

SPECIAL AREA MANAGEMENT PLAN FOR REKAWA LAGOON, SRI LANKA

Rekawa Special Area Management Coordinating Committee

Tangalla Divisional Secretariat
Coast Conservation Department
National Aquatic Resources Agency
Department of Fisheries and Aquatic Resources Development
Irrigation Department
Integrated Rural Development Programme, Hambantota
Forest Department
Rekawa Lagoon Fishery Cooperative Society

1996

Coastal Resources Management Project of
The University of Rhode Island and the
United States Agency for International Development

SPECIAL AREA MANAGEMENT PLAN FOR REKAWA LAGOON, SRI LANKA

by

Rekawa Special Area Management Coordinating Committee,
Coast Conservation Department,
National Aquatic Resources Agency, and
Coastal Resources Management Project.

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SPECIAL AREA MANAGEMENT PLAN FOR REKAWA LAGOON, SRI LANKA

Tangalla, Sri Lanka

as Approved for Implementation
by the members of the

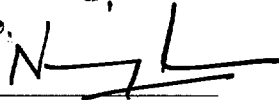
**Rekawa Special Area
Management Coordinating Committee**

in April, 1996



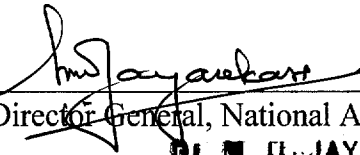
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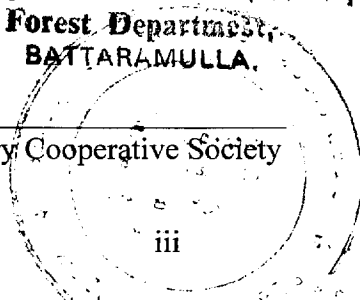


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List of Acronyms and Abbreviations

ACCD	Assistant Commissioner of Cooperative Development
AGA	Assistant Government Agent
AREMCO	Aquatic Resources Management Consultants
ARTI	Agrarian Research and Training Institute
CBO	Community Based Organizations
CCD	Coast Conservation Department
CEA	Central Environmental Authority
CLEER	Coastal and Lagoon Environment Education and Research Center
CRC	Coastal Resources Center
CRM	Coastal Resources Management
CRMP	Coastal Resources Management Project
CTB	Ceylon Tourist Board
CU	Colombo University
CZMP	Coastal Zone Management Plan
DA	Department of Agriculture
DAS	Department of Agrarian Services
DFARD	Department of Fisheries and Aquatic Resources Development
DFEO	District Fisheries Extension Officer
DAC	District Agricultural Committee
DEA	District Environmental Agency
DS	Divisional Secretariat
DWLC	Department of Wildlife Conservation
ECL	Engineering Consultants Ltd.
EDC	Enterprise Development Center
EDP	Enterprise Development Program
EIA	Environmental Impact Assessment
FCS	Fisheries Cooperative Society
FD	Forest Department
GA	Government Agent
GN	Grama Niladhari
ha	hectare
HIRDEP	Hambantota Integrated Rural Development Programme
IE	Irrigation Engineer
IEE	Initial Environmental Evaluation
ID	Irrigation Department
IRDP	Integrated Rural Development Project
JSP	Janasaviya Program
km	kilometer

List of Acronyms and Abbreviations

m	meter
mcm	million cubic meters
MFARD	Ministry of Fisheries and Aquatic Resources Development
MOH	Medical Officer of Health
MTEWA	Ministry of Transport, Environment and Womens Affairs
NARA	National Aquatic Resources Agency
NAREPP	Natural Resources and Environmental Policy Project
NGO	Non-governmental organization
NORAD	Norwegian Agency for International Development
NWSDB	National Water Supply and Drainage Board
OIC	Officer in charge
PD	Project Director
PS	Pradeshya Sabha
PU	Peradeniya University
RDA	Road Development Authority
RLFCS	Rekawa Lagoon Fishery Cooperative Society
RSAMCC	Rekawa Special Area Management Coordinating Committee
Rs	Rupees
SAM	Special Area Management
SFCS	Sea Fisheries Cooperative Society
spp	species
sq	square
TCP	Turtle Conservation Project
TEAMS	Technology Evaluation and Management Services
USAID	United States Agency for International Development

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Foreword

The Rekawa lagoon area is endowed with a beautiful, diverse and resource rich coast. Mangroves, estuaries, coral reefs and beaches, common along the Sri Lankan coastline, are among the most naturally productive ecosystems in the world. In response, many people depend directly on these systems for their livelihood, be it fishing or tourism related. Others depend on the coastal area as a convenient waste sink or an accessible source of materials such as coral, limestone, sand or wood. But, as for all natural systems, there are limits to tolerable impacts and extraction levels. Because these limits are not obvious to most resource users, we need this Special Area Management Plan for Rekawa. Without a plan for guiding development, the potential loss of coastal resources and their natural productivity, grows daily.

This “Special Area Management Plan” focuses only on the Rekawa lagoon and vicinity and the management of the resource use conflicts within that area. It is an integrated plan because it addresses all the important management issues in a manner which defines management roles for local communities, local government, national government agencies and non-government organizations--both local and national. It is comprehensive and sets the direction of action for sustainable development of the Rekawa resources and area. Most important, this plan represents the perspectives and needs of active stakeholders in the Rekawa planning area. Because the stakeholder group is comprised of government and community groups working together, this plan is a collaborative effort for management of the resources in the area.

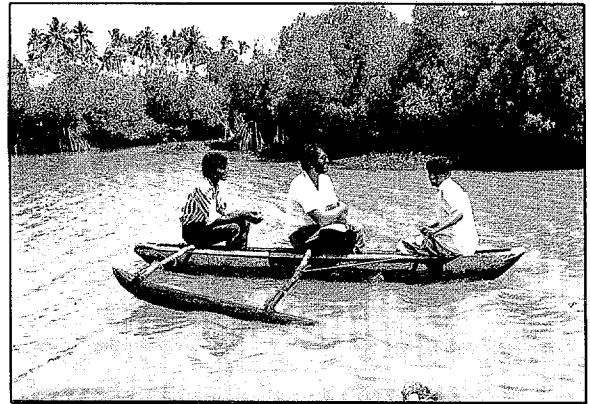
We should make use of this plan to guide us towards sustainable development of the Rekawa area. If we ignore the pending threat of loss and destruction of coastal resources, the cost of restoration will only accumulate and fall on the next generation. Let us act now and implement the Special Area Management Plan for Rekawa.

Director
Coast Conservation Department

MAJOR ISSUES AND OPPORTUNITIES IN REKAWA



Causeway impeding the flow of lagoon water will be replaced by a bridge



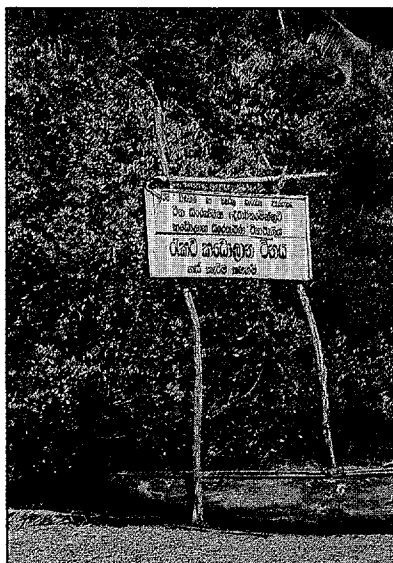
Lagoon tourism is still untapped in Rekawa



Operation of lime kilns is declining as alternative livelihoods increase



Fishing only provides a partial income to people



Mangroves are now being protected



Sea turtles and their eggs require protection

P. Richardson

Chapter 1

BACKGROUND, PROCESS, GOAL AND OBJECTIVES

1.1 Introduction to Rekawa

Rekawa is a seaside rural community engaged in fishing and agriculture. Its long, sandy beach and mangrove-skirted lagoon gives it a rustic beauty, although the tourism potential has not yet been developed. The local peoples' dependence on natural resources for their livelihood imposes limits on the number of people who can be sustained by the resource base of the area. Now, with population increasing and with degradation of the natural resources of fisheries and land, it is vital that resources management commence in the Rekawa area. Otherwise, the human communities and their environment will continue to decline.

Rekawa is situated about 200 km south of Colombo in the Tangalla Secretariat Division, Hambantota District in the Southern Province of Sri Lanka. The Rekawa lagoon (250 ha) with its wide basin and narrow meandering channel leading to its mouth by the sea, is the dominant feature of the Rekawa Special Area Management (SAM) site. Mangrove and scrub forest (about 200 ha) surround the lagoon, which is bounded on the seaward side by a broad, sandy beach, 10 km long. Landward of the lagoon is a large tract (about 500 ha) of paddy (rice) fields, most of which has been abandoned. The Rekawa lagoon area has nearly 5400 people comprising almost 1200 families. About 50 percent of the population is engaged in sea and lagoon fishing and the other half in agriculture. Their incomes tend to be low by national standards.

In its entirety, the lagoon, its water supply and flow, the fisheries, the mangroves and other scrub forest with their wildlife, the agricultural land, the dynamic beach environment together with the human community are the major resources of the area. These resources comprise a complex system, the parts of which are interconnected. Each part has its requirements for maintenance and limits of use. Unfortunately, the trend of misuse and abuse is increasing in Rekawa and the natural capacity of the ecosystem to sustain itself will decline if immediate actions are not taken.

In an effort to combat the problems of Rekawa, this Special Area Management (SAM) Plan has been designed by the people of Rekawa, with

1 Background, Process, Goal and Objectives

input from numerous government agencies. The overall goal is to ensure the sustainable management of Rekawa's coastal resources. The plan provides a brief background on the Rekawa area; but a more detailed description is found in *The Coastal Environment Profile of Rekawa Lagoon, Sri Lanka*.⁹

This plan addresses major problems chapter by chapter and presents policies and strategies which have been agreed on at public meetings to solve the problems. The Rekawa Special Area Management Coordinating Committee (RSAMCC) functions as the local mechanism to coordinate and implement the SAM plan. The Plan is a "living document" that is flexible and adaptable enough to meet the needs of the community as they evolve. The plan also serves as a model to assist persons working in the many other similar situations occurring all along the coast of Sri Lanka.

1.2 Coastal Zone Management in Sri Lanka

Coastal areas are the most socially and economically important areas of Sri Lanka. Over one-third of the population and two-thirds of the urbanized land are located in the coastal region, as are 80 percent of the tourism-related infrastructure and factories, which account for two-thirds of the country's industrial production.¹⁶ As the economy continues to grow with emphasis on industrial and tourism development, the coastal areas will increase in importance.²

Generally, the development activities in coastal areas of Sri Lanka have lacked proper planning and management. As the intensity of activities has increased, the result has been the emergence of a number of environmental and social problems. The common problems in coastal areas are coral mining, mangrove felling, sandmining, overfishing, and loss of biological diversity. These issues can be addressed and corrected by appropriate planning, education and management. Rekawa is an example of an area with no previous planning but where natural resources are still viable.

The Government of Sri Lanka recognized the need for more comprehensive and integrated coastal resource management and responded by enacting the Coast Conservation Act in 1981. Key aspects of the Act required the Coast Conservation Department (CCD) to develop a Coastal Zone Management Plan (CZMP), regulate and control development activities within the coastal zone, and design and implement coast conservation projects.³ The CZMP, as approved in 1990, recognizes the need to devolve resource management responsibilities to local government authorities and NGOs. This was followed with the publication of *Coastal 2000: Recommendations for a Resource Management Strategy for Sri Lanka's Coastal Region* in 1992, which strongly advocated a policy of achieving "effective and participatory

resource management by governmental and nongovernmental agencies”.¹⁶ Now, the *Revised Coastal Zone Management Plan, Sri Lanka* of 1996 endorses the Special Area Management approach as a means to increase participation in management as described below.⁵

1.3 The Special Area Management Approach and Planning Process

Special Area Management (SAM) is a locally-based, geographically specific, planning process. It “involves the affected communities and provincial agencies in the process of resource management”, by building “community-level support through a highly participatory process and creating community-based management groups”.^{22,23} The Rekawa SAM process, initiated in 1993, is a step forward in the development of a management plan with people and their organizations taking major responsibility.

The SAM planning process actively encourages the local community groups to participate from the beginning as principal stakeholder in planning and implementation sessions with local and central government agencies. In this way, the local community gains a sense of “ownership” of the planning process. The resulting actions are more likely to address the most pressing issues and lead to sustainable resource use. Also, by taking a lead role in planning and management, community groups can ensure that they share tangible benefits from project activities.

The role of the Coast Conservation Department and the Coastal Resource Management Project in the SAM process is that of a catalyst to start the process. This is accomplished by providing technical and financial assistance and by helping to mediate competing demands so that the resource use is both fair and sustainable. Most importantly, it strengthens the planning and management capabilities of community groups and local government so they can gradually assume responsibility for the SAM plan implementation.

The overall planning process in Rekawa is coordinated by the Rekawa Special Area Management Coordinating Committee (RSAMCC). Representatives on this committee are the Coast Conservation Department (CCD), the National Aquatic Resources Agency (NARA), the Irrigation Department (ID), the Divisional Secretariat (DS), the Tangalla Pradeshiya Sabha (PS), the Hambantota Integrated Rural Development Programme (HIRDEP), the Department of Fisheries and Aquatic Resources Development (DFARD) and the Rekawa Lagoon and Sea Fishery Cooperative Societies (Box 1.1).

The SAM approach is a dynamic, collaborative process involving a number of overlapping steps. It is a flexible and ongoing process. The basic

Box 1.1 Rekawa Special Area Management Coordinating Committee

The RSAMCC began to function in mid-1994 and serve the SAM planning process for Rekawa. It meets monthly and provides the forum to develop and implement the management plan. Topics of discussion typically cover any resource use issues and conflicts of concern either to the community groups and organizations or government agency personnel. Up to 60 persons have attended the RSAMCC meetings of which about 45% represent government organizations, 41% nongovernment and community-based organizations and 14% are from international organizations or projects. The core members listed above are primarily responsible for both the contents of the plan and actions taken toward implementation. Many partnerships between government and community groups have and are being formed through this active body chaired by the Divisional Secretary of Tangalla.

plan is developed early, but as circumstances change, the plan is adapted as necessary. Even during planning, implementation of preliminary, small-scale projects can proceed as appropriate. Such early implementation provides further incentive for community groups to participate in the process and assume responsibility for future implementation.

1.4 Rekawa Special Area Management Planning Area

The focus of the SAM activities in Rekawa is on the lagoon and its surrounding area including the beach and shorefront within the SAM boundaries. The southwest coastal boundary is the west side of the Medilla Grama Niladhari (GN) Division near Tangalla town. The eastern boundary is the northeast side of the Wellaodaya GN Division. The inland and GN boundaries are shown in Figure 1.1.

The primary resources of concern in Rekawa are the lagoon and marine fisheries, mangroves and other forest, beach, land for agriculture and tourism, and some important wildlife habitat. The extent and location of these resources is summarized in Table 1.1 and Figure 1.2.

The Rekawa lagoon area lies in the intermediate zone between the climatic wet and dry zones. The intermediate zone can receive rainfall throughout the year. The average rainfall in Rekawa is about 200 cm/year, while average temperature ranges from 26.6 to 27.2 degrees C.

Table 1.1 Extent and condition of coastal resources of management concern in Rekawa*

Coastal Resource	Area (ha)	Diversity	Condition
Beaches (10 km)	500 ha	not applicable	excellent
Rekawa Lagoon	250 ha	not applicable	fair
Water Quality	lagoon	brackish	fair
Lagoon Fish	lagoon	37 species	over fished
Crustaceans	lagoon	9 species	over fished
Mangroves	100 ha	17 species	good
Scrub Forest	100 ha	not measured	degraded
Abandoned Land	400 ha	not measured	high salinity
Migratory Birds	lagoon area	15 species	diverse
Resident Birds	lagoon area	67 species	good/diverse
Coral Reefs	20 ha	21 species	degraded
		stony corals	
Reef Fish	offshore	38 spp	depleted
Sea Turtles	beach	5 spp	eggs poached

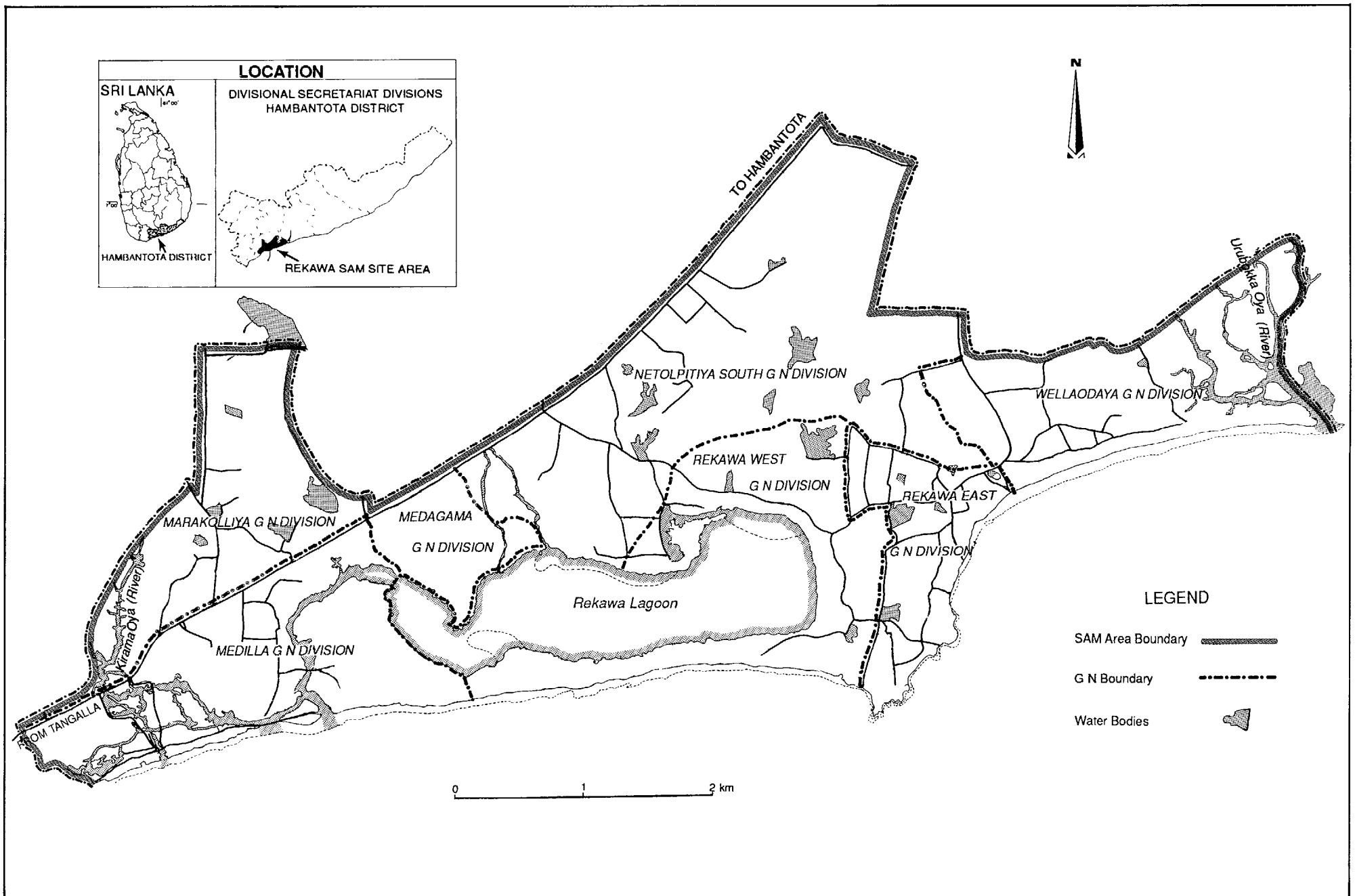
* Described in *The Coastal Environmental Profile of Rekawa Lagoon, Sri Lanka*⁹

The Rekawa lagoon area receives most of its water from inland watersheds draining the Kirama Oya (river) and Urubokka Oya. The Kirama Oya is the principal water source for the lagoon. Much of the water is used for irrigation through 19 anicuts (weirs). The Rekawa SAM site is greatly affected by the movement and supply of water. The areas closest to the lagoon, particularly Rekawa East and West, have only brackish water, thus water for drinking is scarce.

The SAM planning area encompasses 20 villages within 7 Grama Niladhari Divisions, with a population of 5400 in 1200 families. Overall, Rekawa has a young population, with 45 percent younger than 19 years old. Nearly 90 percent of the people are under 55 years of age. One third of the population is between 5 and 18 years old while those under 5 years comprise 12 percent of the population.

Four main types of occupation provide employment for the working population of the Rekawa area. These include sea and lagoon fishing (18 and 10 percent respectively), agriculture (47 percent), and coral mining (9 percent). The work force of four GN Divisions--Netolpitiya, Medagama, Marakolliya and Wellodaya--is predominantly involved with agriculture, while those in Rekawa East, Rekawa West and part of Wellodaya have the largest fishing populations.

Figure 1.1 The Rekawa Special Area Management site and Grama Niladhari Divisions



1.5 Management Issues of Rekawa

The most critical problems which have caused the lagoon to decline in natural productivity, reduced the useable paddy land, disturbed the overall ecological balance of the system and contributed to poverty of people are described below and summarized in Table 1.2:

- Reduced flow of fresh water into the Rekawa lagoon
Freshwater flow into the lagoon has been reduced significantly through numerous irrigation structures constructed along the three main rivers flowing into the Rekawa area. As a result, paddy lands on the western fringe of the lagoon at Yarawela Yaya and Patha Pallama Welyaya are now abandoned due to excessive salinity from intrusion of seawater.
- Reduced flow of seawater into the Rekawa lagoon
Several causeways, particularly at Kapuhenwala near the lagoon mouth, impede the flow of seawater to the lagoon. These changes have reduced and almost eliminated the natural lagoon shrimp fishery, reduced other fisheries and affected water quality and lagoon volume.
- Increased sedimentation of the lagoon
Causeways again, particularly at Kapuhenwala, have prevented flushing of the lagoon by natural water flow. This has affected lagoon depth and contributed to the loss of water surface area to invading mangrove forest of about 100 ha over ten years.
- Unsustainable fishing methods and effort in the lagoon
Drift net fishing and Ja-Kotu (kraal type) fishing are reducing the natural recruitment of shrimp and movement of fish. Exploitation is generally not controlled, so large quantities of immature fish are being caught. Catching fish before they reach maturity is decreasing spawning stocks and threatens fishery survival.
- Coral mining, lime production and sand mining
The limited coral reefs off Rekawa beach near Oruwellagoda village have been destroyed by coral mining. Now, although coral mining is minimal, the supply of coral limestone for the numerous lime kilns in Rekawa is mostly from other coastal areas. The lime kilns use some mangrove wood as fuel. Sand mining occurs along the Rekawa beaches, further accelerating beach erosion.
- Sea turtle nesting and poaching
Rekawa beach is a prime sea turtle nesting area. Local residents remove all the eggs from the nests, and occasionally the animals are killed for their meat and shell. These rare and endangered species are thus being depleted and a potential tourism resource is being lost.

1 Background, Process, Goal and Objectives

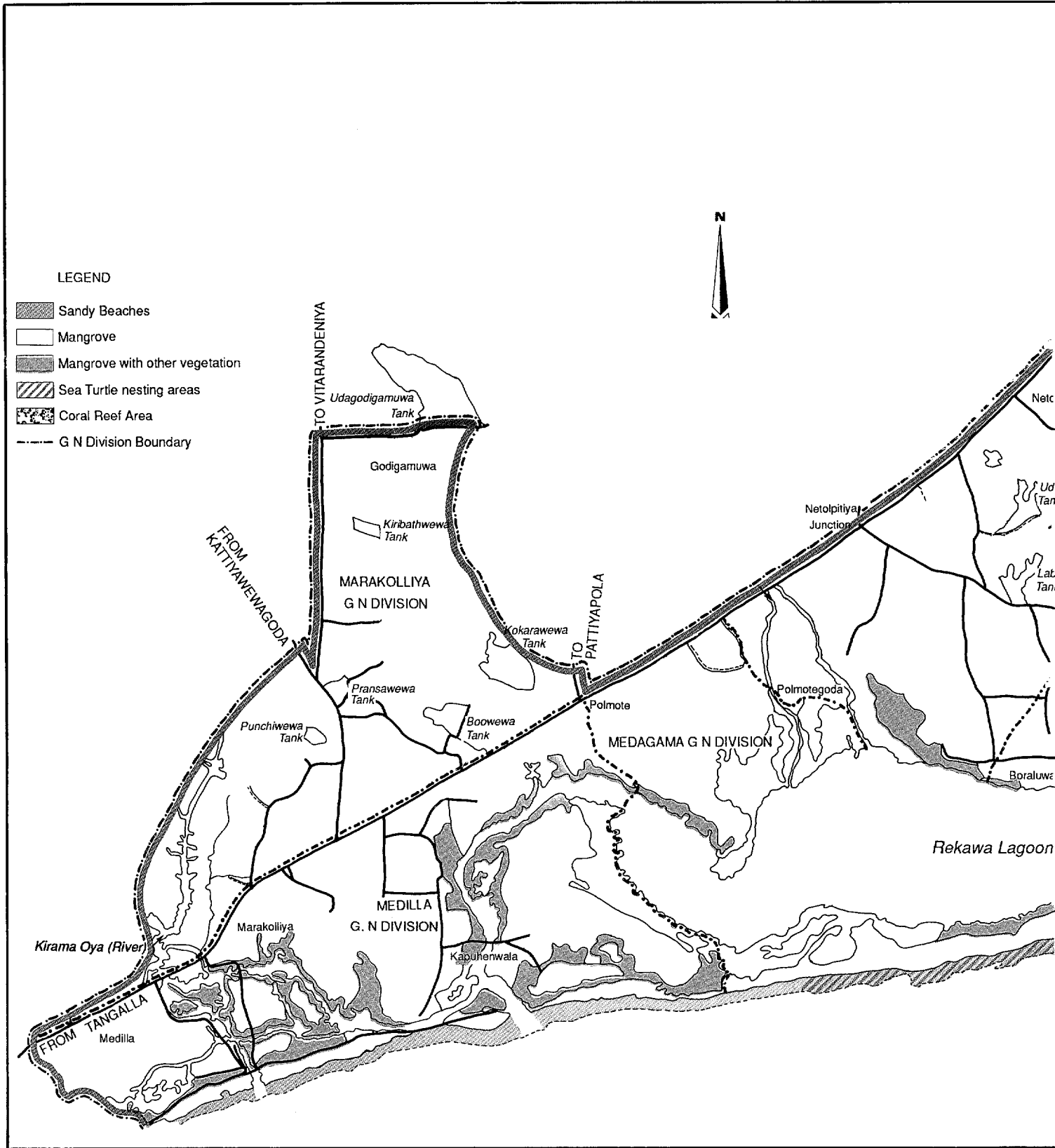
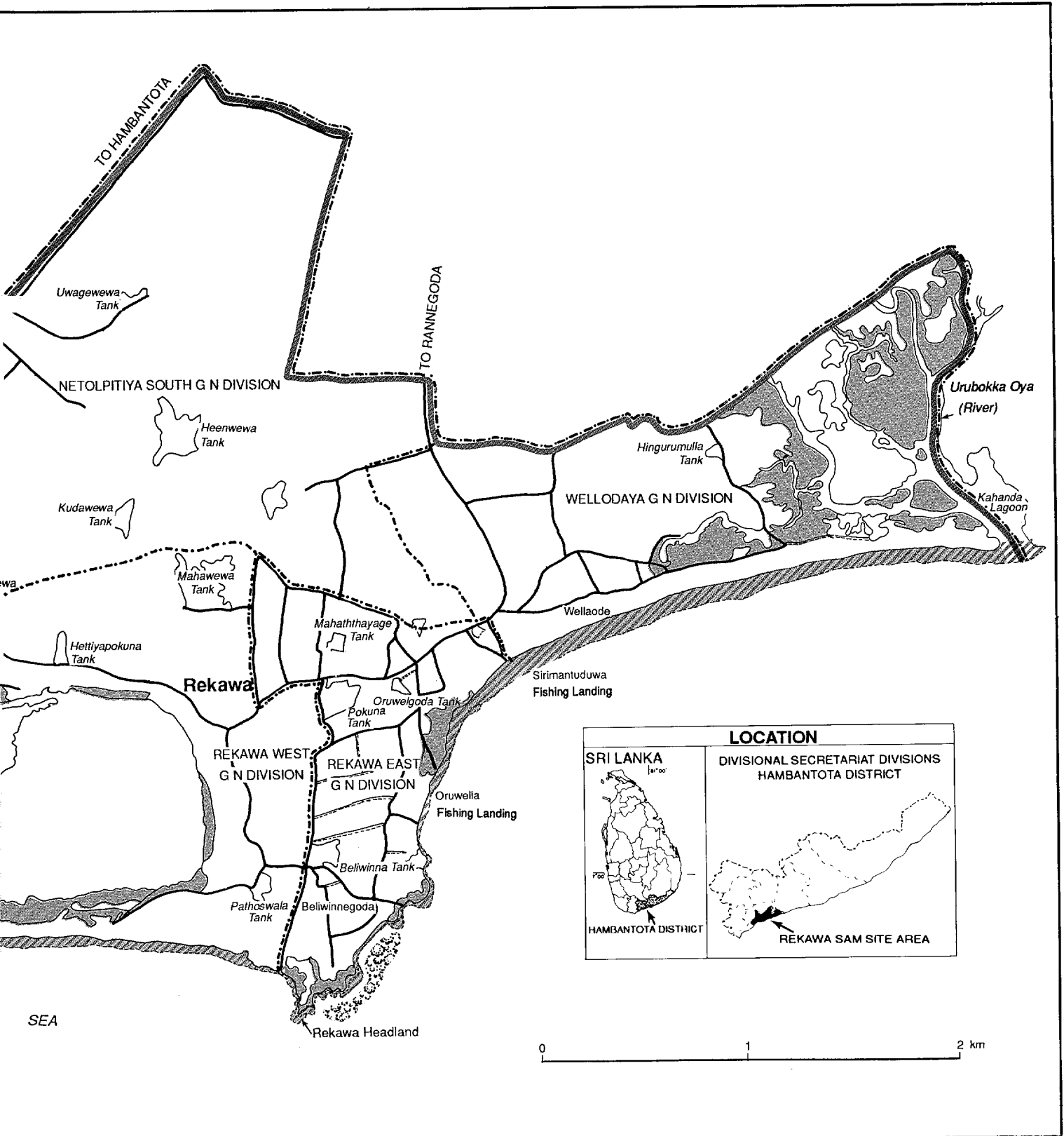


Figure 1.2 Mangrove forests, coral reefs,



beaches and sea turtle nesting sites found in the Rekawa area

1 Background, Process, Goal and Objectives

- Poverty in the Rekawa community
Low incomes of people in the area are both a cause of environmental degradation and an effect of changes in the Rekawa lagoonal system and its environs. Coral mining, cutting of mangroves, and collection of sea turtle eggs are all related to poverty. Poverty is also reflected in the dependence of about 80 percent of the population on some form of welfare.

Table 1.2 Management issues of the Rekawa Special Area Management area

Lagoon Water System Degradation
<ul style="list-style-type: none">• Reduced fresh water flow due to irrigation uses• Reduced sea water exchange in the lagoon• Sedimentation and pollution of lagoon
Lagoon and Marine Resource Depletion
<ul style="list-style-type: none">• Over fishing of shrimp and fish in lagoon• Degradation of coral reef from coral mining• Poaching of turtle eggs and slaughter of animals• Erosion of sea beach related to coral mining• Cutting of mangroves and scrub forest
Shoreline and Land Use Problems
<ul style="list-style-type: none">• Abandoned land in Yarawela Yaya and Patha Pallama Welyaya due to high salinity• Low production and diversity in agriculture• Lack of guidelines and zoning for aquaculture• Lack of guidelines and zoning for tourism development
Incidence of Poverty and Lack of Livelihoods
<ul style="list-style-type: none">• Over dependence on social welfare programs• Weak community organizations with poor leadership• Lack of training and education for alternative jobs• No development of sustainable aquaculture and tourism

1.6 Goal and Objectives of the Rekawa Management Plan

To address the issues described above and to take advantage of the various opportunities in the Rekawa area, the RSAMCC supports the following goal of the Special Area Management Plan:

To protect and manage the coastal resources of Rekawa so that the community can continue to benefit from their biodiversity and environmental quality to support the natural resource based economy and to promote appropriate and sustainable new development.

To achieve this goal, the RSAMCC has agreed through the involvement and participation of the Rekawa community that the following objectives set the overall policies of this plan. These are to:

- a. Strengthen community organizations and build new ones to enable them to participate actively in the management of their natural resources and livelihoods;
- b. Improve the productivity and diversity of the ecosystems by reducing degradation of the beach, the lagoon, the mangroves and the fisheries;
- c. Increase community awareness of natural resource values and understanding of resource ownership for management to sustain environmental and economic well-being;
- d. Reduce conflicts among users of the natural resource;
- e. Conduct research and periodic monitoring activities to provide information and feedback to the Management Plan;
- f. Develop alternative employment for those engaged in degrading the natural resources through development of agriculture, aquaculture, tourism and other appropriate means; and,
- h. Promote policies to provide institutional and legal support for the Management Plan and its implementation.

1.7 Justification for Management

The strongest justification for managing the natural resources of Rekawa lagoon area is that the population is wholly dependent on them for survival. About 250 families depend on the lagoon fishery for income. Annual production of fish and shrimp from the lagoon has been estimated at 36 tons with a value of Rs 1.8 million (Jayakody and Jayasinghe 1992). In 1984 and 1985, the average annual income of the fishermen ranged from Rs 17,000 to 19,500, with shrimp comprising 66 percent of the catch. In the early 1990s, this income rose to a range of Rs 24,000 to Rs 26,000, but 70 percent of the catch is now fin fish. The productivity of the lagoon has declined due to poor management yet the potential for increased economic yields are well known.

The sea fishermen use both mechanized traditional outriggers and more modern fiberglass boats. Although it has been estimated that the Hambantota Banks could sustainably yield up to 23,500 tons per year with the current catch

1 Background, Process, Goal and Objectives

being somewhat less, the people of Rekawa cannot rely on increases in catch from offshore fisheries.¹³ They will ultimately be dependent on land-based activities which require planning and management of their coastal resources.

Aquaculture has a limited potential for development in the Rekawa area. Small scale commercial and subsistence aquaculture could be done on about 100 ha and developed in phases around the Rekawa lagoon.¹ Negative perceptions and cautious attitudes of the people have inhibited the development of aquaculture. Proper guidelines and management can ensure some new economic benefits through aquaculture which is sensitive to environmental protection.

Coral mining, a prohibited activity, brings a lucrative income to lime kiln owners. Due to education and police action in 1995, coral mining has decreased. The remaining problem is that about 200 women who made a living by mining lost their income source and need jobs. Some can be trained in agriculture, poultry raising or livestock farming. Overall, the economic justification of halting coral mining is that it has contributed to escalation of sea erosion and boat landing areas of Rekawa East have been lost. Additionally, the degradation of coral reefs means the loss of biodiversity and a valuable resource.

The mangrove cover has increased from 100 hectares in 1984 to 200 hectares in 1994, while the surface area of the lagoon has subsequently declined. Managed and sustainable cutting of the mangroves could reduce further encroachment on the lagoon and could also provide a source of income.

Due to ill-planned irrigation interventions, a large extent of the once flourishing tract of paddy field referred to as Tangalu Velyaya is abandoned. Research has indicated that certain varieties of salt resistant rice and vegetables can be grown with proper management.²¹

The Rekawa area has potential for nature-based tourism. The beaches with nesting sea turtles, the lagoon with its mangroves and bird life, and the generally pleasant natural environment provides much scope for ecotourism. Investment in tourism which is nature-friendly has potential and can thrive with careful management to ensure local community participation.

1.8 Plan Implementation and Organization

The management issues of Rekawa have surfaced in numerous awareness programs, seminars and workshops organized in the Rekawa community and in several comprehensive research studies. The information

upon which this plan is based is in the *Coastal Environmental Profile of Rekawa Lagoon*, a brief summary of which is included herein in Chapter 1. Chapter 2 covers the management of the lagoon water system. Chapter 3 addresses the management of the lagoon and marine resources. Zoning and management of Rekawa land and shoreline is found in Chapter 4. Poverty alleviation and alternative livelihood comprise Chapter 5, and the Plan concludes with a summary on implementation (Chapter 6).

Since 1993 there have been intensive community awareness raising efforts and a gradual strengthening of local voluntary organizations. A new Lagoon Fishery Cooperative Society has been organized and registered. Coordinating Committees for Voluntary Organizations and for Women's Organizations have been formed which send representatives to the RSAMCC. The RSAMCC will ultimately take responsibility for the implementation of the management plan and for carrying out its actions. As members, essential support will come from the Coast Conservation Department; the Departments of Fisheries and Aquatic Resources Development, Forest, Wildlife Conservation, Agriculture; Irrigation; the Hambantota Integrated Rural Development Programme (HIRDEP) and the Tangalla Divisional Secretariat.

MANAGEMENT OF THE LAGOON WATER SYSTEM

2.1 Introduction

The problem of sea and fresh water flow to the Rekawa lagoon water system and the need for efficient management of this valuable resource is critical. The movement of water into and out of the lagoon is the basis for the lagoon fisheries and limits sedimentation of the lagoon. If these functions are not maintained, the lagoon will eventually die.

The objectives and strategies for management in this chapter are the result of several studies on the lagoon system and ideas that emerged from discussions with community organizations and in the deliberations of the Rekawa SAM Coordinating Committee (RSAMCC). The *Coastal Environmental Profile of Rekawa Lagoon*, provides the details on the water system and reasons for management but pertinent information is summarized below.

2.2 Problems Concerning the Lagoon Water System

Decreasing Fresh Water Supply to the Lagoon

Rekawa lagoon is in the intermediate climatic zone, with a rainfall of about 200 cm per year (Figure 2.1). Climatic characteristics of the area include “low rainfall, severe sunlight, and seasonally strong winds”.¹⁴ The two monsoons dictate the weather and the rainfall in and around Rekawa. From May to October the Southwest monsoon predominates and from November to April the Northeast monsoon influences weather patterns. Of these two, the Northeast monsoon brings the most rain to the area. Rainfall for a fifteen year period in the Kirama Basin from 1980 to 1994 is shown in Figure 2.2.

The Rekawa site receives most of its water from inland watersheds draining into two rivers, the 32 km long Kirama Oya (River) and the 42 km long Urubokka Oya. The Kirama Oya is the principal water source for the Rekawa lagoon with a catchment basin of approximately 225 sq km, which

2 Management of the Lagoon Water System

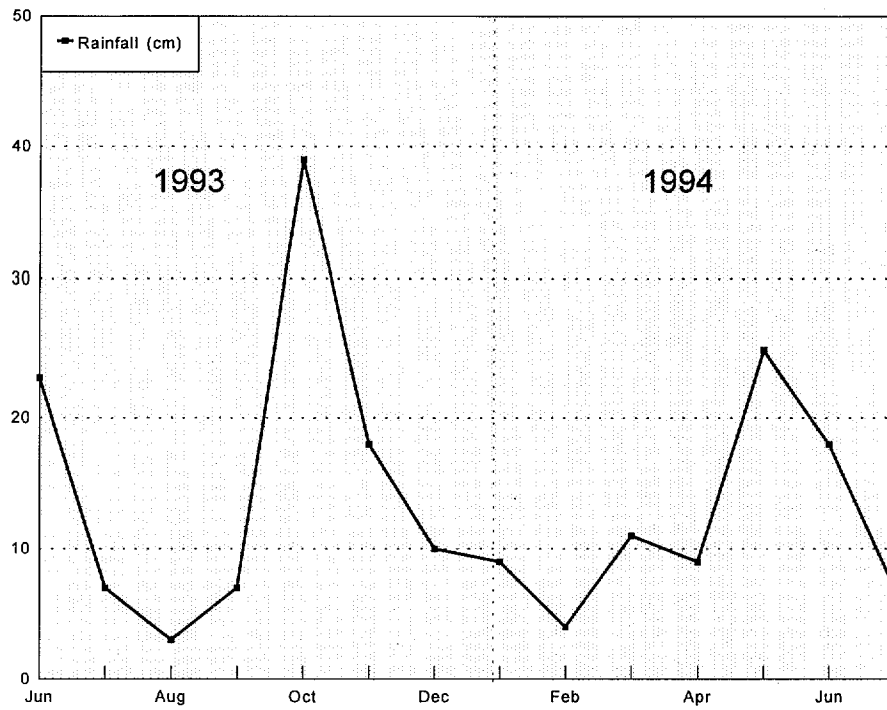


Figure 2.1 Rainfall in the Rekawa lagoon area, June 1993-July 1994¹¹

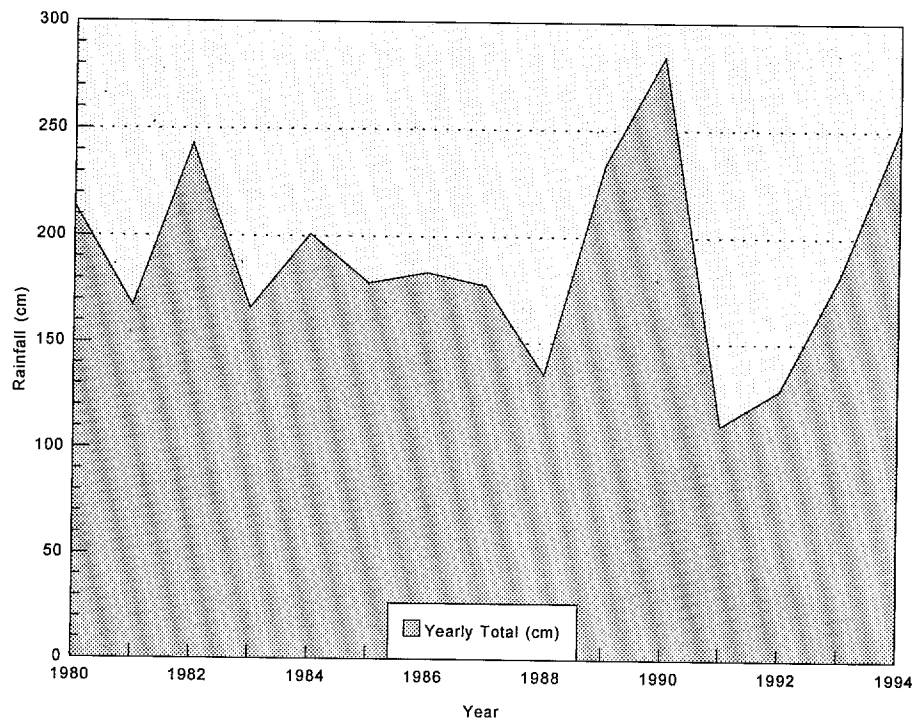


Figure 2.2 Total yearly rainfall in the Kirama River Basin 1980-1994^{11,21}

receives an annual average of approximately 11.5 mcm of water into its 14 sq km drainage area. The Kirama Oya is heavily exploited by 19 anicuts (weirs) leaving little water to flow into the Rekawa lagoon (see Figure 2.3).

The Urubokka Oya has a catchment basin of approximately 352 sq km flowing from the north east but little water flows direct to the Rekawa lagoon.²¹ Irrigation tanks have also been constructed along this river. The Rekawa Oya which is only a stream has a catchment basin of 78 sq km and also provides some water to the lagoon (see Figure 2.3).

Restricted Flow of Water to and from the Sea

The major impediment to the flow of water in and out of the lagoon is the Kapuhenwala causeway. This was constructed by the Tangalla office of the Road Development Authority (RDA) in 1984 (Figure 2.4). Water passes under the causeway through twenty-three 30 cm diameter pipes which greatly reduce the volume and velocity of water entering and leaving the lagoon system. The quantity of shrimp larvae and fish entering the lagoon are reduced.¹² The causeway also affects the salinity of the lagoon by not allowing efficient mixing of marine and freshwater.¹¹

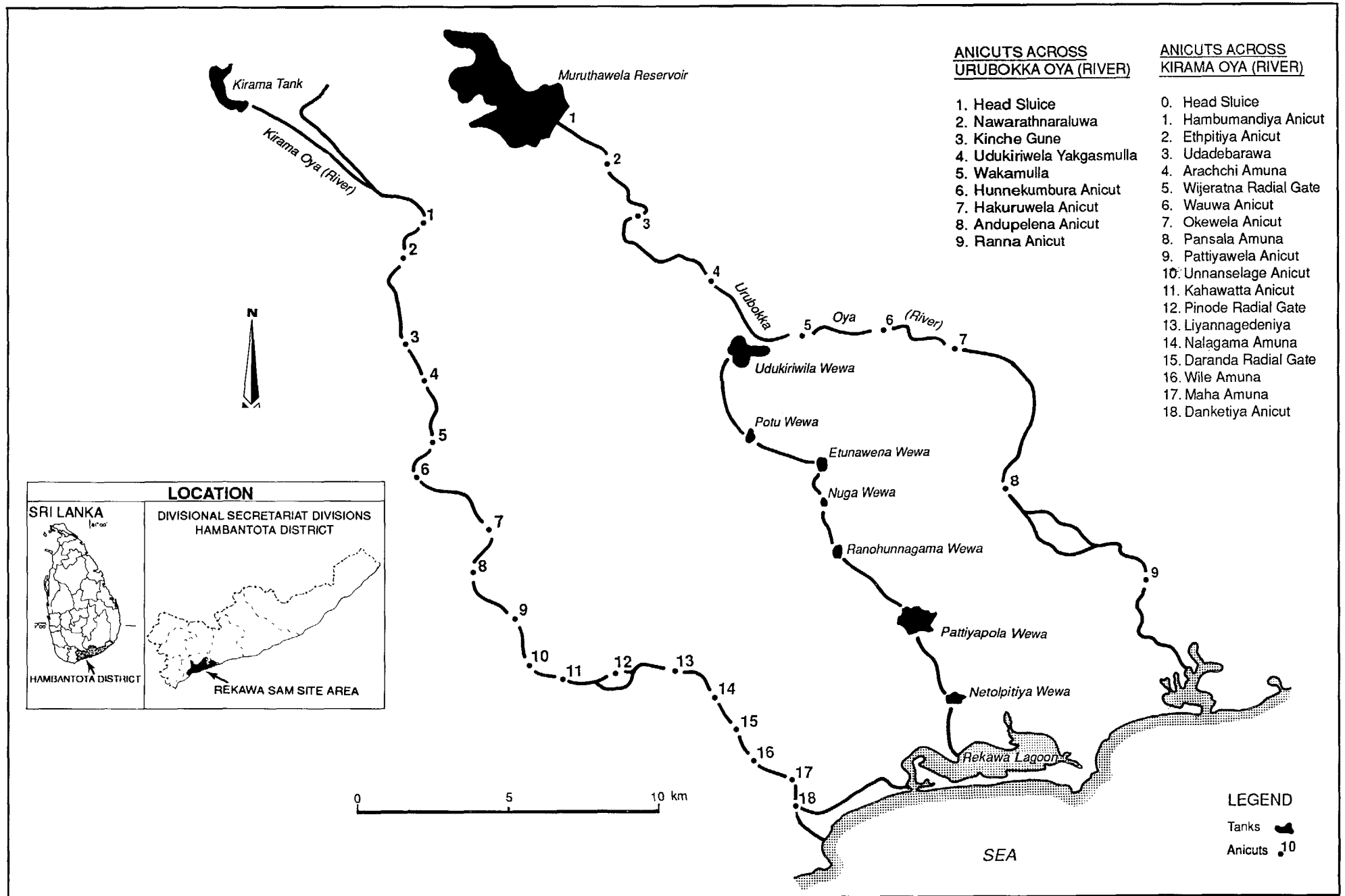
The Kapuhenwala causeway by inhibiting the water flow during periods of high rainfall lowers the capacity of the water flow to breach the sand bar formed at the mouth. Because this opening to the sea is the only means for shrimp larvae to migrate into the lagoon, it has important implications for the lagoon fishery.

Community organizations and the Rekawa SAM Coordinating Committee (RSAMCC) have suggested modifications to the Kapuhenwala causeway to increase water flow into and out of the lagoon system.

Increasing Pollution of the Lagoon

The limited fresh water which reaches the Rekawa lagoon through the three rivers which drain into the lagoon is mostly runoff from agricultural land. This water carries nutrients from fertilizer applications in rice fields, some pesticides and sediments. Although the levels of nutrients and pesticides have not been measured, their presence is surmised as local agricultural practices show reliance on heavy application. Sediments are heavy during periods of high rainfall. Sediment movement out of the lagoon is impeded by the Kapuhenwala causeway and is deposited in the lagoon and its canals.

Figure 2.3 Major irrigation tanks and weirs along the Kirama Oya and Urubokka Oya



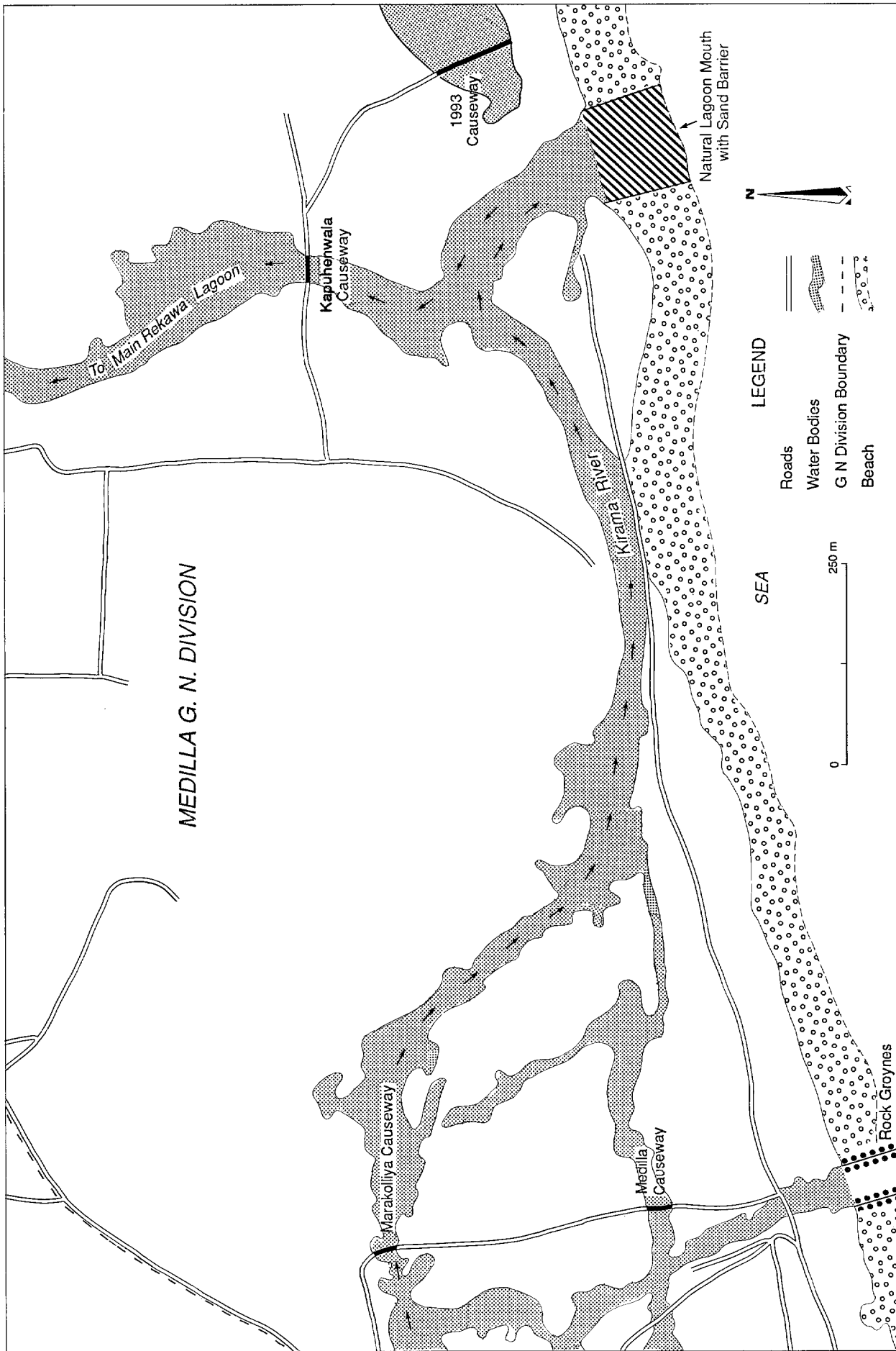


Figure 2.4 Rekawa lagoon natural mouth and causeways affecting water exchange

2 Management of the Lagoon Water System

2.3 Objectives and Policies for Management

The Rekawa lagoon will continue to be degraded and function at a suboptimal level if the problems affecting the water system are not addressed. To prevent this outcome, the RSAMCC has agreed to the following management objectives:

- 1. Maintain and increase the volume of freshwater entering the lagoon system;**
- 2. Remove and prevent obstructions to the natural fresh and sea water flow into and out of the lagoon; and,**
- 3. Minimize the input of nutrients, pesticides, herbicides, other toxic waste and sediments into the lagoon system.**

The following policies are adopted to achieve the objectives with the RSAMCC, CCD, ID and DA playing a key roll in the process. Appropriate members of the RSAMCC shall:

1. Promote free flow of both fresh and sea water into and out of the lagoon;
2. Prohibit the use of lagoon water for large scale industries;
3. Require that agriculture, irrigation and all development activities comply with the Central Environment Authority's and CCD's effluent discharge standards;
4. Minimize drainage of any waste from private dwellings, tourist hotels, shrimp ponds or other industry into the lagoon, reservoirs and river water resources;
5. Encourage research to determine the levels of chemical pollution of the lagoon and other water quality problems; and,
6. Educate developers and local residents about the importance of maintaining the lagoon water system intact.

2.4 Strategies and Actions for Water System Management

Strategy 1 **Modify the Kapuhenwala causeway and construct a bridge with a span of at least 5 m** at the deepest end of the channel, through the cooperation of the RDA, HIRDEP, DS and a Peradeniya University engineering design team.

- Actions**
1. Make soil tests and complete a preliminary design for the bridge.
 2. Modify preliminary design as required for final approval by RDA.
 3. Negotiate all approvals for bridge construction with RDA and HIRDEP.
 4. Secure funding for bridge construction from HIRDEP.
 5. Let contract for bridge construction by HIRDEP and RDA.

- Benefits**
- Natural water flow and ecology returned to Rekawa lagoon.
 - Increased recruitment of shrimp and fish to the lagoon fishery and more regular opening of lagoon mouth to sea.
 - Reduced sedimentation in stagnant parts of the lagoon.
 - Improved income to lagoon fishermen.

Box 2.1 Actions taken on the Kapuhenwala bridge construction

The decision to modify the Kapuhenwala causeway based on scientific evidence from the research of NARA on shrimp larvae migration, was made in 1994. In 1995, soil tests of the bridge site were made by a volunteer engineering design team of Peradeniya University. Based on the studies of this team, the Provincial Director, Road Development Authority has agreed to submit design drawings and cost estimates to the Project Director of HIRDEP. HIRDEP set aside funds for construction and will let the contract in 1996.

Strategy 2 **Limit the volume of water which is retained for irrigation or other uses** through coordination between the RSAMCC and DS, ID, HIRDEP and DA.

- Actions**
1. Determine which irrigation tanks are not essential for irrigation and release water to lagoon.
 2. Prevent any future constructions on the three rivers which would further limit water entering the lagoon.
 3. Raise the awareness of ID and DA officials about the importance of maintaining a normal flow of fresh water into the lagoon system.

- Benefits**
- Stable or enhanced flow of freshwater into the lagoon to limit extreme salinity fluctuations and improve fishery production and other ecological functions.

2 Management of the Lagoon Water System

Strategy 3 **Monitor water quality entering and in the lagoon for toxic substances and use findings to educate the farming community and to modify use practices** through coordination with the DA and farming community and the assistance of NARA, Colombo University (CU) and HIRDEP

Actions

1. Establish water quality monitoring points in the rivers and the lagoon and conduct a study for two years by NARA and CU.
2. Determine primary sources of pollution entering the lagoon and mitigation actions required.
3. Conduct a survey of farmer chemical use practices.
4. Conduct an education program on minimizing use of chemicals in paddy farming areas affecting the lagoon by DA.

Benefits

- Improved information on the extent of water pollution in the rivers and lagoon in the area.
- Improved water quality in the lagoon and enhanced ecological functioning.

2.5 Conclusion

The productivity of the lagoon has deteriorated over the last ten years in response to changes in the water supply and flow patterns of the lagoon. An essential first step to bring the lagoon functions back to a historical norm is to remove the Kapuhenwala causeway and replace it with a short bridge. The action has been fully endorsed by all government and nongovernment parties concerned and should be implemented as soon as possible.

Chapter 3

MANAGEMENT OF THE LAGOON AND MARINE RESOURCES

3.1 Introduction

The coastal resource systems of Rekawa lagoon and surrounding area are diverse and rich in both ecological and economic terms.⁹ A viable mangrove and lagoon system support lagoon, nearshore and offshore fisheries for shrimp and fish. The mangroves provide habitat for resident and migratory birds, stabilize sediments and produce organic matter for lagoon fisheries. The extensive beaches are nesting grounds for five species of rare sea turtles and are beginning to be an attraction for tourists. Limited areas of coral reef occur. Although this large ecosystem and all its resources are threatened by overuse and changes in water movement through the lagoon as discussed in chapter 2, sustainable use of the existing resources is possible with careful management.

The protection and management of resources in Rekawa will be accomplished through collaboration between government agencies and community stakeholder groups of the area. The laws which support protection of the Rekawa resources are summarized in Chapter 6.

3.2 Problems of Lagoon and Marine Resources Management

Degradation of the Mangrove-Lagoon Ecosystem

Mangrove forest provides important habitat for fish, crustacean and birds in Rekawa. It occurs in a narrow band along the shoreline of the lagoon channels and the main lagoon basin (Figure 1.2). Well known large mangrove species such as *Rhizophora mucronata* and *Bruguiera gymnorhyza* make up only a small portion of the mangrove forest system in Rekawa.

A mixed mangrove and scrub forest is common with about 200 ha of mangrove and associated vegetation growing in the area (see Figure 1.2). The common mangrove and associated plant species and all the organisms which depend on the mangrove as habitat are given in the *Coastal Environmental Profile of Rekawa Lagoon*.

3 Management of the Lagoon and Marine Resources

This large variety of fish (37 spp), crustaceans (9 spp), resident birds (67 spp) and migratory birds (15 spp) all depend to some degree on the quality of the mangrove habitat for existence. Some of these species, particularly, the fish and crustaceans are the basis the viable lagoon fishery. Birds, in the future, will provide viewing opportunities for nature tourists.

Although the total area of mangrove growth has increased in recent years in the lagoon area due to deposition of sediments, the important good quality mangrove trees have decreased in abundance. Local residents use mangroves as a source of wood for building fish kraals and fish traps, fuel for lime kilns and cooking, and as material for house construction. Now, residents are beginning to realize the ecological importance of mangroves and are protecting this resource to some degree. Nevertheless, people of the area need mangrove wood and products for its many uses and could, with planning, utilize limited quantities from designated areas. Planned cutting of the mangroves could retain ecological and other benefits to the lagoon.

Overfishing of the Lagoon and Offshore Fisheries

A productive paeneid shrimp fishery exists in the lagoon and just offshore of the Rekawa area. The late myosis and early post-larval stages of this shrimp enter the lagoon in June-July and October-December when the sand barrier has been breached.¹¹ Juveniles are then caught in lagoon waters beginning in September. By October, the juveniles begin to move back into the sea and continue to do so through April when the inlet is open to the sea. Mature, gravid females are present inshore, just outside the lagoon mouth in 5-8 m of water in June-July and October-November (Figure 3.1).¹¹

Lagoon fishermen use cast nets, drift gill nets, and fish kraals to catch these limited shrimp between 10-14 cm in size. The efficiency of Kraals leads to over-harvesting of many lagoon fish and shrimp. This method is used by some people near the Kapuhenwala causeway and narrower parts of the lagoon.

Just offshore, trammel nets are used to exploit the same species.¹¹ Nearshore fishermen also use gill nets and beach seines to catch sardines, anchovies and mackerel. This fishery is exploited with the use of small open craft without outboard motors and is probably overfished.

Local fishermen also set their nets along reef areas just offshore of the Rekawa lagoon to catch spiny lobsters and reef fish. Reef fish and lobster are economically valuable, but bottom set nets are damaging to the corals, gorgonians, and sponges which make up the coral reef habitat. Moxy nets, placed over coral heads, are used by aquarium fish collectors. Some collectors will pry and break the coral to chase the fish into these nets, resulting in physical damage to the reef.¹⁷

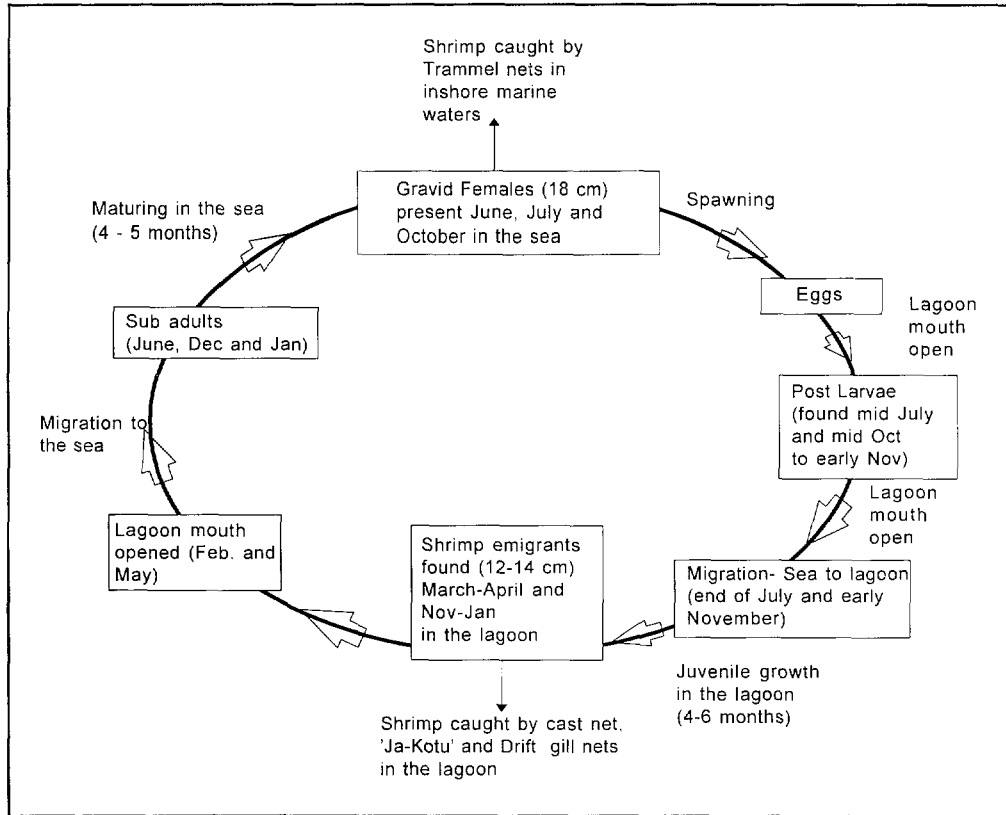


Figure 3.1. Life cycle of *Peneaus indicus* in the Rekawa lagoon and inshore marine waters

Coral Reef Destruction

Off the northeastern side of the Rekawa headland lies a shallow (2-3 m) fringing reef about 100-150 m wide and 300 m long. A preliminary survey showed that this reef is not well developed and that the corals grow intermittently on sandstone and crystalline rock substrate. Coral cover near the headland and in the channel used by fishing boats to reach the open sea is less than 1-2 percent, while the rest of the reef area, east of the boat channel, has up to 25 percent coral cover.¹⁷ Overall diversity of both corals and fishes is low with 21 species of stony corals and 38 species of fish.

Noticeable coral damage has occurred from coral mining and destructive fishing techniques. Dead coral rubble was found in mined patches of the reef and on the lagoon side of the reef. The beach erosion can be correlated to reef degradation because without the offshore reef to break waves, beaches are subject to the full force of ocean waves.¹⁷

Sea Turtle Poaching

The long, broad and mostly uninhabited beaches fronting the ocean side of the Rekawa Lagoon provide an ideal environment for the nesting of sea turtles. Five species come ashore to lay their eggs every year with the Green turtle (*Chelonia mydas*) being the most common.^{4,6} The 8 km of Rekawa beach east of Tangalla is used for nesting. The most common nesting beach extends west of the Rekawa headland for about 3 km but the beach east of the headland extending for about 5 km also hosts some turtle nests.

May and July are the most frequent nesting months for most of the species. Generally, the turtles lay between 100 to 150 eggs, which incubate deep in the sand before hatching. The juvenile turtles then journey towards the surf and begin their lives in the ocean.

Along the turtle nesting beach at Rekawa, local people collect all the turtle eggs and occasionally kill turtles, to sell or consume. Incidence of turtle nests is declining in the Rekawa area, as in all parts of Sri Lanka, due to poaching and habitat degradation. The potential to protect this living resource through conservation, nature tourism, and careful management is large in Rekawa because of the undeveloped nature of the nesting beach.

3.3 Objectives and Policies for Management of the Resources

The overall objectives of this management plan for the management of fisheries and mangroves and the conservation of endangered species and habitat through the RSAMCC are to:

1. **Protect the old growth of mangrove forest in core areas and zone other mangroves for sustainable development;**
2. **Maximize the income of fishermen by regulating fishing activities and replenishing the lagoon with fish and shrimp stocks;**
3. **Protect coral reefs, beaches and sea turtles; and,**
4. **Ensure maximum participation of the people in the management of their coastal natural resources.**

The policies agreed by the RSAMCC to improve the management of the mangrove, lagoon, beach and fishery resources are to:

1. Develop a zonation and a sustainable use plan for mangroves;

2. Promote replenishment of the lagoon with fish and shrimp in collaboration with the DFARD and other agencies;
3. Recognize the Rekawa Lagoon Fishery Cooperative Society (RLFCS) as a legitimate organization and allow its full participation in the management of the lagoon resources for the implementation of the following guidelines adopted by the RLFCS in June 1995 for lagoon fishery management:
 - a. Lagoon fishing is limited to members of the RLFCS whose membership is confined to those residing in the 7 GN divisions of Rekawa West and East, Marakolliya, Medagama, Wellodaya, Medilla and Netolpitiya South;
 - b. Only throw nets (visidel) and floating nets (pawenadel) are permitted;
 - c. Up to 100 fishermen are permitted to use floating nets, the maximum length of a floating net is 480 feet;
 - d. The eye of a fish net must be at least 4 inches and the eye of a shrimp net must be at least 1.5 inches;
 - e. Up to 100 kraals (jakotu) are permitted, only one kraal is allowed per person and only those who had a kraal for the last 3 years can obtain a license to own a kraal;
 - f. The maximum length of a kraal is 20 yards (18.2m) and the width not more than 8 yards, the distance between each kraal must be at least 40 feet; and,
 - g. Kraal should be placed across the lagoon in the shallow area between Netolpitiya river and the mouth of the lagoon.
4. Continue to strengthen and support the RLFCS and the Sea Fishery Cooperative Societies through regular training in resources management, monitoring and financial management;
5. Prohibit all destructive activities (e.g. coral mining, certain fishing techniques, and poaching and sale of turtle eggs);
6. Promote alternative employment for those engaged in the destructive activities of coral mining and poaching of turtle eggs;
8. Encourage the development of nature-based tourism; and,
9. Promote a coastal and lagoon environment, education and research center for education and research on coastal, lagoon, mangrove, fishery ecosystems and environmental conservation.

3.4 Strategies and Actions for Implementation

Strategy 1 **Initiate the Coastal and Lagoon Environment Education and Research (CLEER) Center** to provide a financially sustainable education, training, management and research facility as an institutional base for the sustainable use of the Rekawa lagoon and coastal resources and education of local and Provincial residents on coastal environment (Figure 3.2) through coordination by the proposed steering committee: Provincial government, RSAMCC, DS, M/TEWA, M/FARD, CEA, CCD, DFARD, NARA, FD, selected universities and environmental NGOs.

- Actions**
1. Reach agreement on the functions, organization and concept of the CLEER Center and the composition of the Steering Committee through coordination of the Presidential Task Force for Southern Area Development.
 2. Finalize the administration, activities, functions, facilities required, affiliation to Universities, funding and institutional development of the CLEER Center.
 3. Obtain ten acres of land suitable for the Center with the assistance of the DS and CCD.
 4. Obtain funding for construction and to begin operation by Steering Committee, M/FARD and M/TEWA.

Box 3.1 Action on the CLEER Center

Development and construction of the CLEER Center is being encouraged and partially sponsored by the Presidential Task Force for Southern Area Development. A Steering Committee for the Center (see Strategy 1) is operating under the Chairman of the Presidential Task Force. A proposal for the Center development, considering participating agency needs, is being endorsed by the Task Force to interested donors.

Ten acres of land has been allotted near the lagoon shore by the Tangalla Divisional Secretary and a land survey is being supported by the Coast Conservation Department. Negotiations are proceeding to obtain water and electricity for the Center.

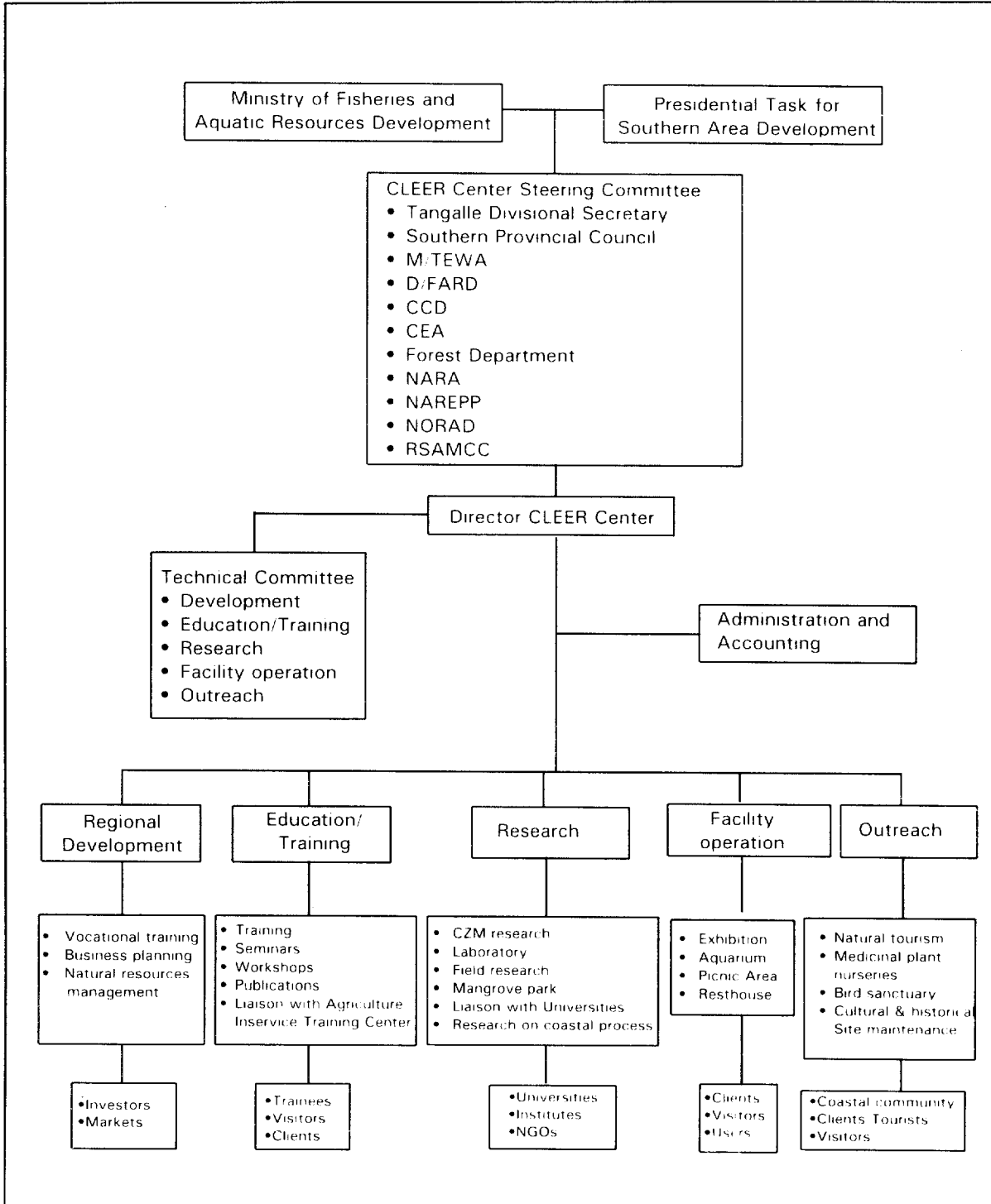


Figure 3.2 Institutional design for the Coastal and Lagoon Environment, Education and Research Center

3 Management of the Lagoon and Marine Resources

Strategy 2 **Develop and implement a zonation scheme and sustainable use plan for mangrove resources** through the collaboration of the Forest Department, NARA, CCD, RSAMCC, HIRDEP, the RLFCS and other community groups

- Actions**
1. Confirm map locations of prime mangrove stands as shown in Figure 1.2 for strict protection from any use.
 2. Confirm areas of mixed mangrove vegetation where limited uses will be permitted (Figure 1.2).
 3. Form an agreement between the FD and community groups on joint management of the mangrove resources which stipulates:
 - a. Core areas of strict protection;
 - b. Areas of limited and sustainable use;
 - c. Permitted uses;
 - d. Means of monitoring uses; and,
 - e. Designated responsible persons or community groups.
 4. Formalize management agreement by declaring area a sanctuary or forest reserve with limited use permits.

Box 3.2 Development of mangrove management plan

In January 1996, the Forest Department endorsed a scheme to assist with the sustainable use plan for the mangrove resources of Rekawa. The RSAMCC will take the lead in drafting the plan through a small working committee with FD, NARA, CCD and the RLFCS represented.

Strategy 3 **Strengthen and expand the Lagoon Fishery Cooperative Society (RLFCS) for lagoon fishery and resources management** by encouraging the RLFCS to take management responsibility for all lagoon resources and by implementing management guidelines for the lagoon which are endorsed by NARA, DFARD and DFEO.

- Actions**
1. Formally adopt the fishery management guidelines through RLFCS consensus and DFARD approval as stipulated above.
 2. Increase the membership of the RLCFS to include at least 80 percent of the Rekawa residents who depend on the lagoon for livelihood in some form.
 3. Adopt the guidelines for sustainable use of mangrove resources of Strategy 1 by the RLFCS and the DFARD.

4. Continue education programs on the lagoon ecology and on fisheries and resources management through HIRDEP and the CLEER Center.
5. Train the RLCFS in accounting, monitoring of fish catch and methods, leadership, conducting of meetings, keeping records, selection of officers in the society and in liaison with government officials.

Box 3.3 *Rekawa Lagoon Fishery Cooperative Society formation*

The RLCFS was registered by the government as a cooperative society in March 1995. This was the first time that a lagoon fishery society in Sri Lanka has been registered. The RLCFS then developed and adopted the lagoon fishing guidelines. Participation by Society members in the NARA research project on the lagoon shrimp fishery and ecology led to the formulation of the management guidelines. The Society now takes responsibility for management of the lagoon.

Strategy 4 Replenish the lagoon fishery by introducing fish fingerlings and shrimp larvae at appropriate times with assistance from the Inland Fisheries Division of the DFARD and the results of research of the Zoology Department of Colombo University, NARA, DFEO and the DS.

Actions

1. NARA will provide a list of brackish-water fish to be introduced to the lagoon through the cooperation of the RLFCS.
2. The RLFCS with assistance from the DFEO will obtain stocks of fingerlings from the Inland Fisheries Division for release into the lagoon.
3. The RLFCS will participate in the lagoon enhancement project of the CU and test the results of lagoon stocking with shrimp larvae.

Box 3.4 *Ongoing replenishment of the Rekawa lagoon*

The Zoology Department of Colombo University in collaboration with the University of Millport, Scotland has been implementing the Enhancement of Rekawa Lagoonal Praw n Fishery Project since mid-1995. The project, through 1997, will enhance the natural *Peneaus monodon* population of the lagoon. The lagoon fishermen participate in and benefit from this project. Also, the RLFCS is requesting appropriate species of brackish water fingerlings from the Inland Fisheries Division of DFARD to stock the lagoon.

3 Management of the Lagoon and Marine Resources

Strategy 5 Strengthen and expand the Sea Fishery Cooperative Societies for nearshore fishery and resources management by encouraging the Societies to take management responsibility for all sea fishery resources and by making a set of management guidelines resources which are endorsed by the DFARD for implementation by the Societies with the assistance of NARA, DFEO, RLFCs and the RSAMCC.

- Actions**
1. Draft fishery management guidelines with Societies through a consensus process as used for the RLFCs and includes the same categories of regulations for fisheries management.
 2. Increase the membership of the Societies to include at least 80 percent of the Rekawa residents who depend on the nearshore waters for livelihood in some form through the DFEO.
 3. Continue education programs on marine and lagoon ecology and on fisheries and resources management for the SFCS with assistance from NARA, and the CLEER Center.
 4. Train Society members in accounting, monitoring of fish catch and methods, leadership, conducting of meetings, keeping records, selection of officers in the society and in the liaison with government officials with assistance from the DFEO.
 5. Liaison with the Rekawa Lagoon Fishery Cooperative Society on pertinent conservation matters of shared interest through the RSAMCC.

Strategy 6 Form community-based organization(s) for sea turtle conservation and related conservation issues such as coral mining, and affiliate it with a national organization (NARA, Colombo University, Turtle Conservation Project (TCP) or other NGO), to promote law enforcement, and to ensure that the community derives benefits from sea turtle eggs and presence on Rekawa beaches, through tourism or other incentives, and encourages alternative livelihood for those dependent on destructive activities, with the assistance of the RSAMCC, DS, DWLC, CCD, DFEO, HIRDEP and interested donors.

- Actions**
1. Conduct participatory research on the sea turtle nesting conservation problem in Rekawa through facilitation by TCP, NARA and community groups as appropriate.
 2. Formalize community-based organization for sea turtle conservation through community organization, training and support which will initiate alternative livelihood for the participants.
 3. Liaison with local resorts to serve as “turtle guides” for visitors or provide other ecotourism services.
 4. Designate a turtle nesting sanctuary area where no eggs will be collected but turtle nesting and hatching can be viewed by visitors.

5. Design and implement an incentive system to ensure that eggs laid within sanctuary are hatched in situ.
6. Continue education programs for local residents on sea turtle and coral reef conservation with the assistance of NARA, DWLC and TCP.

Box 3.5 Progress on sea turtle conservation

The RSAMCC has approved the education and research program of the Turtle Conservation Project (TCP) sponsored by Care for the Wild, an international NGO. A locally-based turtle and environmental conservation association is also being formed to raise community awareness for turtle conservation, about other conservation issues and to ultimately to prevent poaching of turtle eggs.

3.5 Conclusion

This chapter reviewed the diversity of the lagoon and marine resources of the Rekawa SAM area and their importance. These habitats support the subsistence lagoon and marine fisheries which is the basis for livelihood and food for many residents. These resources must be used in a sustainable manner and the income derived therefrom augmented through new livelihoods. It is suggested that several community-based organizations be strengthened or newly formed to become directly involved in the management of coastal resources. Finally, it is proposed that the Coastal and Lagoon Environment, Education and Research Center be set up to provide institutional support for resources management in the area.

ZONING AND LAND USE PLANNING

4.1 Introduction

Land use for agriculture, aquaculture, and tourism development are addressed in this chapter. The development of aquaculture and tourism, although locally controversial, has potential if carefully planned. Land use planning is essential in the Rekawa area because eventually land will become scarce and user conflicts will arise. Planning for optimal use of land resources consistent with potential capacity of soil, water supply, beaches, lagoon and other resources will ensure a balanced environment in the future. Equally, the area needs economic development. Thus, guidelines must now be set to control how and where economic development occurs.

Potential land use areas as proposed by studies on the Tangalu Velyaya and the Rekawa Lagoon area are described in the *Coastal Environmental Profile of Rekawa Lagoon*, and shown in Table 4.1.^{1,9,21} It is seen that agriculture is a dominant land use and an equal area of about 500 ha has been abandoned due to high salinity. Setting criteria for future land uses quickly emerges from the pattern displayed in Figure 1.2 as well.

The Rekawa SAM area can be divided into six use areas for development purposes as noted in Table 4.1. These areas more fully described are:

1. **Lagoon**, an important economic area and resource with about 250 families dependent on the lagoon fisheries for subsistence income and food;
2. **Mangrove area**, no major economic activity except that residents depend on some mangrove products for livelihood; the area can be divided into protected (core) and sustainable use zones;
3. **Agriculture and Yarawela Yaya and Patha Pallama Welyaya area**, existing agriculture land and the low lying Yarawela Yaya and Patha Pallama Welyaya area are of little economic importance at present, whereas it may be possible to rehabilitate this tract by the cultivation of saline resistant paddy and other cash crops.
4. **Aquaculture**, area with potential for small-scale aquaculture development;

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5. **Tourism area**, still undeveloped but has potential for nature-based tourism to support sea turtle conservation; and,
6. **Sea fishery and coastal area**, sea fishing activities and other development dependent on new investment and enterprises.

Table 4.1. Existing and potential land use areas in Rekawa site

Use/Resource Area	Areal Extent	Activity/Resource
Rekawa lagoon	250 ha	Lagoon fishery
Mangrove forest		
a Pure mangroves	100 ha	Habitat/protected
b Mangroves with scrub	100 ha	Sustainable use
Alternative agriculture (Tangalu Velyaya) Rehabilitate for paddy and other cash crops	400-500 ha	Partly abandoned paddy Saline resistant paddy and other cash crops
Existing agriculture	500-600 ha	Paddy, vegetable citronella, coconut
Tourism area	50-100 ha	Beach tourism, sea turtle viewing, bird watching
Sea beach/coastal area	100 ha	Sea fishery, turtle nest sanctuary, coral mining and lime kilns

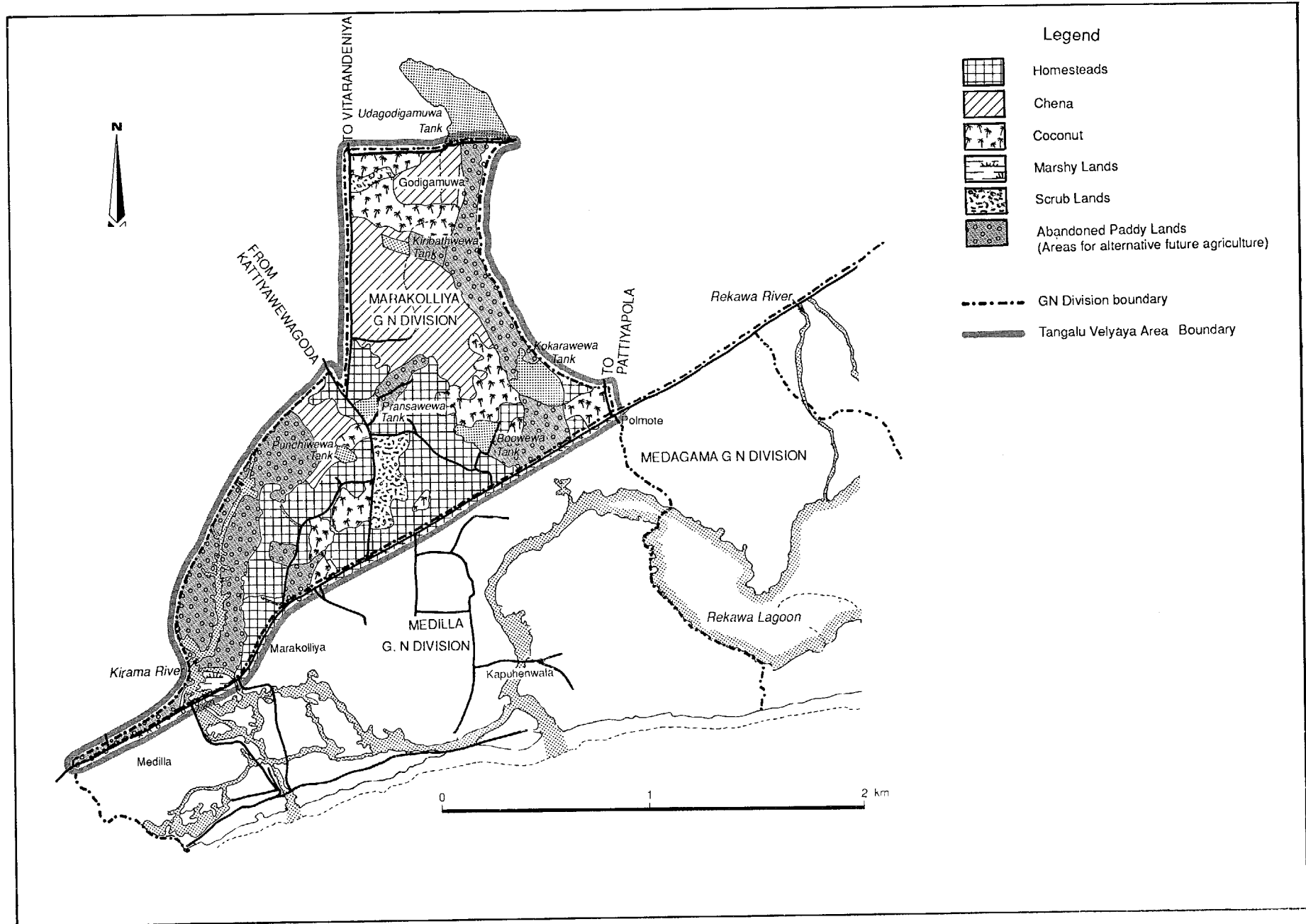
4.2 Problems of Land Use Areas in Rekawa

Alternatives for Saline Paddy Land (Yarawela Yaya and Patha Pallama Welyaya)

Inland from the Rekawa lagoon lie about 500 ha of abandoned paddy land known as the Tangalu Velyaya (Figure 4.1). About two-thirds of the land closest to the lagoon (Yarawela Yaya and Patha Pallama Welyaya) is currently not used because of its high salt content and regular flooding.¹⁰

There is interest in developing this unused land for salt-tolerant agricultural species such as cashew, coconut, paddy, reed (pan), chilies, vegetables or aquaculture ponds.²¹ The area earmarked for aquaculture is at present not of much productive use because of drainage problems. An assessment made by AREMCO, suggests that revenue from shrimp ponds far

Figure 4.1 The extent of the Tangalu Velyaya and surrounding area



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surpasses that from any other industry which can be attempted in these locations.¹ The output of paddy from these fields would be low. However, the local community is firmly opposed to the establishment of shrimp ponds.

Low Production from Existing Agriculture

Agriculture is a major source of income in half of Rekawa GN Divisions. GN divisions of Marakolliya, Medagama, Netolpitiya and part of Wellaodaya all practice paddy, coconut, citronella and subsidiary food crops production, and raise livestock.¹⁵ The major land use patterns including agriculture can be seen in Figure 4.2.

Due to the high salinity of the soil, most land in the Rekawa area cannot be used for paddy cultivation.¹⁰ Only about 54 ha of the Tangalu Velyaya and the surrounding land are currently used for rice cultivation. Since an average hectare of paddy land yields 3.5 tons per season worth about Rs 35,000, farmers would like to farm more rice.

There are 200 ha of land under coconut cultivation in the Rekawa area. A prolonged drought in 1989 seriously affected this crop, but in 1991 and 1992 HIRDEP provided subsidies in two stages to help farmers start more coconut plantations. More coconut cultivation is possible in Rekawa although the income potential is limited.¹⁰

Two distillation stills produce citronella oil, a lucrative business. One is in Marakolliya and another is in Wadiya. Citronella is grown in the Rekawa area with several large producers cultivating up to 10 ha each. This long grass is harvested in a manner similar to paddy and the oil is then extracted through a steaming process.

Maize, green gram and vegetables such as snake gourd, luffa and pumpkin are extensively grown in the Wellaodaya GN Division with smaller crops in Netolpitiya South and Rekawa West. Over 476 ha of these crops are grown in the Rekawa project area and are cultivated in chenas by the slash and burn method of cultivation during the 'Maha' season. This produce is sold at village markets and roadside stalls, bringing some farmers over Rs 2000 per month (DAS, personal communication, 1994). Cattle, buffalo, goats and poultry are also raised.

Aquaculture Development

Aquaculture is yet to be developed in the Rekawa area. This industry, if well planned and efficiently implemented, can provide additional employment and income to the local community. Small scale commercial and subsistence aquaculture could be done on approximately 100 ha of land divided into lots and areas for development. These potential sites surrounding the

lagoon are shown in Figure 4.3.¹ The most viable GN division for this development is Medilla, which has the most suitable soil for pond construction. Opportunities for large scale aquaculture in the Rekawa site are limited due to the lagoon's small size, lack of fresh water and less than ideal soil types.

There are several environmental and social considerations that must accompany the development of this industry. An Environmental Impact Assessment (EIA) was done for one proposed aquaculture project in the Medilla GN division. The outcome is shown in Table 4.2. Unless well managed and properly planned, aquaculture can be environmentally damaging. However, if done with proper planning, the harmful effects of aquaculture can be minimized.

Box 4.1 Aquaculture and people's attitudes in Rekawa

The development of aquaculture in Rekawa is a very controversial issue among residents. The prevailing attitude is that aquaculture, especially shrimp culture, will damage the environment and disrupt local culture. Fear of shrimp pond development by outside investors has virtually blocked any development. Thus, any aquaculture project will have to consider the perspectives and needs of local residents. And, even with consideration of community values and roles, the community response will be cautious.

Conflicts of Use in Shoreline Areas

Since coral mining continues due to economic viability and difficulty of prevention, some beach erosion is a result. People engaged in this activity are reluctant to give it up unless viable alternatives are available. In addition, several structures without CCD permits have been built in the coastal zone of the area.

The immediate shoreline and beach areas of Rekawa have potential for nature-based tourism development. Such development could assist to alleviate the need for alternative incomes if developed appropriately. Sea turtle nesting could become an attraction for tourists and tourism could supplement incomes of people either dependent on egg poaching or coral mining. Any tourism development needs to consider the traditional uses of beach for fishing, and traditional human values so that conflicts space and values are avoided. Consideration and mitigating measures for tourism development in Rekawa are summarized in the *Coastal Environmental Profile of Rekawa Lagoon*, and in *Guidelines for Coastal Tourism Development in Sri Lanka*.²⁰

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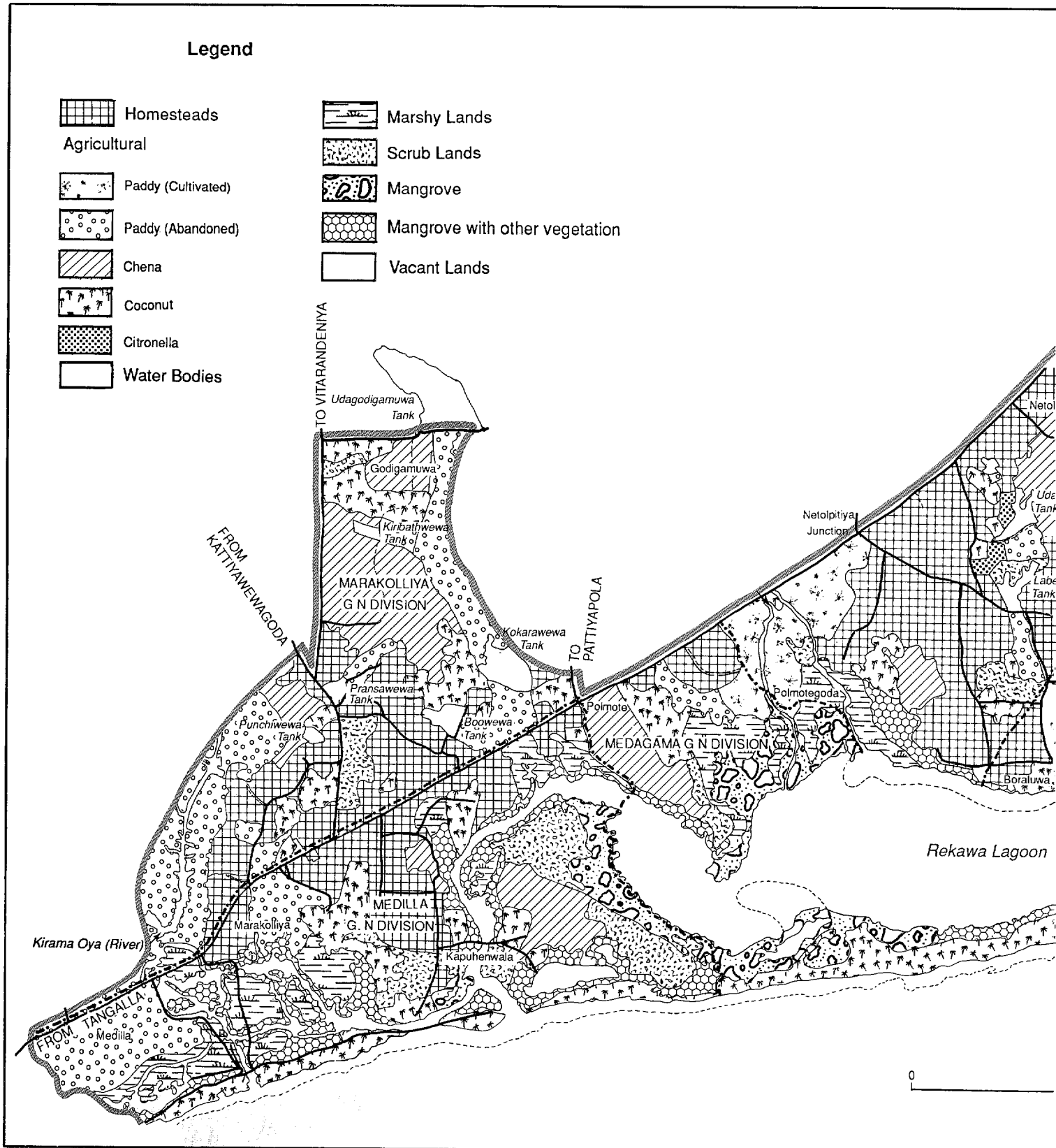
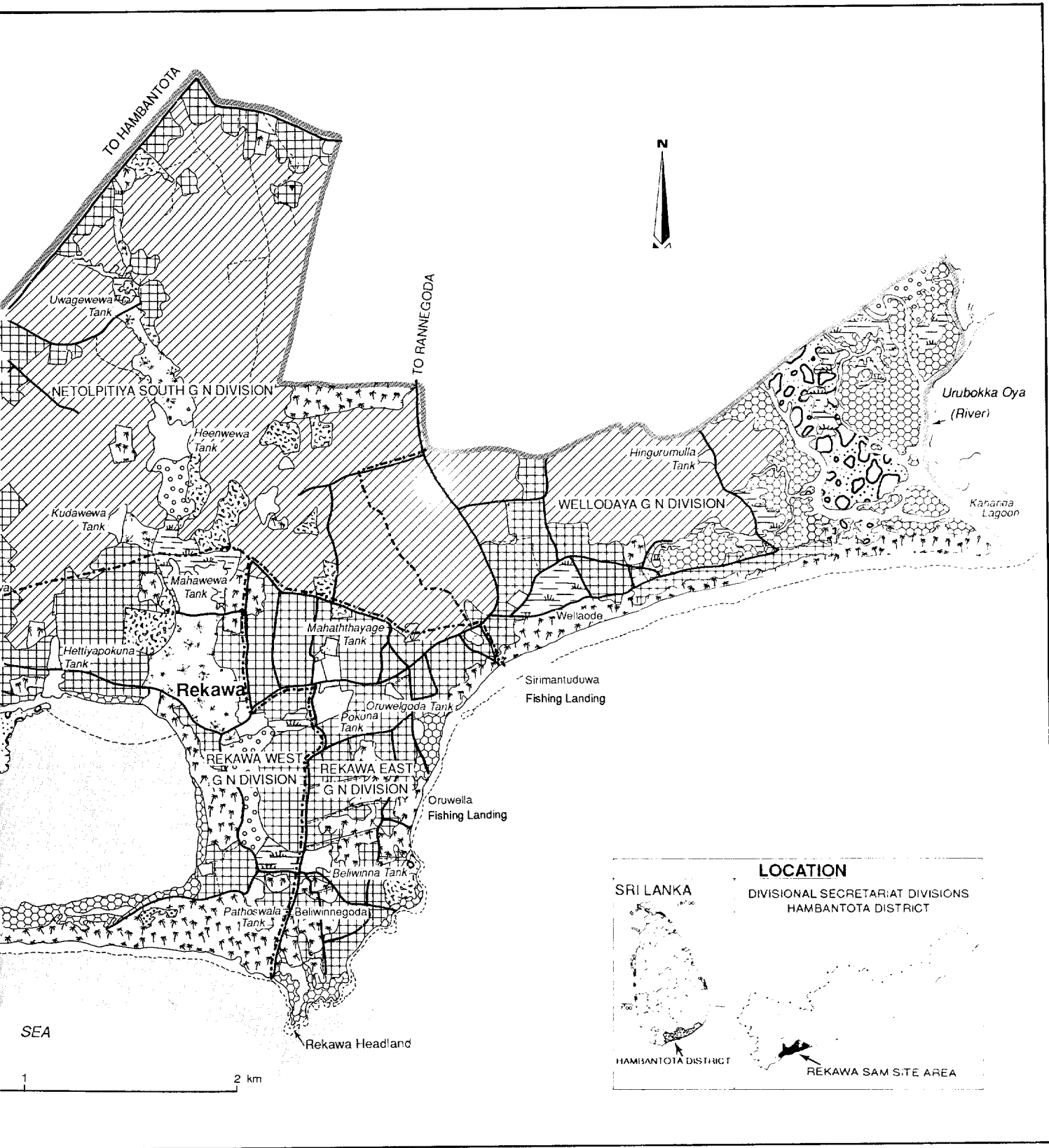


Figure 4.2 Land use patterns



in the Rekawa area¹⁵

Figure 4.3 Sites suitable for potential aquaculture development and their environmental impacts

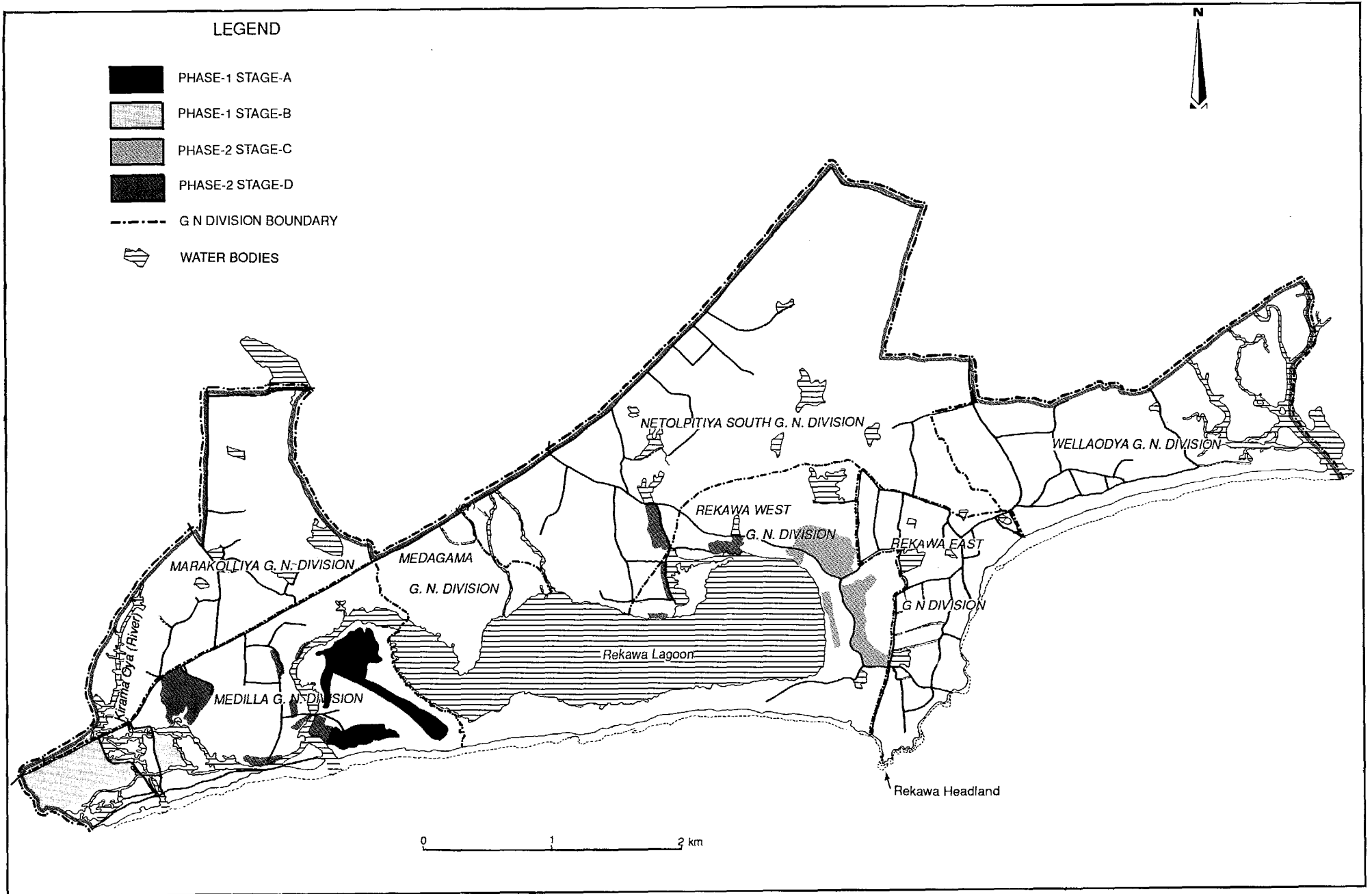


Table 4.2 Results of an Environmental Impact Assessment for a proposed aquaculture development in the Medilla GN Division⁸

Problems:

- Development site is presently covered with mangroves
- Low elevation of development site
- Lagoon water is not suitable for project use due to:
 - a) Sedimentation of the lagoon and encroachment of mangroves into the lagoon;
 - b) Extreme variation of salinity within the lagoon;
 - c) Lagoon habitat supports a productive ecosystem; and
 - d) Possible contamination of lagoon water from inland agricultural runoff containing pesticides and fertilizers.
- Local Community presently utilizes the natural shrimp fishery of the lagoon
- Community is not favorable to aquaculture development
- No major development projects have yet been done in the area
- The local communities are rural and rely heavily on JSP welfare support

Benefits:

- Project can be designed so that it does not harm the environment
- Water is taken from and discharged to the sea
- Product is in heavy demand and has strong international markets
- Developed at the community level with the input of the local people
- Local employment and community participation will be used
- Lagoon will be seeded with post larvae to improve shrimp fishery
- Assistance provided in restoring lagoon and reversing sedimentation
- Use of alternative energy sources such as solar and wind power
- Helps the local community with sustainable use of the mangroves
- Project is designed from the perspective of sustainability
- Direct economic benefits for the local community
- Indirect benefits such as provisions for a hatchery and shrimp feed production, research and transfer of alternative energy sources to the local community

Mitigatory Factors: The proposed aquaculture development project would make the following provisions:

- Avoid use of the lagoon water as a source of water for ponds
 - Avoid using the lagoon for discharging pond effluent
 - Provide for intake and discharge of project water to the sea
 - Avoid excavation of pond beds, which could have harmful effects
 - Provide sedimentation tanks and aeration lagoons for treating effluent
 - Provide storm-water drains to prevent flooding of project area
 - Replace any mangroves that are destroyed and start mangrove nurseries and replantation projects outside of development area
 - Project will occur in phases for control led development
 - Awareness programs will be conducted for the local communities
-

4.3 Objectives and Policies for Land Use Planning

The RSAMCC supports the following management objectives to achieve balanced land use planning in the Rekawa SAM site:

- 1. Demarcate use and resource areas (zones) in the Rekawa planning area**
- 2. Periodically monitor area activities and resources**

4 Zoning and Land Use Planning

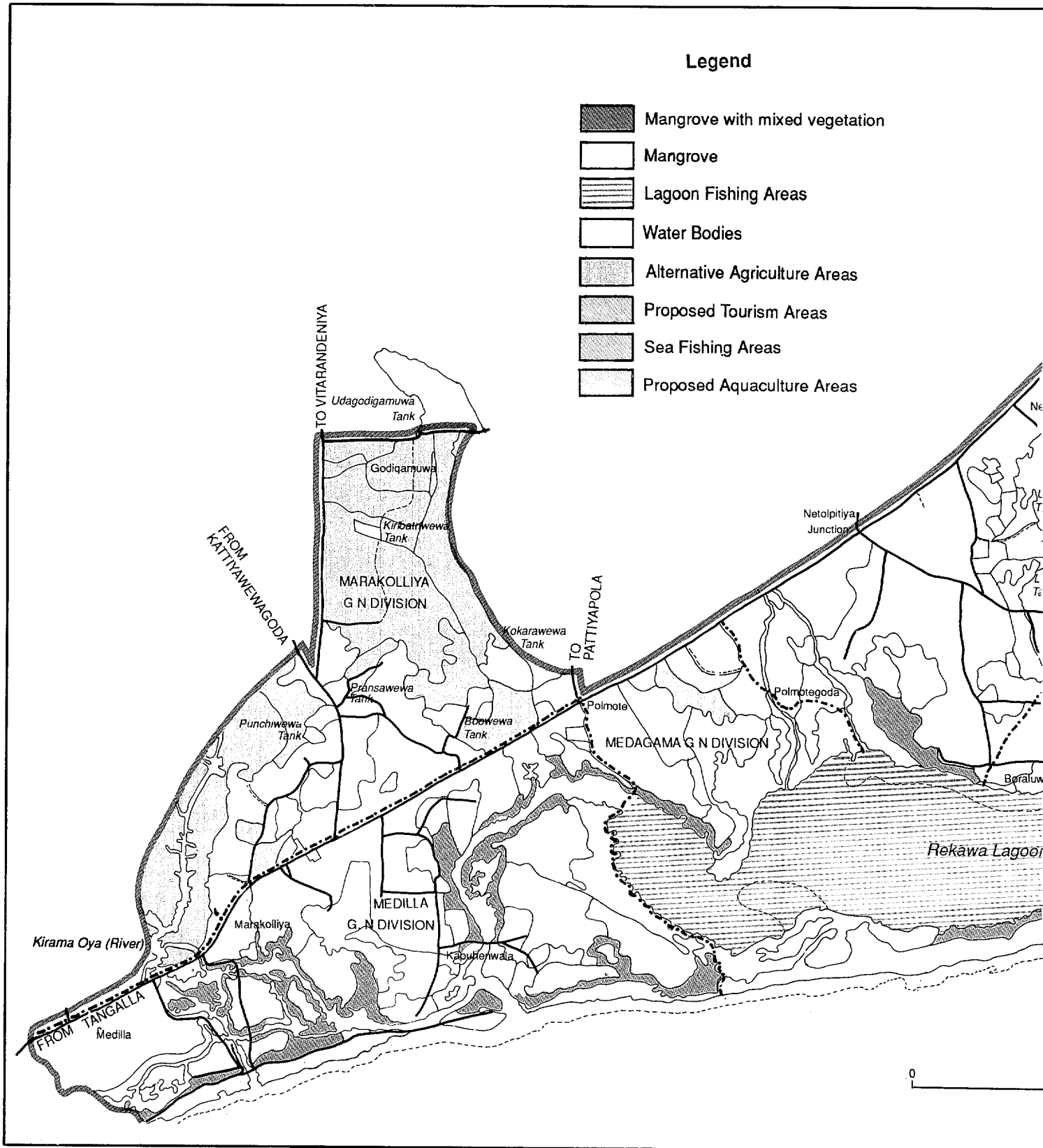
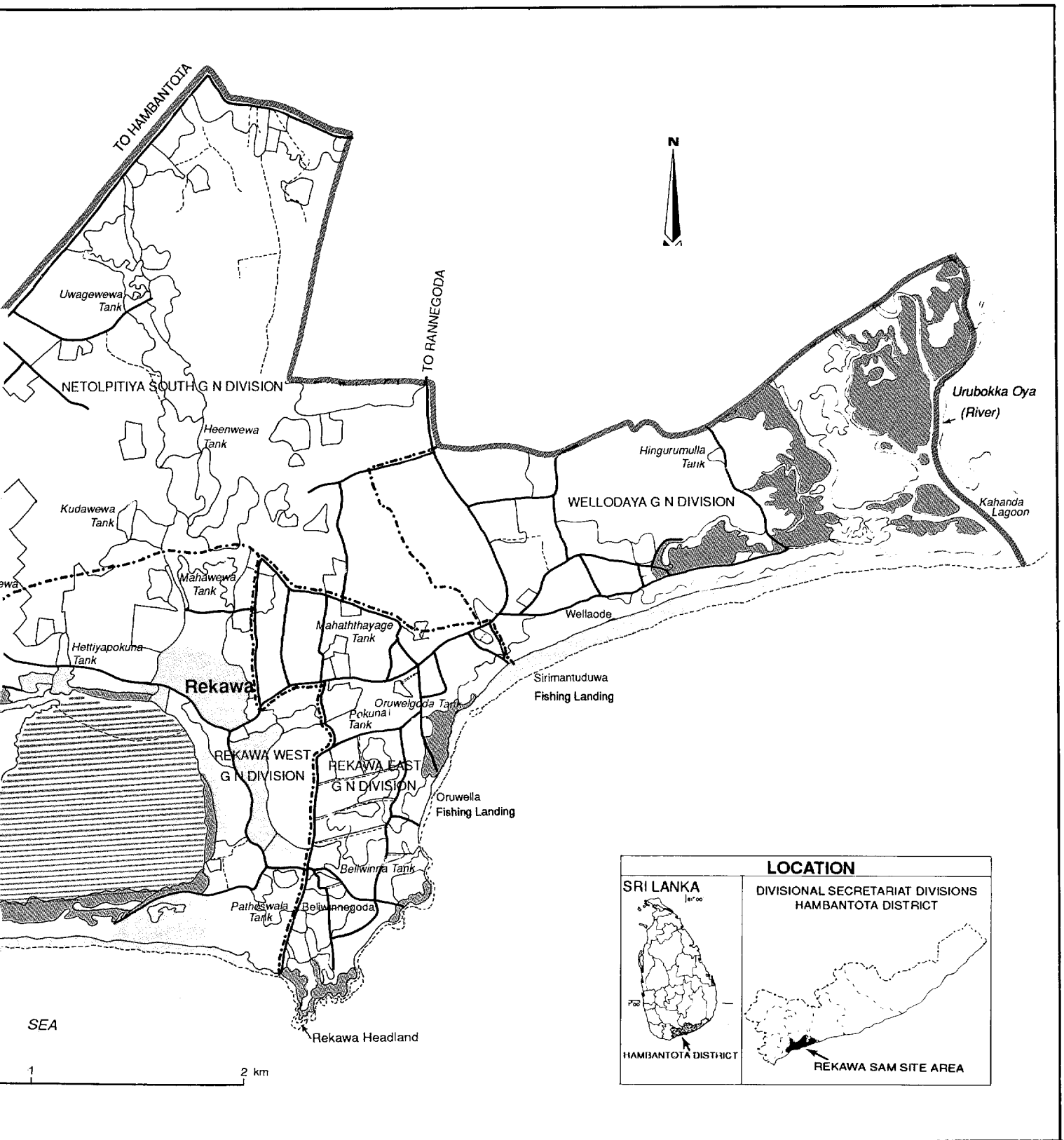


Figure 4.4 Areas for multiple land



uses of the Rekawa lagoon area

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3. Set optimal level of development in aquaculture and tourism areas

4. Rehabilitate the Tangalu Velyaya land

It shall be the policy of the RSAMCC members to:

1. Establish use and resource areas for the lagoon fishing activities, mangrove protection and management, agriculture, aquaculture development, tourism and shoreline fishing activities;
2. Consider the following criteria in setting up area designations and boundaries:
 - a. **Lagoon area** will include all fishing activities, limits on fishing areas and other potential uses of the area for tourism;
 - b. **Mangrove area** will include a core area which protects all the original growth mangrove habitat in which no extraction is allowed and where bird watching and mangrove education is promoted and a sustainable use area in which limited harvesting is permitted for wood and other mangrove products;
 - c. **Agriculture area** will include those areas of existing agriculture plus sites within the Tangalu Velyaya with potential for salt tolerant varieties of plants to thrive;
 - d. **Aquaculture area** will include all those areas which have been determined by the study done by AREMCO to be favorable for aquaculture ponds or areas for freshwater fish in existing reservoirs;¹
 - e. **Tourism area** will include portions of the beach where sea turtles nest, where it is appropriate for small-scale resorts to locate and areas in the lagoon mangrove habitat for bird watching and general education; and,
 - f. **Sea fishery and coastal area** will include sea fishing activity areas, erosion control and locally based enterprises other than tourism.
2. Determine area boundaries with the active participation and collaboration of the community;
3. Facilitate designation of the coastal strip for tourism development and sea turtle conservation with provision for access to all stakeholders; and,
4. Rehabilitate Tangalu Velyaya for agriculture and productive uses.

4.4 Strategies and Actions for Implementation

Strategy 1 **Implement the use and resource areas (or zones)** which designate lagoon, mangrove, agriculture, aquaculture, tourism and shoreline areas as shown in Figure 4.4 and documented in the *Coastal Environmental Profile of Rekawa Lagoon* through collaboration of government agencies with community organizations in a process which formalizes and marks boundaries for all the areas with the assistance of FD, DA, HIRDEP, DS, CCD, DWLC, DFEO, NARA and the RSAMCC.

- Actions**
1. Review, formalize and mark the various use area boundaries in collaboration with concerned community groups.
 2. Ensure that the mangrove management plan of Strategy 2, Chapter 3 is consistent with resource and use area designations.
 3. Determine sea turtle nesting sanctuary through DWLC, TCP and community groups involved.
 4. Refine shoreline use area for fishing craft access and tourism.
 5. Review aquaculture development areas and ensure compatibility with community and local government desires.

- Benefits**
- Clearly defined areas for resource protection, sustainable use and development.
 - Policies to ensure reduced resource use conflicts and degradation.

Box 4.2 Progress on rehabilitation of the Tangalu Velyaya

Under the auspices of the Presidential Task Force for the Southern Area Development, an expert committee with a management specialist, irrigation engineer and an agriculture expert has completed a feasibility study of the Tangalu Velyaya. The committee explored cultivation of saline resistant crops such as paddy, vegetable and reed. A pilot project to begin testing such crops is ready for implementation.

Strategy 2 **Rehabilitate the saline land of the Yarawela Yaya and Patha Pallama Welyaya** through experimenting with various salt tolerant crops and the involvement of local youth groups with the assistance of the DA, HIRDEP and the NORAD Enterprise Development Centre.

- Actions**
1. Develop proposal for youth farm of 50 ha on the northern fringe of the Yarawela Yaya and Patha Pallama Welyaya in collaboration with DA, HIRDEP, NORAD, DS and the RSAMCC.

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2. Secure funding support for a 3 year experimental program through HIRDEP.
3. Plant experimental plots of plants such as reed, rice, cashew, chilli and others with potential in the area.

Benefits

- Development of land which is lying idle.
- Increased income for farmers in vicinity of Tangalu Velyaya.

4.5 Conclusion

This chapter focuses on land use planning for the area. Critical points are demarking the six use and resource areas and rehabilitating abandoned paddy area at Yarawela Yaya and Patha Pallama Welyaya. Community and government agreement on land use boundaries will lessen resource use conflicts in the future and improve the chances for appropriate investment in the area.

POVERTY ALLEVIATION AND ALTERNATIVE LIVELIHOOD

5.1 Background--Poverty and Environmental Impacts

Poverty is the core problem in the Rekawa area. More than 80 percent of the people have incomes below the poverty line (Rs.1500 per month) and receive some form of public welfare. The rural population of the Rekawa area and the social infrastructure it supports is closely connected to the natural resources and processes discussed above. Official unemployment is high because most people subsist through a variety of activities, most of which do not constitute full-time employment.

Coral mining and the poaching of sea turtle eggs are carried out because there are no other livelihoods. Coral processing is the most lucrative occupation, followed by the lagoon shrimp fishery.¹⁸ Unlike coral mining, the lagoon fishery has potential for sustainable use. Agriculture, the most common livelihood, although stable, is inhibited by infertile coastal land and low productivity but can be improved. Other forms of economic development are lacking.

Coral mining and burning of coral in lime kilns has been occurring in Rekawa for several decades. A 1994 survey revealed 51 lime kilns in Rekawa East and Rekawa West.¹⁹ The kiln operators are businessmen who employ women (about 200 in the area) to mine the corals and male laborers to process the coral. A woman mining coral can earn about Rs 60 to Rs 100 per day. Strictly enforcing the law to stop coral mining has not been an option because of the loss of livelihood of these people.

It has been the practice over the years for villagers, particularly unemployed youth, to take turtle eggs from the nests of turtles that nest on the Rekawa beach. The eggs are sold for Rs 1-2 each in Tangalla and Ratnapura towns. Although illegal, no enforcement has been imposed because of the economic consequences to the poachers.

5.2 Problems and Issues

Over Dependence on Social Welfare Programs

More than 70 percent of the population was receiving Rs 700 per month in food stamps from 1980 until 1990. In 1991, the government started the Janasaviya (JSP) (Community Strengthening) program to replace food stamps. A monthly income of less than Rs 1,458 per month qualified beneficiaries of this program.

Public assistance is also provided for people in the Rekawa area who are old, chronically ill and infirm. The people on the public assistance program are usually in need of medical support which they cannot get on their own.¹⁰

Thus, most of the population is supported to some extent by government social welfare for supplemental income which is a disincentive for potentially industrious people. Formal education is also not widespread in the community. There is a need to improve the social condition of the people through sustainable economic development and social programs which do not create dependence.

Weak Community Organizations with Poor Leadership

There are various community-based organizations in the Rekawa area which are organized around livelihood or occupation. The Fishery Cooperative Societies, Women's Organizations, Youth Groups and Agriculture Cooperatives are all concerned with improving their economic condition. Yet, few if any of the existing groups are effective at organizing themselves to substantially enhance their incomes. Although the options for livelihood are limited, all the existing organizations need to be strengthened to become more effective at their own internal management functions.

Lack of Training and Education for Jobs

Few people in Rekawa have skills as mechanics, technicians, teachers or in the realm of agriculture beyond what is commonly practiced. Most people are accustomed to gathering food and saleable products from the lagoon, the sea, the mangroves or doing simple agriculture. New skills are desperately needed to make people more employable.

No Development of Sustainable Aquaculture and Tourism

The Rekawa area has potential for carefully managed aquaculture and coastal tourism. Aquaculture development with community involvement is

possible. It has not yet occurred because of reluctance in the community to allow development. Now with sound guidelines for aquaculture development in place, it could proceed slowly. Beach tourism based on nature could be an asset for Rekawa. It could bring employment and make it easier for local people to justify conserving their natural resources for the future.

5.3 Objectives and Policies for Poverty Alleviation

Poverty and resources degradation will continue to be the norm in Rekawa unless some alternatives are developed. Management objectives of the RSAMCC are to:

- 1. Increase self reliance in the community to reduce the number of families dependent on public assistance programs;**
- 2. Increase agriculture productivity and reduce post harvest losses;**
- 3. Improve productivity of existing employment to gain higher income;**
- 4. Improve budgeting and management of household income; and,**
- 5. Test fresh and brackish water aquaculture.**

The following policies are adopted to achieve the objectives. Appropriate members of the RSAMCC shall:

1. Discourage public welfare programs when they may act as deterrent to the development of self confidence and self reliance of the community;
2. Promote investment in enterprises which will increase the income of the community through environmentally sound activities;
3. Encourage diversification in agriculture to enhance productivity and income and promote cultivation of high income crops in collaboration with government agencies such as Department of Agriculture and HIRDEP.
4. Seek new employment for those engaged in coral mining and poaching of sea turtle eggs;
5. Encourage the development of nature-based beach and lagoon tourism;
6. Promote the appropriate testing of micro-scale aquaculture through the participation of community groups and individuals; and,
7. Promote processing of common vegetables and fruits.

5.4 Strategies and Actions for Implementation

Strategy 1 Stimulate local economic development and self reliance through education, training and community organization focused on resources management, household budgeting and management, livelihood skills, leadership, motivation and environmental awareness through continuation of the catalyst program field staff working in collaboration with CCD, DS, RSAMCC, HIRDEP, DFARD and community organizations.

- Actions**
1. Conduct community environmental awareness programs which build understanding about peoples relation to their natural resources through the catalysts and schools.
 2. Organize and strengthen all the community-based organizations (RLFCS, SFCS, Womens groups, Farmer organizations) to better manage their livelihoods, households and natural resources.
 3. Continue community GN catalyst program to support natural resources management and new livelihood projects with support from the DS, HIRDEP and CCD.
 4. Conduct skills training programs in agriculture, fish processing and marketing, mechanics, aquaculture or others.
 5. Implement Strategies 3 and 4 of Chapter 3 to strengthen the RLFCS and sea fishery societies in managing their fishery resources.
 6. Implement Strategy 5 of Chapter 3 to form a community-based organization for sea turtle conservation.

- Benefits**
- Increased desire among local people to manage their own affairs, develop their own skills and become self reliant.
 - A system in place to build local participation in economic development which is not totally dependent on government and donor assistance.

Box 5.1 The catalyst program

The use of educated youth as catalysts in the Special Area Management process in Rekawa is unique and innovative. Nine youth from the Rekawa community were recruited, trained and posted as volunteer community organizers in January 1995. One catalyst was appointed to each of 7 GN divisions and to work with the RLFCS and the Federation of Womens Organizations. Their primary responsibilities are to work closely with village officials, community leaders and voluntary organizations in creating an awareness of the environment and natural resources conservation; facilitating development and higher productivity; strengthening organizations; and developing self reliance by encouraging people to take responsibility for their own development. The catalysts are an important element in the SAM process.

Strategy 2 Implement agriculture income projects of poultry raising, livestock farming and cashew tree planting with assistance from the Enterprise Development Centre of NORAD and HIRDEP using community organization techniques and catalyst assistance in coordination with DA and DS.

- Actions**
1. Find interested participants from the community and conduct awareness program about potential of poultry and livestock farming and growing of cash crops through involvement of the community catalysts.
 2. Select and train farmers in poultry, livestock and cashew farming.
 3. Construct needed facilities through volunteer action.
 4. Obtain small loans as required to purchase supplies and monitor their use with assistance of Hatton National Bank and HIRDEP.
 5. Support farmers with technical, marketing and moral support to carry them through several farming cycles.

- Benefits**
- New agricultural based activities which generate cash income which are not dependent on large areas of productive soil.
 - Increased income to those engaged in poultry and/or cashew farming.

Box 5.2 Initial results of poultry project

The poultry project is providing alternative income to women engaged in activities harmful to the environment such as coral mining and poaching turtle eggs. The project is sponsored and supported by the RSAMCC with the assistance of the Enterprise Development Center in Hambantota, Hatton National Bank (loans up to Rs. 30,000) and the Tangalla Veterinary Surgeon. By the end of 1995, six poultry farms with 100 chicks in each farm were in operation in the Rekawa West Division. Others commenced in 1996. It is expected that the average monthly income from a 100 chicken farm will be about Rs 3000. The catalysts play a major role in promoting the poultry farms.

Strategy 3 Raise awareness among farmers of post harvest losses of vegetables and fruits in collaboration with the DA, NORAD, DAS, ARTI, DS and RSAMCC

- Actions**
1. Conduct a study on post harvest losses of vegetables and fruits in the Rekawa area with the assistance of ARTI.
 2. Conduct seminars and workshops for farmers on post harvest losses of vegetables and fruits.
 3. Organize a pilot project for the processing of vegetables and fruits.

- Benefits**
- Reduced post harvest losses and increased income to farmers.

5 Poverty Alleviation and Alternative Livelihood

Strategy 4 **Actively recruit investment in development of nature-based tourism** which is environmentally sound and includes community participation through contacts with local or national companies or individuals in collaboration with the Ceylon Tourist Board, and close coordination with community and local government

Actions

1. Advertise the Rekawa area as a site which is open to environmentally friendly development which includes community participation in the process.
2. Invite potential investors to discuss plans at meetings of the RSAMCC and provide background information on the site with copies of this plan.
3. Request investors to make an Initial Environmental Examination (IEE) which also includes guidelines for development presented in this plan and the *Coastal Environmental Profile of Rekawa Lagoon, Sri Lanka*.
4. Arrange for affected community groups to have meetings and discussions with the potential developer.
5. Hold regular meetings to discuss progress on a development and its impact on the environment and community during and after completion.

Benefits

- Environmentally and socially sound development in tourism which generates revenues for the community as a whole or its members.
- Economic development which has a bias for environmental protection and sustainable community improvement.

Box 5.3 Aquaculture, local needs and desires

The introduction of shrimp aquaculture is controversial. The negative attitude of the community is partly based on their awareness of the environmental and equity issues caused by the shrimp farms in the Northwest Province, and partly to fear that shrimp ponds would use lagoon water and discharge effluent to the lagoon thus lowering its natural productivity. Although investment is urgently needed in this economically poor area, shrimp farming is not the desired solution.

Strategy 5 Test and promote fresh water fish breeding in village tanks of the Rekawa area with the assistance of DFARD, NARA, Colombo University and DS

- Actions**
1. Identify the village tanks in the Rekawa area suitable for fresh water fish breeding.
 2. Identify the fish species suitable for breeding in the village tanks and obtain fingerlings from the Inland Fisheries Division of DFARD.
 3. Organize a committee of community leaders to monitor and promote the fish breeding program for each village tank.
 4. Raise community awareness of the fish breeding program.

- Benefits**
- Income from water bodies not previously used for fish culture.

5.5 Conclusion

This chapter provides a framework which can guide economic recovery and development in Rekawa which is sustainable and sensitive to environment and community values. It is essential that some new forms of livelihood are started to reverse the cycle of poverty, dependence and resources degradation. Agriculture can be improved while aquaculture and tourism offer new alternatives. A theme is for people to become more self-reliant and involved in their own development than in the past.

PLAN IMPLEMENTATION

1.1 The Institutional Framework

Rekawa SAM Coordinating Committee

Natural resource management experiences in developing countries demonstrate that the participation of local communities is vital to the success of such activities. Recognizing this, an increasing number of natural resource management activities are designed to involve local communities. The Rekawa SAM plan reflects such policies which devolve responsibility to locally based authorities and community groups.

The overall planning of the Rekawa SAM activities is being coordinated by the Rekawa Special Area Management Coordinating Committee (RSAMCC). This is composed of central and local government officials and also representatives of key community groups. The Committee coordinates all activities that impact on the management area. The implementation of SAM activities will be carried out by various agencies and community groups as designated by the Committee (Figures 6.1 and 6.2). The Committee's primary responsibility is acting as a clearinghouse of information regarding the SAM plan development and its implementation. Beyond information clearing and specific agency and community roles, is the style of working together in a collaborative manner. Consultation, cooperation and voluntary action are at the core of progress and for implementation of the SAM Plan. The following is an agreed terms-of-reference for the RSAMCC:

- Reviews, approves and/or amends the draft Rekawa SAM plan;
- Acts as a coordinating body for interagency planning and implementing of Rekawa SAM activities;
- Facilitates the monitoring and evaluating of SAM activities;
- Develops policy guidelines specifically for the management of the Rekawa SAM site;
- Requests assistance from other government agencies as needed; and,
- Facilitates community participation in the Rekawa SAM planning and implementation process.

Important National Agencies

The Special Area Management approach was first proposed in *Coastal 2000: A Resource Management Strategy for Sri Lanka's Coastal Region* which was endorsed in 1994 by the Cabinet of Ministers.¹⁶ The management of coastal resources involves many government institutions. The primary management responsibility, however, rests with the Coast Conservation Department (CCD) presently within the Ministry of Fisheries and Aquatic Resources Development (MFARD), which is responsible for:

- Formulating and implementing coastal protection and management activities;
- Regulating development within the prescribed "coastal zone" (see below) through permits;
- Evaluating development project impacts through discretionary environmental impact assessments;
- Preparing and implementing the Coastal Zone Management Plan; and
- Conducting surveys in cooperation with other agencies.

The national Coastal Zone Management Plan (CZMP) approved by the Cabinet of Ministers in 1990, provides the framework to manage resources in the coastal zone. The revised CZMP of 1996 authorizes the development and implementation of SAM plans such as for Rekawa.⁵

In Rekawa, CCD plays a leading role in coordinating management activities within the SAM area. This situation tests CCD's broad interest in coastal zone management, as envisaged in *Coastal 2000*. Central to this process is Special Area Management.

Other government bodies, which have responsibilities within the coastal zone area, with a potential role in the Rekawa Lagoon SAM include:

- The Central Environmental Authority
- The Ceylon Tourist Board
- The Forest Department
- The Irrigation Department
- The Ministry of Fisheries and Aquatic Resources Development
- The National Aquatic Resources Agency
- Department of Wildlife Conservation

Local Government

A general government policy is to devolve responsibility to local authorities. In the present administrative framework, the Divisional Secretary (DS) is the unit of government best suited for this role in the activities of the Rekawa SAM site. The DS implements the development projects of the

Division and provides basic services to the inhabitants. The DS is a key facilitator of the SAM planning and implementation actions.

There are three District Committees and the District Environmental Agency (DEA) that have direct relevance to the resources and activities within the Rekawa area. The committees include Agricultural, Land Use and HIRDEP Coordinating Committees.

The District Agricultural Committee (DAC) is an important and powerful coordinating agency. Its membership includes members of Parliament, the Provincial Council and District heads of all government departments with the District Secretary serving as the Chairman. The DAC has been active and vocal about environmental issues in Rekawa.

HIRDEP has a District Coordinating Committee which reviews progress and discusses problems and issues in the implementation of the HIRDEP projects. Meetings are held quarterly and include all members of HIRDEP, District heads of departments and leading voluntary organizations. Like the DAC, the District Secretary is the Chairman.

Land use falls under the District Land Use Committee also known as the District Action Plan Committee for Land and Land Development. Members of this committee are the Secretary of Land and Land Development, District Land Officers, and District representatives of the Survey, Irrigation and Forest Departments. This technical body makes decisions such as planning reforestation projects.

Finally, the District Environmental Agency (DEA) has senior representatives of the Forest Department, Department of Wildlife Conservation, District Medical and Public Health officers, Education officers and the Central Environmental Authority (CEA). The main responsibilities of the Agency include creating awareness about environmental issues of pollution, soil management, and the discharge of toxic waste from paper and sugar factories. The DEA has legal support from the CEA and many of its projects are funded by HIRDEP.

Non-Governmental Organizations (NGOs)

The Women's Federation began in 1990 in Hambantota with a group of dedicated women workers. The Foundation proposes to establish organizations in each village and a Women's Development Federation at the District level. Several of these societies have been formed in the Medilla, Marakolliya, Medagama and Netolpitiya GN divisions of Rekawa. The NGOs have become increasingly active in the SAM process through voluntary action.

6 Plan Implementation

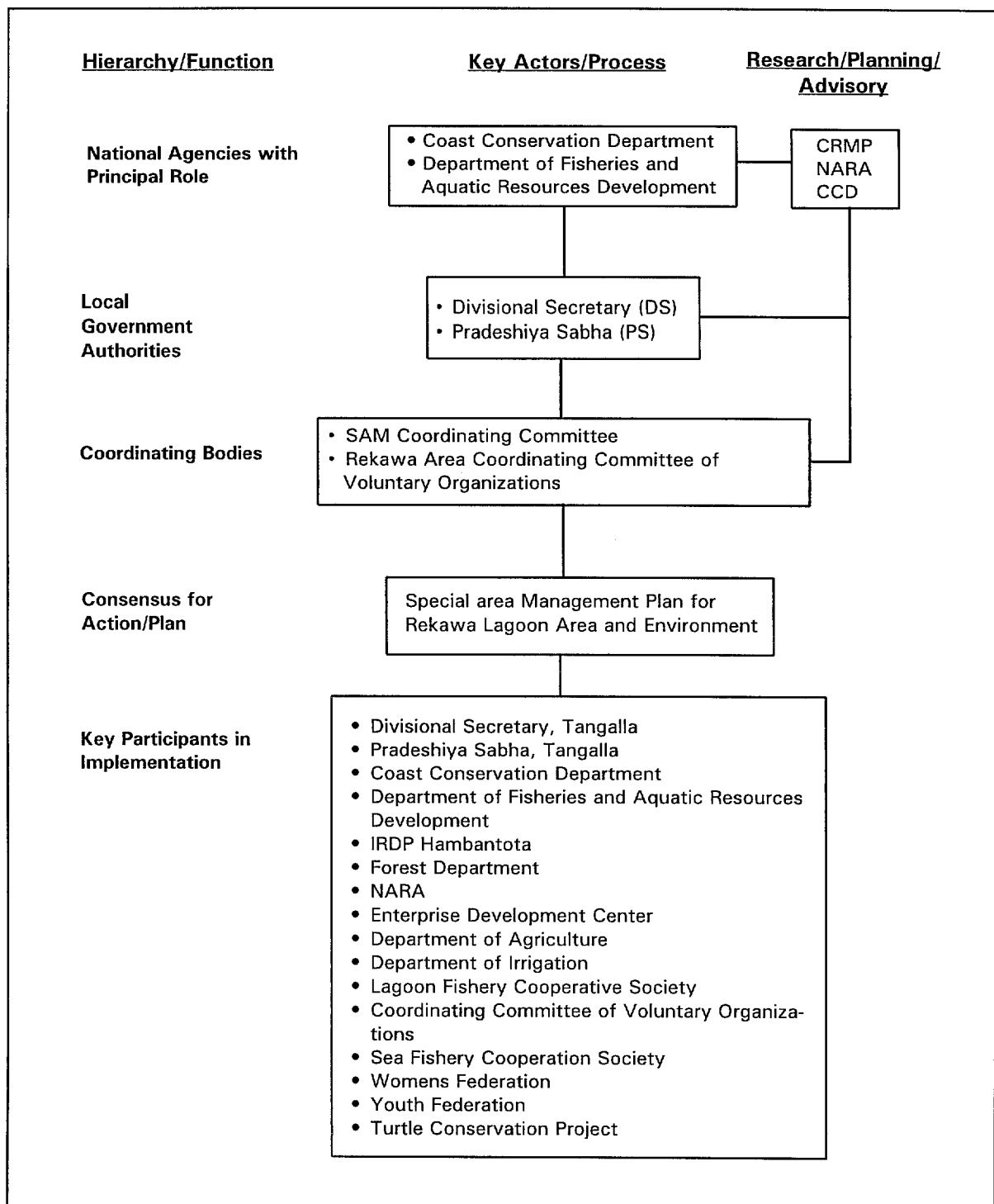


Figure 6.1 Institutional framework for planning and implementing the Rekawa Special Area Management Plan

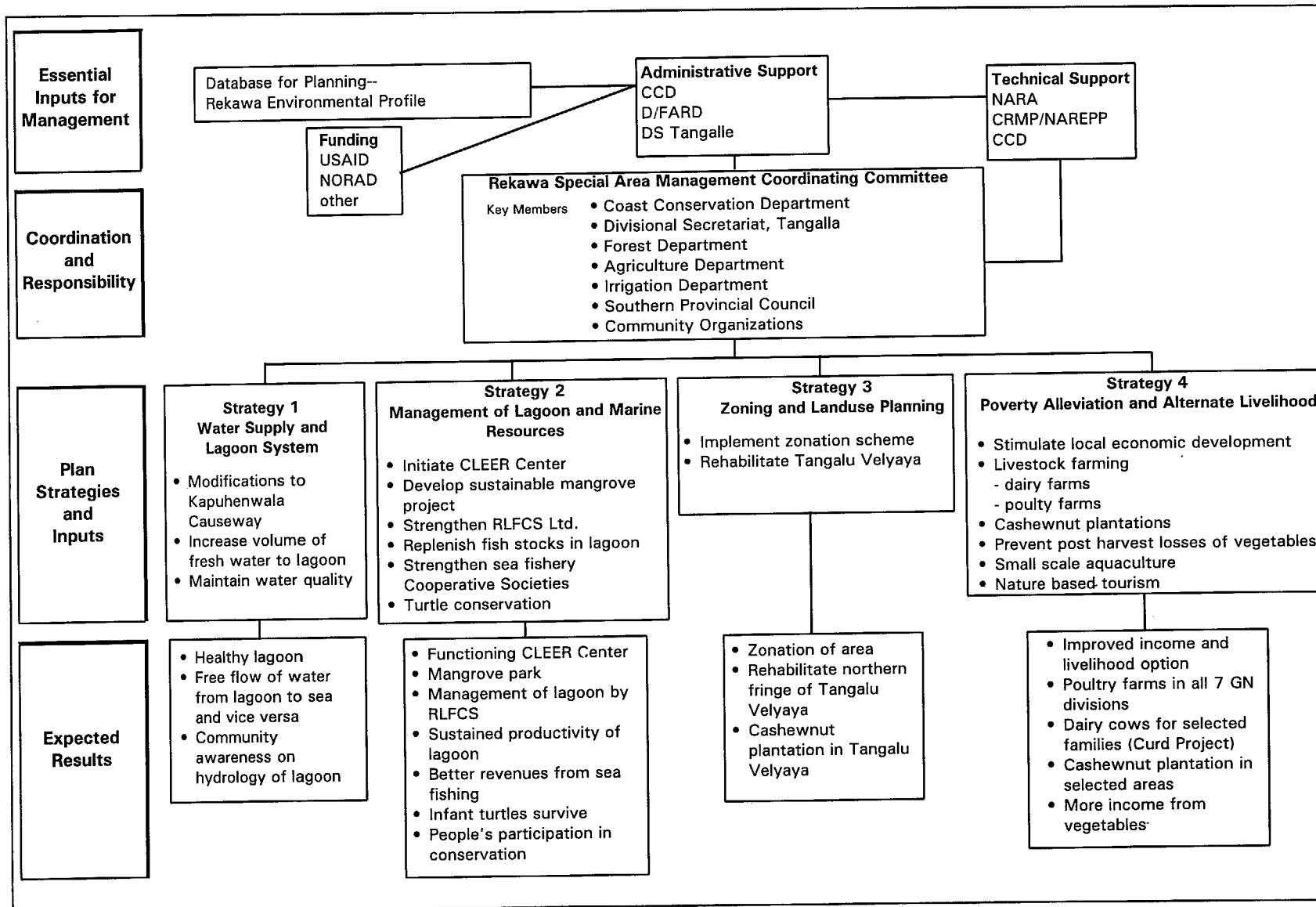


Figure 6.2 Roles, inputs and coordination for management and expected outputs

Community-Based Organizations (CBOs)

There are a number of community based cooperatives and other organizations in the Rekawa area and adjacent communities. The fisheries cooperatives, Cooperative Credit Societies (SANASA) and farmer organizations are among the more active.

The Fisheries Cooperative Societies are established at the level of the GN Divisions. The membership of these societies is presently confined to sea fishermen. The Rekawa lagoon fishermen have formed their own organization to be registered under the Cooperative Ordinance. The primary objective of the Rekawa Lagoon Fishery Cooperative Society is to take responsibility for the management of the lagoon.

Three farmer organizations in the Rekawa area are registered by the Commissioner of Agrarian Services who grants legal recognition and legal status.

Legal Framework

Sri Lanka has a number of laws regarding the use and protection of natural resources, that have particular relevance to the Rekawa Lagoon SAM site and its resources include:

The Seashore Protection Ordinance, Gazette No. 7710 (1929), banned the removal of coral, sand and other substances;

The Fauna and Flora Protection Ordinance, Gazette No. 8675 (1940), protects threatened and endangered wildlife including endangered sea turtles nesting on the Rekawa beaches;

The Fisheries Ordinance, Gazette No. 12304 (1961) bans the use of destructive fishing gear and supports sustainable fishing activities;

The Natural Heritage and Wilderness Act (1980) was amended in 1988 to require Environmental Impact Assessments and licenses for industries potentially producing air, water and/or land pollution;

The National Environmental Act No. 47 (1980) and Amendment No. 56 (1988) (a) established the CEA, and (b) made provision for the protection, management and enhancement of the environment, and for the prevention, abatement and control of pollution;

The National Aquatic Resources Agency Act No. 54 (1981) established NARA to ensure the application of science and technology to the conservation

of aquatic resources in the inland water, coastal wetlands and offshore areas, disseminate information, and provide advisory and consultant services;

The Coast Conservation Act No. 57 (1981) (a) requires CCD to develop a Coastal Zone Management Plan, (b) defines coastal zones to include some portion of the water areas of lagoons, estuaries and rivers, (c) established uniform procedures for permit applications for most development activities, (d) encouraged collaboration among various government agencies involved in research and development activities within the coastal zone, (e) authorized the Director of CCD to demolish unauthorized structures, and (f) established horizontal links between the law and other parallel legislation;

The 1988 Amendment to the Coast Conservation Act No. 57 of 1981 (a) authorized the Director of CCD to delegate powers, duties and functions to government agents or public officers of any administrative district which contains a portion of the coastal zone and allows police officers to prevent offences, (b) banned the mining, collecting, possessing storing, burning and transporting of coral, and the possessing of limestone kilns, (c) authorized the demolition of kilns and the seizure of boats engaged in illegal activities within the coastal zone, and (d) granted the public the right to use any beach;

The Forest Ordinance No. 3 (1945) Amendment No. 13 (1966) Act No. 13 (1988) makes illegal the harvesting, possession, sale and transport of timber without a permit; and,

The Marine Pollution Prevention Act No. 59 (1981) authorized the Marine Pollution Prevention Authority to prevent, reduce, and control pollution in Sri Lankan waters.

6.2 Summary of Objectives, Strategies and Actions

Table 6.1 and Figure 6.2 summarize the main contents of the management plan. Objectives, strategies and actions are listed with the responsible agency or community group. Priorities for implementation are those actions that can be carried out through community and local government action.

6.3 Implementation Time-frame, Rationale and Funding

The time frame for the implementation phase of the SAM plan is 5 years. Although the planning phase is still in progress, implementation of pilot projects is proceeding. These initial implementation activities help to achieve the broader management objectives and, more importantly, they provide incentive to community groups to participate. Because of the

6 Plan Implementation

overlapping nature of planning and implementing, the implementation phase can be considered as having started. The many ongoing actions at the field level summarized in Chapters 2-5 reflect the community and local government's commitment to plan implementation. This voluntary and collaborative base of action is essential to the long-term success of the SAM Plan. Table 6.1 shows the intended time-line for implementation of plan activities.

Funding for planning and the initial implementing activities is being provided by the CRMP. Additional funds for implementation are being sought from government budgets and other sources. For example, the HIRDEP is supporting the poultry enterprise development project and the Divisional Secretariat of Tangalla is providing much of the administrative support required to make the plan operative.

6.4 Summary

The Rekawa SAM Plan and process provides an opportunity to reverse the negative environmental and socio-economic trends caused by the lack of planning and management in coastal areas in many parts of Sri Lanka. The SAM approach, properly facilitated, encourages local community groups to become active participants in the process and to share in the benefits that result from project activities. Participation of local community groups in planning and management together with local and central government agencies is the key to the SAM approach.

The Rekawa SAM process is one of the first such efforts to be undertaken in Sri Lanka. In addition to the expected benefits of improved coastal resource management of the Rekawa area, the SAM process will provide valuable lessons for other such projects to be undertaken in the future. The challenge is great. Improved management of natural resources is one of the most important goals of developing countries. The SAM approach to resource management is an effective and sustainable way to help realize this goal.

Table 6.1 Summary of objectives, strategies and actions for implementation of the Rekawa Special Area Management Plan

Chapter 2. Water Supply to the Lagoon System							
Objectives: <ol style="list-style-type: none"> 1. Maintain and increase the volume of freshwater entering the lagoon system. 2. Remove and prevent obstructions to the natural fresh and sea water flow into and out of the lagoon. 3. Minimize the input of nutrients, pesticides, herbicides other toxic waste and sediments into the lagoon system. 							
Strategy	Actions	'95	'96	'97	'98	'99	Responsibility
1. Modify the Kapuhenwala causeway and construct a bridge with a span of at least 5 m at the deepest end of the channel, through the cooperation of the RDA, HIRDEP, DS and a engineering design team from the Peradeniya University (PU)	<ol style="list-style-type: none"> 1. Make soil test and complete a preliminary design 2. Modify preliminary design as required for final approval by RDA 3. Negotiate all approvals for a bridge construction with RDA and HIRDEP 4. Secure funding for bridge construction from HIRDEP 5. Let contract for bridge construction by HIRDEP and RDA 	○	○				CRMP HIRDEP PU RDA RSAMCC
2. Limit the volume of water which is retained for irrigation or other uses through coordination between the RSAMCC and DS, ID, HIRDEP and DA.	<ol style="list-style-type: none"> 1. Determine which irrigation tanks are not essential for irrigation and release water to the lagoon 2. Prevent any future construction on the three rivers which would further limit water entering the lagoon 3. Raise awareness of ID and DA officials about the importance of maintaining normal flow of fresh water into lagoon 	○	○	○	○	○	DA DS HIRDEP ID RSAMCC
3. Monitor lagoon water quality entering and in the lagoon and use findings to educate the farming community and to modify use practices through coordination with the DA, farming community and the assistance of NARA, Colombo University (CU) and HIRDEP.	<ol style="list-style-type: none"> 1. Establish water quality monitoring points in the river and the lagoon and conduct a study for two years by NARA and CU 2. Determine primary sources of pollution entering the lagoon and mitigation actions required 3. Conduct a survey of farmer chemical use practices 4. Conduct an education programme on minimizing use of chemicals in paddy farming areas affecting the lagoon by DA 		○	○			DA DS NARA

Chapter 3. Management of Lagoon and Marine Resources

- Objectives:
1. Protect the old growth mangrove forest in core areas and zone other mangroves for sustainable development
 2. Maximize the income of fishermen by regulating fishing activities and replenishing the lagoon with fish and shrimp stocks
 3. Protect coral reefs, beaches and sea turtles
 4. Ensure maximum participation of the people in the management of their coastal natural resources

Strategy	Actions	'95	'96	'97	'98	'99	Responsibility
1. Initiate the Coastal and Lagoon Environmental Education and Research (CLEER) Center to provide a financially sustainable education, training, management and research facility (see figure 3.2) through coordination by the proposed steering committee.	<ol style="list-style-type: none"> 1. Reach agreement on the functions, organization and concept of the CLEER Center and the composition of its Steering Committee through coordination of the Presidential Task Force for Southern Area Development 2. Finalize the administration, activities, functions, facilities required, affiliation to universities, funding and institutional development 3. Obtain ten acres of land suitable for the Center 4. Obtain funding for construction and to begin operation by Steering Committee, M/FARD and M/TEWA 	○ ○ ○ ○	○ ○ ○ ○			○	CCD CRMP DS M/FARD M/TEWA NORAD RSAMCC
2. Develop and implement a zonation scheme and sustainable use plan for mangrove resources through the collaboration of the Forest Department, CCD, RSAMCC, HIRDEP, the RLFCS and other community groups	<ol style="list-style-type: none"> 1. Confirm map locations of prime mangrove stands as shown in Figure 1.2 for strict protection from any use 2. Confirm areas of mixed mangrove vegetation where limited uses will be permitted 3. Form an agreement between the FD and community groups on joint management of the mangrove resources 4. Formalize management agreement by declaring area, a sanctuary or forest reserve with limited use permits 	○ ○ ○	○ ○ ○	○ ○ ○		○ ○	CCD FD HIRDEP NARA RLFCS RSAMCC
3. Strengthen and expand the Lagoon Fishery Cooperative Society (RLFCS) for lagoon fishery and resources management , by encouraging the RLFCS to take management responsibility for all lagoon resources and by implementing management guidelines for the lagoon which are endorsed by NARA, DFARD.	<ol style="list-style-type: none"> 1. Formally adopt the fishery management guidelines through RLFCS consensus and DFARD approval 2. Increase the membership of the RLFCS to 80% of Rekawa residents who depend on the lagoon for livelihood 3. Adopt the guidelines for sustainable use of the mangrove resources of strategy 1 by RLFCS and FD 4. Continue education programs on the lagoon ecology, fisheries and resource management 5. Train the RLFCS in accounting, monitoring of fish catch, leadership, conducting meetings, keeping records, selection of officers in the society and in liaison with government officials 	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○	D/FARD FD NARA RLFCS

Chapter 3. Management of Lagoon and Marine Resources (contd..)

Strategy	Actions	'95	'96	'97	'98	'99	Responsibility
4. Replenish the lagoon by introducing fish fingerlings and shrimp larvae with assistance from the Inland Fisheries Division of the DFARD and the Zoology Department of the University of Colombo, NARA, DFARD, DFEO Tangalla.	<ol style="list-style-type: none"> 1. RLFCS obtain from NARA, a list of brackish water fish to be introduced to the lagoon 2. RLFCS through the DFEO Tangalla obtain stocks of fingerlings from the Inland Fisheries Division of the DFARD 3. RLFCS participate actively in the Lagoon Enhancement Prawn Fishery Project by the Department of Zoology of the University of Colombo 	○	○				CU D/FARD DFEO NARA RLFCS RSAMCC
5. Strengthen and expand the Sea Fishery Cooperative Societies for nearshore fishery and resources management by encouraging the societies to take management responsibilities for all sea fishery resources which are endorsed by the DFARD for implementation by the Societies with the assistance of NARA, DFEO, RLFCS and the RSAMCC	<ol style="list-style-type: none"> 1. Draft fishery management guidelines with societies through a consensus process as used for the RLFCS and include the same categories for regulations for fisheries management 2. Increase the membership of the societies to include at least 80 percent of the Rekawa residents dependent on nearshore waters through DFEO 3. Continue education programs on marine and lagoon ecology and on fisheries and resource management for the SFCS with assistance from NARA, DFEO and the CLEER Center 4. Train society members for better management and performance 5. Liaison with RLFCS on pertinent conservation matters of shared interest through the RSAMCC 	○	○				CLEER Center D/FARD DFEO RLFCS RSAMCC SFCS
6. Form a community based organization for sea turtle conservation and related conservation issues which is affiliated with a national organizations (NARA, Colombo University, TCP, other NGO's)	<ol style="list-style-type: none"> 1. Conduct participatory research on the sea turtle nesting conservation problem in Rekawa through facilitation by TCP, NARA and community groups 2. Formalize community based organization for sea turtle conservation 3. Liaison with local resorts to serve as "turtle guides" for visitors or provide other ecotourism services 4. Designate a turtle nesting sanctuary area 5. Design and implement an incentive system to ensure that eggs laid within sanctuary are hatched in situ 6. Continue education programs on sea turtle conservation 	○	○	○	○	○	CCD CU DFEO DS DWLC NARA NGOs RSAMCC TCP

Chapter 4. Zoning and Land Use Planning

- Objectives:
1. Demarcate use and resource areas (zones) in the Rekawa planning area
 2. Periodically monitor area activities and resources
 3. Set optimal level of development in aquaculture and tourism areas
 4. Rehabilitate the Tangalu Velyaya land

Strategy	Actions	'95	'96	'97	'98	'99	Responsibility
1. Implement the use and resource areas which designates lagoon, mangrove, agriculture, aquaculture, tourism and shoreline zones as shown in Figure 4.4 through collaboration of government agencies with community organizations in a process which formalizes and marks boundaries for all the zones with assistance of FD, DA, HIRDEP, DS, CCD, DWLC, DEFO, NARA and RSAMCC.	<ol style="list-style-type: none"> 1. Review and formalize the various use area boundaries 2. Ensure that the mangrove management plan for strategy 2, chapter 3 is consistent with use area designations 3. Determine sea turtle nesting sanctuary through DWLC, TCP and community groups involved 4. Refine shoreline use zones for fishing craft access and tourism 5. Review aquaculture development areas and ensure compatibility with community and local government desires 	○	○	○			CCD RSAMCC DA FD DWLC TCP DS NARA
2. Rehabilitate the saline land of Yarawela Yaya and Patha Pallama Welyaya through experimenting with various salt tolerant crops and the involvement of local youth groups with the assistance of the DA, HIRDEP and the NORAD Enterprise Development Center.	<ol style="list-style-type: none"> 1. Develop proposal for youth farm of 50 ha in Yarawela Yaya and Patha Pallama Welyaya with DA, HIRDEP, NORAD, DS and RSAMCC 2. Secure funding support for a 3 year experimental program through HIRDEP 3. Obtain funding for the farms program and for rehabilitation of irrigation system. 4. Take action under the Agrarian Services Act regarding uncultivated lands which are an obstacle to development of Yarawela Yaya. 	○	○				DA DS EDC HIRDEP NORAD RSAMCC

Chapter 5. Poverty Alleviation and Alternate Livelihood							
objectives: 1. Increase self reliance in the community to reduce the number of families dependent on public assistance programs 2. Increase agriculture productivity and reduce post harvest losses 3. Improve productivity of existing employment to gain higher income 4. Improve budgeting and management of household income 5. Test fresh and brackish water aquaculture							
Strategy	Actions	'95	'96	'97	'98	'99	Responsibility
1. Stimulate local economic development and self reliance through education, training and community organization focused on resource management, household budgeting and management livelihood skills, leadership, motivation and environmental awareness through continuation of the catalyst program with field staff working in collaboration with CCD, DS, RSAMCC, HIRDEP, DFARD and community organizations.	1. Conduct community awareness programs which build understanding about peoples relation to their natural resources through the catalysts and schools 2. Organize and strengthen all the community based organizations to better manage their livelihoods, households and natural resources 3. Continue community GN catalyst program to support natural resources management and new livelihood projects with support from the DS, HIRDEP and CCD 4. Conduct skills training programs in agriculture, fish processing and marketing, mechanics, aquaculture or others 5. Implement strategies 3 and 4 of Chapter 3 to strengthen the RLFCS and sea fishery societies in managing their resources 6. Implement strategy 5 of Chapter 3 to form a community-based organization for sea turtle conservation	○	○	○	○	○	CCD CRMP DA DS DFEO RLFCS RSAMCC SFCS TCP
2. Implement agriculture income projects of poultry raising and cashew tree planting/ livestock farming with assistance from the Enterprise Development Center of NORAD and HIRDEP using community organization techniques and catalyst assistance in coordination with DA and DS	1. Find interested participants from the community and conduct awareness program about potential of poultry/livestock and cashew growing through involvement of the catalysts 2. Select and train farmers in poultry/livestock and cashew farming 3. Construct needed facilities through volunteer action 4. Obtain small loans as required to purchase supplies and monitor their use with assistance of HNB and HIRDEP 5. Support farmers with technical, marketing and moral support to carry them through several farming cycles	○	○	○	○	○	Bank DA DS HIRDEP RSAMCC NORAD
3. Raise awareness among farmers of post harvest losses of vegetables and fruits in collaboration with the DA, NORAD, DAS, ARTI, DS and RSAMCC	1. Conduct a study on post harvest losses of vegetables and fruits with the assistance of ARTI 2. Conduct seminars and workshops for farmers on post harvest losses of vegetables and fruits 3. Organize a pilot project for the processing of vegetables and fruits.		○	○	○	○	ARTI CRMP CISIR DA EDC NORAD RSAMCC

Strategy	Actions	'95	'96	'97	'98	'99	Responsibility
<p>4. Actively recruit investment in development of nature-based tourism which is environmentally sound and includes community participation through contacts with local or national companies or individuals in collaboration with the Ceylon Tourist Board, and close coordination with community and local government</p>	<ol style="list-style-type: none"> 1. Advertise the Rekawa area as a site which is open to environmentally friendly development which includes community participation in the process 2. Invite potential investors to discuss plans at meetings of the RSAMCC and provide background information on the site with copies of this plan 3. Request investors to make an Initial Environmental Examination (IEE) which also includes guidelines for development presented in this plan and the <i>Coastal Environmental Profile of Rekawa Lagoon, Sri Lanka</i> 4. Arrange for affected community groups to have meetings and discussions with the potential developer 5. Hold regular meetings to discuss progress on a development and its impact on the environment and community during and after completion 		○	○	○	○	CU CTB DS EDC HIRDEP NARA RSAMCC
<p>5. Test and promote fresh water fish breeding in village tanks of the Rekawa area with the assistance of DFARD, NARA, Colombo University and DS</p>	<ol style="list-style-type: none"> 1. Identify the village tanks in the Rekawa area suitable for fresh water fish breeding 2. Identify the fish species suitable for breeding in the village tanks and obtain fingerlings from the Inland Fisheries Division of DFARD 3. Organize a committee of community leaders to monitor and promote the fish breeding program for each village tank 4. Raise community awareness of the fish breeding program 		○				CU DS ID D/FARD DFEO RSAMCC NARA

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6.1 වගුව

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කොව්	-	කොළඹ විශ්වවිද්‍යාලය	ලවිකාප	-	ලංකා විද්‍යාත්මක සහ කර්මාන්ත පර්යේෂණ ආයතනය
කෘදේ	-	කෘෂිකර්ම දෙපාර්තමේන්තුව	ලසම	-	ලංකා සංචාරක මණ්ඩලය
ගොපඟ	-	ගොවි කටයුතු පර්යේෂණ සහ අභ්‍යාස ආයතනය	වපිදේ	-	වනජීවී සංරක්ෂණ දෙපාර්තමේන්තුව
ජාපසනි	-	ජාතික ජලජ සම්පත් නියෝජිතයානනය	වසනේ	-	ව්‍යවසාය සංවර්ධන කේන්ද්‍රය
දිධිති	-	දීප්තික ධීවර ව්‍යාප්ති නිලධාරී	වසදේ	-	වන සංරක්ෂණ දෙපාර්තමේන්තුව
ධීපදේ	-	ධීවර සහ ජලජ සම්පත් දෙපාර්තමේන්තුව	වාදේ	-	වාරිමාර්ග දෙපාර්තමේන්තුව
ධීපසඟ	-	ධීවර සහ ජලජ සම්පත් සංවර්ධන අමාත්‍යාංශය	වෙකපප කේන්ද්‍රය	-	වෙරළබඩ සහ කළු පාරිසරික අධ්‍යයන පර්යේෂණ කේන්ද්‍රය
ජේවී	-	ජේරාදෙණිය විශ්වවිද්‍යාලය	වෙසකව	-	වෙරළ සම්පත් කළමනාකරණ ව්‍යාපෘතිය
ප්‍රාලේ	-	ප්‍රාදේශීය ලේකම්	වෙසදේ	-	වෙරළ සංරක්ෂණ දෙපාර්තමේන්තුව
ප්‍රපවඟ	-	ප්‍රවාහණ පරිසර සහ වනිතා කටයුතු අමාත්‍යාංශය	හග්‍රාසව	-	හම්බන්තොට ජනාබද්ධ ග්‍රාමීය සංවර්ධන ව්‍යාපෘතිය
මාසඟ	-	මාර්ග සංවර්ධන අධිකාරිය	හැනැබෑ	-	හැටන් නැෂනල් බැංකුව
මුධසස	-	මුහුදු ධීවර සමුපකාර සමිතිය	රැවිසක	-	රැකව විශේෂ කළමනාකරණ ප්‍රදේශ සම්බන්ධීකරණ කමිටුව
රනොස	-	රාජ්‍ය නොවන සංවිධාන			

මේ කළමනාකරණ සැලසුම පිළියෙළ කරන ලද්දේ වෙරළ සංරක්ෂණ දෙපාර්තමේන්තුවේ, ජාතික ජලජ සම්පත් නියෝජිතයානනයේ සහ වෙරළ සම්පත් කළමනාකරණ ව්‍යාපෘතියේ සහය ඇතිව රැකව විශේෂ කළමනාකරණ ප්‍රදේශ සම්බන්ධීකරණ කමිටුව විසිනි.

2 පරිච්ඡේදය- කළපු පද්ධතියට පල සැපයුම

- අරමුණු.**
- 1 කළපු පද්ධතියට ඇතුළු වන මීටරිංග ප්‍රමාණය පවත්වාගෙන යාම සහ වැඩ කිරීම
 - 2 කළපු පද්ධතිය තුළට සහ ඉන් පිටතට ස්වාභාවික ලෙස මීටරිංග සහ මුහුදු පලය ගැලීමට ඇති බාධක ඉවත් කිරීම සහ වැළැක්වීම
 - 3 කළපු පද්ධතිය තුළට පෝෂක ද්‍රව්‍ය පිළිබෝධිතයක වෙනත් විෂ අපද්‍රව්‍ය සහ අවසාදන ගලා යාම අවම කිරීම

ක්‍රමෝපාය	ක්‍රියාකාරකම්	95	96	97	98	99	වගකීම
1 මාසය ගනුයුතු ප්‍රාග්ධන සහ පේළි ඉවැටීමට දැනුවත් කණ්ඩායමක් සමඟ සහයෝගයෙන් කළමනාකරණ දීමානවක වැඩක් කිරීම සහ පල ප්‍රතිඵලය ගැනීම මඟින් මීටරිංග වැඩ වැඩි වීමට හේතු වන ප්‍රධාන සහිත ප්‍රාග්ධන ඉවැටීම්	<ol style="list-style-type: none"> 1 පස් පරිවෘත්ත සහ මුහුදු සැලසුමක් පිළියෙල කිරීම 2 මුළුක සැලසුම මාසය ඇවසන් (අනුමැතිය සඳහා) සුදුසු ලෙස සංශෝධනය කිරීම 3 ප්‍රාග්ධන ඉවැටීම් සඳහා වූ සියලුම අනුමැතිය කිරීම් සම්බන්ධයෙන් මාසය සහ ගනුයුතු සමහර කාර්යයන් කිරීම 4 ප්‍රාග්ධන ඉවැටීම් සඳහා ගනුයුතු වෙනත් මූල්‍ය ප්‍රතිපාදන ලබා ගැනීම 5 මාසය සහ ගනුයුතු වෙනත් ප්‍රාග්ධන ඉවැටීම් සඳහා වූ කාර්යයන් සම්බන්ධයෙන් පිරිනැමීම 	0	0				වෙසකම් ගනුයුතු පේළි මාසය රැකීම
2 රැකියා සහ ප්‍රාග්ධන අතර ද වාද ගනුයුතු සහ කාල අතර ද සම්බන්ධීකරණයෙන් වාර්ෂික කටයුතු සහ වෙනත් පරිහරණ සඳහා වැඩා ගන්නා පල ප්‍රමාණය සීමා කිරීම	<ol style="list-style-type: none"> 1 වාර්ෂික කටයුතු සඳහා අනවශ්‍ය නොවන වැඩ කටයුතු සඳහා වාර්ෂික කටයුතු සඳහා වැඩා ගන්නා පල ප්‍රමාණය සීමා කිරීම 2 කළපුට පලය ගලා යාම අවම වැඩි කිරීමට හේතු වන පල මූලාශ්‍ර පාලනය වැඩි කිරීම සඳහා වැඩ කිරීම 3 කළපුට ස්වාභාවික ලෙස පලය ගලා යාම අවම වැඩි කිරීමට හේතු වන වාද සහ කාල නිලධාරීන්ගේ දැනුම වැඩි කිරීම 	0	0	0	0	0	කාල ප්‍රාග්ධන වාද රැකීම
3 කළපුට ඇතුළු වන පලය ද කළපු තුළ පලය ද භක්තිය සුපරික්ෂණය සහ ඉන් සහාය ගෙන කරනු ලබන වෙනත් වැඩ කටයුතු සඳහා ද පාලනය කොට සහ ගනුයුතු සහ ඇතිව කාල සහ වාද වැඩා ගන්නා සම්බන්ධීකරණයෙන් පල පරිහරණ වැඩා වෙනස් කිරීම සඳහා ද දැනුවත් කර ගැනීම	<ol style="list-style-type: none"> 1 කිරීම කොට කළපුට ද පල භක්තිය සුපරික්ෂණය සම්බන්ධීකරණය සහ පාලනය කොට වෙනත් වැඩ කටයුතු සඳහා පාලනය කිරීම 2 කළපුට ඇතුළු වන ප්‍රාග්ධන දූෂක ප්‍රභව නිර්ණය කිරීම සහ වැඩා පහත ගොඩනැගීම ක්‍රියාකාරකම් නිර්ණය කිරීම 3 වෙනත් කාල වසරයක දී පරිහරණ පිළියෙන් පිළිබඳ සම්බන්ධයෙන් පාලනය කිරීම 4 කළපුට බලපාන කුණු ප්‍රදේශවල කාල වසරයක දී පරිහරණය ඇති කිරීම පිළිබඳ සම්බන්ධීකරණය සම්බන්ධීකරණය කිරීම 	0	0	0	0	0	කාල ප්‍රාග්ධන පාලනය

3 පරිච්ඡේදය - කළුපු සහ සමුද්‍ර සම්පත් කළමනාකරණය

- ඇරමුණු.** 1 මධ්‍ය ප්‍රදේශවල කාලාන්තරයක් තිස්සේ වැඩෙන කඩොලාන කැලව් ආරක්‍ෂා කිරීම සහ තිරසාර සංවර්ධනය උදෙසා අනෙක් කඩොලාන කැලව්වලට වෙන් කිරීම
 2 ධීවර කටයුතු පාලනය කිරීමෙන් සහ මත්ස්‍ය ඉස්සන් පැටවු කළුපු වේ නැවත භාවිත කිරීම මගින් ධීවරයන්ගේ ආදායම් උපරිම කිරීම
 3 හිරිගල් පර වෙරළ සහ කැස්බඩවුන් ආරක්‍ෂා කිරීම
 4 ස්වකීය වෙරළබඩ ස්වාභාවික සම්පත් කළමනාකරණයේ දී මහජනයාගේ සහභාගිත්වය උපරිම මට්ටමෙන් පවතින බව තහවුරු කිරීම

ක්‍රමෝපාය	ක්‍රියාකාරකම්	95	96	97	98	99	වගකීම	
1 යෝජිත මෙහෙයුම් කමිටුවේ සම්බන්ධීකරණය යටතේ මූල්‍ය වශයෙන් තිරසාර වූ අධ්‍යාපන අභ්‍යාස කළමනාකරණ සහ පර්යේෂණ පහසුකම් සැපයීම පිණිස වෙරළබඩ සහ කළුපු පරිසර අධ්‍යාපන සහ පර්යේෂණ වෙනම පා කේන්ද්‍රයක් ඇරඹීම (3.2 රූපය බලන්න)	1 දකුණු ප්‍රදේශය සංවර්ධනය පිළිබඳ ප්‍රායෝගික කාර්ය බලකායේ සම්බන්ධීකරණය යටතේ කේන්ද්‍රය සඳහා වූ සංකල්පමය සැලසුම් කාර්ය පටිපාටිය සහ සංවිධානය පිළිබඳවත් මෙහෙයුම් කමිටුවේ සාමාජිකත්වය පිළිබඳවත් අනුගතවියට පැමිණීම 2 පරිපාලන ක්‍රියාකාරකම් කාර්ය පටිපාටිය පවත්වා ගැනීම සහ පාලන ක්‍රියාකාරකම් විශ්ලේෂණය/වැඩිදියුණු කිරීම ප්‍රතිපාදන සැපයීම සහ පාලන ක්‍රියාකාරකම සංවර්ධනය යනාදිය ගැන අවසන් අනුගතවියට පැමිණීම 3 කේන්ද්‍රය සඳහා යෝජ්‍ය අක්කර 10ක ඉඩමක් ලබා ගැනීම 4 කේන්ද්‍රය ඉදිකිරීම සඳහා ප්‍රතිපාදන ලබා ගැනීම සහ මෙහෙයුම් කමිටුව, ධීවර ප්‍රවේශ මගින් එහි කටයුතු ආරම්භ කිරීම	0	0					වෙසඳ වසඳ ප්‍රාග් ධීවර ප්‍රවේශ නොසති රැකියාව
2 වසඳ, වෙසඳ, රැකියාව, රැකියාව සහ අනෙක් ප්‍රජා කණ්ඩායම් හා සහයෝගීතාවෙන් කඩොලාන සම්පත් සඳහා කැලව් වෙන් කිරීමේ වැඩපිළිවෙළක් ද තිරසාර පරිහරණ සැලසුමක් ද සකස් කිරීම සහ ක්‍රියාත්මක කිරීම	1 කිහිප හෝ පරිහරණයකින් දැඩි ලෙස ආරක්‍ෂා කර ගැනීම සඳහා 12 රූපයේ පෙන්වා ඇති පරිදි ප්‍රවේශයේ කඩොලාන ගොනු සිතියම් ගත කර ඒවායේ පිහිටීම සනාථ කර ගැනීම 2 සීමාසහිත පරිහරණ කටයුතු සඳහා අවසර දීම හැකි මිල කඩොලාන ව්‍යාප්තය ප්‍රදේශ සනාථ කර ගැනීම 3 කඩොලාන සම්පත් ඒකාබද්ධ ව කළමනාකරණය සම්බන්ධයෙන් වසඳ සහ ප්‍රජා කණ්ඩායම් අතර ගිවිසුමක් වීම් කිරීම 4 සීමාසහිත පරිහරණ අවසර පත්‍ර ක්‍රමයක් සහිත ව එන රක්ෂිතයක් ලෙස මේ ප්‍රදේශය ප්‍රකාශයට පත් කිරීමෙන් කළමනාකරණ ගිවිසුම ස්ථාපිත කිරීම	0	0	0				වෙසඳ වසඳ භූමිකාව ප්‍රවේශ රැකියාව රැකියාව
3 සියලු කළුපු සම්පත් සම්බන්ධයෙන් කළමනාකරණ වගකීම් දැරීමට රැකියාව දිරිමත් කිරීමෙන් ද කළුපු සඳහා පාලක ධීවර දැඩි විසින් අනුමත තෙරයකු කළමනාකරණ උපදෙස් මාලා ක්‍රියාත්මක කිරීමෙන් ද කළුපු ධීවර කර්මාන්තයේ සම්පත් කළමනාකරණයට උදෙසා රැකියාව දිරි ගැන්වීම සහ ව්‍යාප්ත කිරීම	1 රැකියාව අනුමතව සහ දැඩි අනුමතව සහිත ව ධීවර කළමනාකරණ උපදෙස් මාලාවක් මුලික වශයෙන් පිළිගැනීම 2 පිටතෝපාය සඳහා කළුපුවෙන් රැකෙන රැකව පදිංචිකරුවන්ගෙන් 80%ක් දක්වා නියෝජනය වන පරිදි රැකියාව සාමාජිකත්වය වැඩි කිරීම 3 මේ 3 පරිච්ඡේදයේ 1 වැනි ක්‍රමෝපායේ පරිදි කඩොලාන සම්පත් තිරසාර පරිහරණය සඳහා වූ උපදෙස් මාලා රැකියාව සහ වසඳ විසින් පිළිගනු ලැබීම 4 කළුපු පරිසර විද්‍යාව, ධීවර කර්මාන්තය සහ සම්පත් කළමනාකරණය සම්බන්ධයෙන් අධ්‍යාපන වැඩසටහන් අඩංගු ව ක්‍රියාත්මක කිරීම 5 ගිණුම්කරණය, මත්ස්‍ය ඇල්ලුම සුපරීක්ෂණය, නායකත්වය, රැස්වීම් පැවැත්වීම, වාර්තා පවත්වාගෙන යාම සමඟ නිලධාරීන් තෝරා ගැනීම සහ රජයේ නිලධාරීන් සමඟ සම්බන්ධතා පැවැත්වීම සම්බන්ධයෙන් රැකියාව වෙත ප්‍රවේශයක් ලබාදීම	0	0	0	0	0		දැඩි ධීවර පාලක රැකියාව

3 පරිච්ඡේදය - කළුපු සහ සමුදු සම්පත් කළමනාකරණය (කලින් පිටුවෙන්)

ක්‍රමෝපාය	ක්‍රියාකාරකම්	95	96	97	98	99	වගකීම
<p>4 ධීවර භෞතික ධීවර අංශයේ කොළි සත්ත්ව විද්‍යා අංශයේ පාපසනි ධීවර භෞතික දිවිනි සහය ඇතිව මාළු පැටවුන් සහ ඉස්සන් කීටයන් හැන්පත් කිරීමෙන් කළුපුවේ අඩුපාඩු පිරවීම</p>	<p>1 කළුපුවට හඳුන්වාදිය හැකි කිවුල් දිය මත්ස්‍යයන් හේ නාමාවලියක් පාපසනි වෙතින් රැකබස ලබා ගැනීම</p> <p>2 භෞතික දිවිනි මගින් ධීවර භෞතික ධීවර අංශය වෙතින් මාළු පැටවුන් හෝ රැකබස ලබාගැනීම</p> <p>3 කොළි සත්ත්ව විද්‍යා අංශයේ කළුපුව දියුණු කිරීමේ ඉස්සන් ධීවර ව්‍යාපෘතියට රැකබස ක්‍රියාකාරී ලෙස සහභාගිවීම</p>	0	0	0	0	0	කොළි ධීවර දිවිනි පාපසනි රැකබස
<p>5 පාපසනි දිවිනි රැකබස රැවසක සහාය ඇතිව මුඩසස මගින් ක්‍රියාත්මක කිරීමට ධීවර භෞතිකව ලත් සියලු මුහුදු ධීවර සම්පත් සම්බන්ධයෙන් කළමනාකරණ වගකීම් භාරගැනීම සඳහා එකී සමීක්ෂණ කිරීම මගින් වෙරළාශ්‍රිත ධීවර කර්මාන්තය සහ සම්පත් කළමනාකරණය උදෙසා එකී සමීක්ෂණ වැරදිවීම සහ ව්‍යාප්ත කිරීම</p>	<p>1 රැකබස ඒකීන් භාවිතා කෙරෙන සම්මුතියකට පැමිණීමේ ක්‍රියාවලිය මගින් මුඩසස සමග ධීවර කළමනාකරණ උපදෙස් මාලාවක් සැලසුම් කිරීම සහ ධීවර කළමනාකරණ රෙගුලාසි සඳහා ඒ උපදෙස් මාලාව යොදා ගැනීම</p> <p>2 පීවනෝපාය සඳහා හොඳම වූ මුහුදේ ධීවර කටයුතු වලින් සැපයෙන රැකව පදිංචිකරුවන්ගෙන් අඩු වශයෙන් 80%ක් නියෝජනය වන පරිදි දිවිනි මගින් මුඩසස සාමාජිකත්වය වැඩි කිරීම</p> <p>3 පාපසනි දිවිනි වෙත පවත්වන 80% ක් සහාය ඇතිව සමුදු සහ කළුපු පරිසර විද්‍යාව පිළිබඳ ව ද මුඩසස සඳහා ධීවර කර්මාන්තය සහ සම්පත් කළමනාකරණය පිළිබඳ ව ද අධ්‍යාපන වැඩසටහන් අඩවි ව පැවැත්වීම</p> <p>4 මනා කළමනාකරණයක් සහ ක්‍රියාකාරීත්වයක් සඳහා මුඩසස සාමාජිකයන් පුහුණු කිරීම</p> <p>5 හවුල් ප්‍රතිලාභවලට අදාළ පාරිසරික කරුණු පිළිබඳ ව රැවසක හරහා රැකබස සමග සම්බන්ධතා පැවැත්වීම</p>	0	0	0	0	0	වෙත පවත්වන ධීවර දිවිනි රැකබස මුඩසස
<p>6 පාපසනි කොළි කැසව හෝ වෙනත් රනොස වැනි පාභික සංවිධානයක් සමග අනුබද්ධ ව කැස්බෑ සංරක්ෂණය සහ ආශ්‍රිත සංරක්ෂණ ප්‍රයත්න උදෙසා ප්‍රජා මූලික සංවිධානයක් පිහිටුවීම</p>	<p>1 කැසව පාපසනි සහ ප්‍රජා කණ්ඩායම්වල පහසුකම් මගින් රැකව කැස්බෑ කැඳලි සංරක්ෂණ ගැටලුව සම්බන්ධයෙන් සහභාගිත්ව පර්යේෂණ පැවැත්වීම</p> <p>2 කැස්බෑ සංරක්ෂණය සඳහා ප්‍රජා සංවිධානයක් පිහිටුවීම</p> <p>3 සංචාරකයන් සඳහා කැස්බෑ මග පෙන්වන්නන් වශයෙන් ක්‍රියාකාරීව ප්‍රදේශයේ කුඩා හෝටල සමග සම්බන්ධතා පැවැත්වීම හෝ වෙනත් පාරිසරික සංචාරක සේවා සැපයීම</p> <p>4 කැස්බෑ කැඳලි ගැනීමේ අභ්‍යන්තර ප්‍රදේශයක් නම් කිරීම</p> <p>5 අභ්‍යන්තර තුළ දමන කැස්බෑ ඒකීන් ඒ ස්ථානයේ දීම රැක්කවීම සහතික කිරීම පිණිස දිරිගැන්වීමේ ක්‍රමයක් සැලසුම් කිරීම සහ ක්‍රියාත්මක කිරීම</p> <p>6 කැස්බෑ සංරක්ෂණය පිළිබඳ අධ්‍යාපන වැඩසටහන් අඩවි ව ක්‍රියාත්මක කිරීම</p>	0	0	0	0	0	කොළි දිවිනි ප්‍රාදේශීය පාපසනි රනොස රැවසක කැසව

4 පරිච්ඡේදය - කලාප වෙන් කිරීම සහ ඉඩම් පරිහරණ සැලසුම් කිරීම

- අරමුණු**
- 1 රැකව වීගේම කළමනාකරණ ප්‍රදේශයේ පරිහරණ කලාප සහ සමපත් කලාප ලකුණු කිරීම
 - 2 කලාපවල ක්‍රියා සහ සමපත් වාරික ව සුපරික්ෂණය
 - 3 පලපිටි රෝපණ ප්‍රදේශවල සහ සංචාරක ප්‍රදේශවල සංවර්ධනයේ ප්‍රශස්ත මට්ටමක් පිළියෙළ කිරීම
 - 4 තංගලු වෙල්ලයාගේ ගම්පුනරාජනම්පාය

ක්‍රමෝපාය	ක්‍රියාකාරකම්	95	96	97	98	99	වගකීම	
1 වැදි කෘදේ හග්‍රාසය ප්‍රාලේ වෙසාදු වටිදේ දිඩිති පාපසනි සහ රැවිසක සහාය ඇතිව 44 රැකගත් පෙන්වා දී ඇති පරිදි කළුපුටි කඩොලාන කෘමිකර්මය පල පිටි රෝපණය සංචාරක ව්‍යාපාරය සහ වෙරළ යන කලාපවලට වෙන්වුණු පරිහරණ ප්‍රදේශ සහ සමපත් ප්‍රදේශ ක්‍රියාත්මක කිරීම සඳහා රජයේ නියෝජිතයන් සහ ප්‍රජා සංවිධානවල සහයෝගයෙන් සියලුම කලාප සම්බන්ධයෙන් මායිම් තීරණය කර සලකුණු කිරීමේ ක්‍රියාවලියක් බිහි කිරීම	1 විවිධ පරිහරණ කලාප මායිම් විමර්ශනය කිරීම සහ ස්ථාපිත කිරීම	0	0	0			රැවිසක කෘදේ වසදේ වටිදේ කැසව ප්‍රාලේ පාපසනි	
	2 පරිහරණ ප්‍රදේශ වෙන් කිරීම සමග 3 පරිච්ඡේදයේ 2 වැනි ක්‍රමෝපාය සඳහා වූ කඩොලාන කළමනාකරණ සැලසුම ගැලපෙන බව සහතික කිරීම		0	0	0	0		0
	3 වටිදේ කැසව සහ පැළ ප්‍රජා කණ්ඩායම් මගින් කැස්බෑ කැදලි හැනීමට අගයභූමියක් නිශ්චය කිරීම		0	0	0	0		0
	4 ධීවර යාත්‍රා ප්‍රවේශවීමට සහ සංචාරක කර්මාන්තයට ඉඩකඩ ලබන පරිදි වෙරළබඩ පරිහරණ කලාප තව දුරටත් බෙද වෙන් කිරීම		0	0				
	5 පොකුණු ඉස්සන් රෝපණය හැර පලපිටි රෝපණ සංවර්ධන ප්‍රදේශ විමර්ශනය කිරීම සහ ප්‍රජාවේ ද දකුණු පළාතේ පළාත් පාලන ආයතනවල ද අපේක්ෂා සමග එය ගැලපීම සහතික කිරීම		0	0	0	0		0
2 කෘදේ හග්‍රාසව සහ නෝසනි ව්‍යවසාය සංවර්ධන කේන්ද්‍රයේ සහාය ඇතිව වී වගාව සඳහා වාරිමාර්ග පද්ධතිය අවශ්‍ය පරිදි සකසා ගැනීමෙන් ද ප්‍රාදේශීය තරණ කණ්ඩායම් සමග කටයුතු කිරීමෙන් ද යාරවෙල යාය පුනරාජනම්පාය කිරීම	1 කෘදේ හග්‍රාසව නෝසනි ප්‍රාලේ සහ රැවිසක සමග යාරවෙල යායේ සහ පානපල්ලම වෙල්ලයාගේ උතුරු කෙළවරේ හෙක්ටේයාර 50ක තරණ ගොවිපොළක් සඳහා වූ යෝජනාවක් සකස් කිරීම	0	0				කෘදේ ප්‍රාලේ වසකේ හග්‍රාසව නෝසනි රැවිසක	
	2 හග්‍රාසව වෙතින් වර්ෂ 3ක පරික්ෂණාත්මක වැඩසටහනක් සඳහා ප්‍රතිපාදන සහාය ලබා ගැනීම	0	0	0	0	0		
	3 ගොවිපොළ වැඩසටහන සඳහා ප්‍රතිපාදන සහාය ලබාගැනීම සහ වාරිමාර්ග පද්ධතිය පුනරාජනම්පාය කිරීම	0	0	0	0	0		
	4 යාරවෙල යාය සංවර්ධනය කිරීමට බාධකයක්ව ඇති වගා නොකරන ඉඩම් සම්බන්ධයෙන් ගොවිපන සේවා පනතට අනුව ක්‍රියා කිරීම	0	0	0	0	0		

5 පරිච්ඡේදය - දිළිඳුකම මැඩලීම සහ විකල්ප ජීවනෝපාය

- අරමුණු,**
- 1 මහජන ආධාර වැඩසටහන් මගින් යැපෙන පවුල් සංඛ්‍යාව අඩු කරලීම සඳහා ප්‍රජාව තුළ ස්ව ශක්තිය වැඩි කිරීම
 - 2 කෘෂිකාර්මික ජලදායීතාව වැඩි කිරීම සහ පසු අස්වනු හානි අඩු කිරීම
 - 3 වැඩි ආදායමක් උපයා ගැනීම සඳහා පවත්නා රැකියාවල ජලදායීතාව වැඩිදියුණු කිරීම
 - 4 හේ දොර ආදායම් කළමනාකරණය සහ අයවැය සැකසීම වැඩිදියුණු කිරීම
 - 5 මෙරිදියේ සහ කිවුල් දියේ පලපිච්චි රෝපණය අත්හදා බැලීම සහ වැඩිදියුණු කිරීම

ක්‍රමෝපාය	ක්‍රියාකාරකම්	95	96	97	98	99	වගකීම
1 වෙසඳෙ ප්‍රාලේ රැවිසක හඟුසව ධීවර සහ ප්‍රජා සංවිධාන සහ සහයෝගිතාවෙන් කටයුතු කරන ක්ෂේත්‍ර කාර්ය මණ්ඩලයක් සහිත අඩණ්ඩු උත්ප්‍රේරක වැඩසටහන් හරහා සම්පත් කළමනාකරණය, හේ දොර අයවැය සැකසීම සහ ජීවනෝපාය ගැනියා කළමනාකරණය නායකත්වය, පෙළඹවීම සහ පාරිසරික දැනුමැතිකම ඉලක්ක කෙරුණු අධ්‍යාපනය, අනුභව සහ ප්‍රජා සංවිධාන මගින් ප්‍රාදේශීය ආර්ථික සංවර්ධනය සහ ස්ව ශක්තිය දිරිමත් කිරීම	<ol style="list-style-type: none"> 1 මහජනතාවට ස්වකීය ස්වාභාවික සම්පත් සමග ඇති සම්බන්ධතාව පිළිබඳව අවබෝධයක් බොධනැගෙන පරිදි උත්ප්‍රේරකයන් සහ පාසල් මගින් ප්‍රජා දැනුමැති කිරීම වැඩසටහන් පැවැත්වීම 2 සියලු ම ප්‍රජා සංවිධාන ස්වකීය ජීවනෝපාය හේදොර සහ ස්වාභාවික සම්පත් වඩා හොඳින් කළමනාකරණය සඳහා සංවිධාන කිරීම සහ ශක්තිමත් කිරීම 3 ප්‍රාලේ හඟුසව සහ වෙසඳෙ සහය ඇතිව ස්වාභාවික සම්පත් කළමනාකරණයට සහ නව ජීවනෝපාය වැඩිපිළිවෙලට ආධාර කිරීම සඳහා ප්‍රජා ග්‍රාම නිලධාරී උත්ප්‍රේරක වැඩසටහන අඩණ්ඩු ව ක්‍රියාත්මක කිරීම 4 කෘෂිකර්මය, මත්ස්‍යයන් සකස් කිරීම සහ අලෙවිය කාර්මික ශිල්පය, පොකුණු ඉස්සන් රෝපණය හැර පලපිච්චි රෝපණය සහ වෙනත් කටයුතුවල ගැනියා පුහුණු වැඩසටහන් පැවැත්වීම 5 ස්වකීය සම්පත් කළමනාකරණය සම්බන්ධයෙන් රැකවිය සහ මුඩියස වැර ගැන්වීම සඳහා 3 පරිච්ඡේදයේ 3 සහ 4 වැනි ක්‍රමෝපාය ක්‍රියාත්මක කිරීම 6 කැස්බෑ සංරක්ෂණය සඳහා ප්‍රජා සංවිධානයක් පිහිටුවීමට 3 පරිච්ඡේදයේ 5 වැනි ක්‍රමෝපාය ක්‍රියාත්මක කිරීම 	0	0	0	0	0	වෙසඳෙ වෙසකව කඳෙ ප්‍රාලේ දිඹිති රැකවිය රැවිසක මුඩියස කැස්බෑ
2 කෘඳ සහ ප්‍රාලේ සම්බන්ධකරණය යටතේ ප්‍රජා සංවිධාන ශිල්පීය ක්‍රම සහ උත්ප්‍රේරක සහය හාවිතා කිරීමෙන් නෝසනි ව්‍යවසාය සංවර්ධන කේන්ද්‍රයේ සහ හඟුසව හි සහායෙන් සත්ත්ව පාලනයට, ආර්ථික බෝග වගාවට වෙන් වූ කෘෂිකාර්මික ආදායම් ව්‍යාපෘති ක්‍රියාත්මක කිරීම	<ol style="list-style-type: none"> 1 ප්‍රජාව අතරින් උනන්දුවක් දක්වන්නන් සොයා ගැනීම සහ උත්ප්‍රේරකයන්ගේ ක්‍රියාකාරිත්වය මගින් මේ සත්ත්ව පාලන ; කපුටුකා කටයුතු දියත් කිරීමේ ගැනියාව ගැන දැනුමැති කිරීමේ වැඩසටහන් පැවැත්වීම 2 සත්ත්ව පාලනයට සහ ආර්ථික බෝග වගාවට ගොවීන් හෝරා ගැනීම සහ පුහුණු කිරීම 3 හනැබෑ සහ හඟුසව සහයෙන් ස්වේච්ඡා ක්‍රියාමාර්ගයක් මගින් අවශ්‍ය පහසුකම් ඉදිකිරීම 4 අවශ්‍ය සැපයුම් මිලට ගැනීම සඳහා ආධාණය ලබාගැනීම සහ ඒ ණය මුදල් හාවිතා කිරීම සුපරික්ෂණය 5 ගොවීන්ට හාක්ෂණික අලෙවි සහය සැලසීම සහ මවුන් දීර් ගැන්වීම 	0	0	0	0	0	හනැබෑ කඳෙ ප්‍රාලේ හඟුසව රැවිසක නෝසනි
3 කෘඳ නෝසනි ගොස්ඳෙ ගොපදා, ප්‍රාලේ සහ රැවිසක සහයෝගයෙන් ජලවළු, පලතුරු, පසු අස්වනු හානිය පිළිබඳ ගොවීන්ගේ දැනුමැති බව වර්ධනය කිරීම	<ol style="list-style-type: none"> 1 ගොපදා සහායෙන් ජලවළු පලතුරු පසු අස්වනු හානිය ගැන අධ්‍යයනයක් පැවැත්වීම 2 ජලවළු, පලතුරු, පසු අස්වනු හානිය පිළිබඳ ව ගොවීන් සඳහා සම්මන්ත්‍රණ හා වැඩමුළු පැවැත්වීම 3 ජලවළු, පලතුරු සකස් කිරීම පිළිබඳ නියමු ව්‍යාපෘතියක් සංවිධානය කිරීම 		0	0	0	0	ගොපදා වෙසකව ලවිකාප කඳෙ වියනේ නෝසනි රැවිසක

5 පරිච්ඡේදය - දිළිඳුකම මැඩලීම සහ විකල්ප ජීවනෝපා (කලින් පිටුවෙන්)

ක්‍රමෝපාය	ක්‍රියාකාරකම්	95	96	97	98	99	වගකීම
<p>4 ප්‍රාදේශීය හෝ පාහික සමාගම් හෝ පුද්ගලයන් සමඟ ඇති සම්බන්ධතා හරහා ලංකා සංචාරක මණ්ඩලයේ සහයෝගය ඇතිව ප්‍රජාවේ සහ පළාත්පාලන ආයතනවල සම්බන්ධීකරණය යටතේ පාරිසරික වායනපත් සහ මහජන සහභාගීත්වය සහිත පරිසරය පදනම් කෙරුණු සංචාරක ව්‍යාපාර සඳහා ක්‍රියාකාරී ලෙස ආයෝජන යෙදවීම</p>	<p>1 ප්‍රජා සහභාගීත්වය ඇතිව සහ වන පාරිසරික ව භිතකර සංවර්ධන කටයුතුවලට රැකව ප්‍රදේශය විවෘත ව ඇතැයි ප්‍රසිද්ධ දැන්වීම් මගින් ප්‍රචාරය කිරීම</p> <p>2 යෝජිත ආයෝජකයන්ගේ සැලසුම්, රැස්වීම්ක ද සාකච්ඡාවට භාජනය කිරීම සඳහා ඇරඹුම් කිරීම් සහ මෙකී රැකව කළමනාකරණ සැලසුමෙහි පිටපත් ඇතුළු ව ස්ථානය පිළිබඳ පසුබිම් තොරතුරු ඔවුන්ට සැපයීම</p> <p>3 මේ රැකව කළමනාකරණ සැලසුමෙහි ඉදිරිපත් කර ඇති සංවර්ධනය සඳහා වූ උපදෙස් මාලාවෙහි සහ රැකව කළප්‍රවේ වෙරළබඩ පාරිසරික පැහැනි නමැති කෘතියෙහි දක්වා ඇති පරිදි මූලික පාරිසරික පරීක්ෂණයක් පවත්වන මෙන් ආයෝජකයන්ගෙන් ඉල්ලා සිටීම</p> <p>4 සංවර්ධන ක්‍රියාදාමය මගින් බලපෑම් සිදුවන ප්‍රජා කණ්ඩායම් සහ යෝජිත ආයෝජකයා අතර රැස්වීම්, සාකච්ඡා සංවිධානය කිරීම</p> <p>5 සංවර්ධන ක්‍රියාදාමය සිදු කරද්දී සහ එය නිමවීමෙන් අනතුරු ව සංවර්ධනයේ ප්‍රගතිය ගැනත්, පරිසරයට හා ප්‍රජාවට ඉන් වන බලපෑම් ගැනත් සාකච්ඡා කිරීමට ස්ථිර රැස්වීම් පැවැත්වීම</p>		0	0	0	0	කොළී ලෙසම ධීවර චසනේ හඟුපව ජාපසති රැවසක
<p>5 ධීවර, ජාපසති, කොළී සහ ප්‍රාලේ සහාය ඇතිව රැකව ප්‍රදේශයේ ගම්බද වැව්වල මිරිදිය මත්ස්‍ය පැටවු බෝ කිරීම අත්හදාබැලීම සහ ප්‍රවලිත කිරීම</p>	<p>1 මිරිදිය මත්ස්‍යයන් බෝ කිරීම සඳහා රැකව ප්‍රදේශයේ යෝග්‍ය ගම්බද වැව් හඳුනා ගැනීම</p> <p>2 ගම්බද වැව්වල බෝ කිරීමට යෝග්‍ය මත්ස්‍ය විශේෂ හඳුනා ගැනීම සහ අවශ්‍ය මාළු පැටවුන් ධීවරයා හි ගොඩනර ධීවර අංශයෙන් ලබා ගැනීම</p> <p>3 එක් එක් ගම්බද වැව්වල මත්ස්‍යයන් බෝ කිරීමේ වැඩපිළිවෙළ සුපරීක්ෂණය සහ ප්‍රවලිත කිරීම පිණිස ප්‍රජා නායකයන්ගේ කමිටුවක් බැගින් සංවිධානය කිරීම</p> <p>4 මත්ස්‍යයන් බෝ කිරීමේ වැඩපිළිවෙළ ගැන මහජන දැනුමැති බව ඉහළ නැංවීම</p>		0	0	0	0	කොළී ප්‍රාලේ වාද ධීවර දිවිති රැවසක ජාපසති

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