is not sufficient to live on so all PA field officers need to have additional income generating activities.

Changing role of protected area staff. Protected areas managers are now expected to be community development and poverty alleviation officers, as well as conservation managers. Yet, they do not have the mandate, skills and capacity to fulfil this community development role. The new responsibilities in conflict resolution and creating working links with key economic sectors go well beyond the experience and training of many staff.

Decentralisation of protected area management. The entire Government Public Service system is undergoing difficult reforms. MOE and MAFF will both need to address the challenge of decentralisation and determining the balance between the number of staff and budgets at the central offices in Phnom Penh and at provincial and PA levels. Overall, protected areas need more staff at local level for improved management.

The "two speed" staff structure. Staff involved in foreign funded projects tend to be well paid, motivated and work full time. The remaining government staff are poorly paid, have broad responsibilities and demands, but need to find additional work to supplement their income. Placing so many staff as counterparts to NGOs has brought advantages to individuals and the NGOs involved (and to the country as a whole in the long term), but there are managerial challenges and disadvantages that have to be faced, and these are likely to increase in the future.

2.5.4 Management Planning

Achievement:

Ream and Bokor National Parks have draft 5-year management plans. Broader, less detailed assessments of the management status and needs of several other protected areas have been completed recently, such as for Virachey National Park and the MOE protected areas in Mondulkiri Province. However, these management plans and the associated processes were not ideal. The planning process has led to lack of ownership in affected communities. Preparing management plans with strong local staff participa-

tion in the process, as well as establishing site level management committees and involving them in plan definition remains an important challenge.

Challenge:

Many PAs and few resources for management planning – rapid methods needed. Management planning frameworks for the remaining protected areas need to be tailored to existing capacities. Rapid management assessment and priority setting methods for protected area systems developed by the IUCN World Commission on Protected Areas (WCPA), WWF, The Nature Conservancy and others are simple but effective management tools appropriate to Cambodia's situation. Some give an overall picture of the relative management effectiveness, threats, vulnerability and urgency for action across an entire protected area system. Others provide a more in-depth, detailed regional or site-level framework for monitoring and management. All of these methods provide a participatory and objective framework that can be repeated at intervals for monitoring of progress and achievements.

2.5.5 Zoning

Achievement:

MOE has developed and adopted a guideline on zoning. According to the MOE guideline for PA management, each PA will be developed into three zones – (1) the Core Zone refers to areas that most promote the significant values or features of the PA and where any development or exploitation is prohibited, (2) the Buffer Zone refers to areas which are ecologically significant, but which people can use sustainably, and (3) the Community Development Zone refers to village areas where people live and can continue development activities. The Ream and Bokor National Parks have zoning recommended in their draft management plans. Most recently, the draft PA law being prepared by MOE provides a more detailed set of zone categories.

Challenges:

Zoning must be a collaborative process. Creating general guidelines for developing unique zoning systems for each protected area based on its habitats, species, and patterns of use by local people will be difficult, as will developing rules and regulations that govern how different zones will be used. This is particularly so for any subsistence harvests that might be allowed in some parts of protected areas. Community mapping, research on patterns of natural resource use, and joint development of rules and regulations on natural resource harvests will be needed.

Core zones need to be defined with local communities, which might already rely on the harvests of NTFPs and animals from all parts of a protected area for subsistence and/or cash income. Development of alternative sources of food, other products, and cash income will not happen quickly. In some protected areas it will be difficult financially and politically to immediately and fully enforce strict core zones in which all subsistence harvesting of non-endangered species is banned. Yet, the lack or small size of core zones also will have potentially negative consequences on the long term contribution of PAs to development. Determining where core zones are needed immediately should be a priority. The identification in parallel of "softer" zones where some subsistence activities might continue is also important. MOE and MAFF must work in unison to manage this process with local communities, local governments and key sectoral agencies.

2.5.6 Investment in protected areas

Achievements:

Government budget for PAs has increased. In 2001, MOE estimated that it received approximately 0.18 percent of the national government budget which represents almost a threefold increase over ten years.

A significant amount of financing for protected areas and biodiversity conservation has been provided in the past 10 years as grants from multilateral and bilateral aid agencies and Non-Government Organisations.

Innovative financing of PAs has increased. Angkor Wat has been able to develop large levels of additional revenue from entrance fees and other tourism-related revenue. It is close to becoming 100 percent self funded. The Ya Poey Community Forest Association also levies a small tax on community members and others who harvest non-timber forest products, as well as fines from people who break the harvesting rules. These funds help cover some management costs.

The international community has supported PA development. Despite a decade of unstable political circumstances, international support to help build the national PA system was provided.

Challenges:

Government contributions to protected areas remain very small. MOE's budget barely covers staff salaries and basic administration. Cambodia's expenditure for protected areas is very low when compared to other countries in the region. Given the commitment of more than 20 percent of the country to this form of land use and its basic contribution to development in many key sectors, investment priorities will need to be reviewed. Increasing PA budgets will require increased allocation from central government, transfers from development sectors for services received, and the raising of local revenues for specific sites.

Government sector budget contributions to PAs for benefits received. As the development benefits become better understood, such as providing stable water flows to irrigation systems or hydropower facilities, a proportion of the revenue from water and power charges will need to go directly to safeguarding the service through effective management of the protected area. The government will need to provide the appropriate system of economic incentives and regulations in applying the "user pays" approach.

Getting the private sector to contribute. There is potential for business donations to contribute to conservation programs. Cambodia is making the transition to a market economy. For the corporate sector to invest in conservation it has to be assured of profits and believe that the contribution will increase market share through consumer recognition of good environmental performance. Given the present low level of environment awareness and the limited purchasing power of most of the population, the potential for private enterprise investment will come gradually on a case by case basis through sectors which are currently receiving significant PA benefits such as tourism, energy and water supply. Once again government will need to provide the appropriate economic incentives and regulatory environment to promote private sector involvement.

Sustaining conservation funding from external donors. Donors often favour short-term projects that can be self-sustaining after one or two grants. Yet, given the challenges the Government is facing in increasing national revenue from local sources and the time it will take to effectively integrated the national PA system into the government's development programs, long term and consistent external funding will be needed to maintain protected areas. Sustainable funding options will need to be considered very carefully. Perhaps the most promising is a trust fund at the national level, and/or trust funds for individual PAs. Such trust funds could provide a basic and stable support base supplemented by regular contributions. The process of setting up an efficient and transparent system of trust funds to supplement government budgets and with the involvement of stakeholders will require a consistent effort and external support over several years.

International support can facilitate working relationships between PAs and development sectors. ODA support through the MOE has focussed on building the environmental management and PA system. Around five or six international support projects fully or partially implemented have targeted specific protected areas. All emphasised PA management concerns, some with local community support compo-

nents. None had the resources to link the PAs with key economic sectors in a systematic and productive way. Basic protected areas management functions are an essential and critical first step, but now MOE and its partners need also to reach out and build working relations with development sectors. Given Cambodia's special commitment to protected areas as reflected in the exceptional size of the national system, donors and conservation organisations need to ensure that support to all sectors recognises and nurtures the PA development contribution in a way which sustains and enhances their services and products.

Also, bilateral donors must explore the linking of investments from companies originating in the donor countries which benefit from or affect PA values related to energy, forestry development, or water supply for example, with parallel aid programs to the protected areas concerned.

2.6 Conclusion

Protected areas are becoming an essential component of Cambodia's national socio-economic development strategy. This pathway will see the nation in the enviable position of having conserved its natural systems for long term development while neighbouring countries are losing much of theirs.

There is every reason to be optimistic. While progress in the detail of protected areas management and control has been slow, the system has survived the massive over exploitation of forests and other resources which took place for most of the decade and reached its peak in the late 1990's. In that time the PA system has expanded and national budget contributions have increased. A network of field staff in all PAs is in place providing the raw material for training and management initiative.

Most important, the main development sectors are moving steadily to recognise protected areas and regimes of protection as critical to meeting their individual development mandates. The decade has seen protected area approaches integrated with strategies for fisheries, agriculture, forestry, water resources, tourism and rural development. The government policies for decentralisation, for democratic institutions, and for the rule of law all have far reaching implications for the way protected areas are managed and for better defining the connections they have with development in each region. Indeed, protected areas have a vital role to play in promoting the implementation of those priorities. Similarly, protected areas will increasingly facilitate Cambodia's integration into the international community, leading to enhanced development and economic ties.

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Annex 1: Cambodia's national system of protected areas

	Area (ha.)	Locality
1. National Parks		
Kirirom	35,000	Kompong Spett and Koh Kong
Phnom Bokor	140,000	Kampot
Kep	5,000	Kampot
Ream	150,000	Kompong Som
Botum- Sakor	171,250	Kampot and Kompong Som
Phnom Kulen	37,500	Siem Reap
Virachey	332,500	Rattanakiri and Stung Treng
2. Wildlife Sanctuaries		
Aural	253,750	Koh Kong, Pursat, Kompong Chhnang, and Kompong Spett
Beng Per	242,500	Kompong Thom
Peam Krasop	23,750	Koh Kong
Phnom Samkos	333,750	Koh Kong
Roniem Daun Sam	178,750	Battambang
Kulen-Promtep	402,500	Siem Reap and Preah Vihear
Lomphat	250,000	Rattanakiri and Mondulkiri
Phnom Prich	222,500	Mondulkiri
Phnom Nam Lyr	47,500	Mondulkiri
3. Protected Landscapes		
Angkor	10,800	Siem Reap
Banteay Chhmar	81,200	Banteay Meanchey
Preah Vihear	5,000	Preah Vihear
4. Multiple Use Management Areas		
Dong Peng	27,700	Koh Kong
Samlaut	60,000	Battambang
Tonle Sap	316,250	Kompong Chhang, Kompong Thom, Siem Reap, Battambang and Pursat
Total Area	3,327,200	

5. Fish habitat conservation areas

Kampong Pluk	6,377	Tonle Sap Lake (Siem Reap)
Piek Kantel	1,230	Tonle Sap Lake (Battambang)
Dey Roniet	5,826	Tonle Sap Lake (Pursat)
Riangtil	1,859	Tonle Sap Lake (Pursat)
Kampong Prak	3,954	Tonle Sap Lake (Pursat)
Chroy Sdey	1,490	Tonle Sap Lake (Pursat)
Pi Stuong	1,031	Tonle Sap Lake (Kampong Chhnange)
Bar Lord	1,777	Tonle Sap Lake (Kampong Thom)
Lot No. 14	691	Takeo
Lot No. 10	30	Kampong Cham
Lot No. 10	115	Kampong Cham
Lot No. 3	9	Banteay Meanchey
Lot No. 4	3	Banteay Meanchey
Total area	24,392	

6. Forest protection areas

Sarus Crane Reserve	12,650	Ang Tra Peang Thmor
Central Cardamom Protected Forest	402,000	Koh Kong, Pursat and Kampong Speu