A TRAINING KIT FOR GOVERNMENT OFFICERS ON THE MALAYSIAN HIGHLANDS

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TRAINING KIT FOR GOVERNMENT OFFICERS ON THE MALAYSIAN HIGHLANDS

Introduction

This training kit presents a series of modules which focuses on the stewardship needed in the management Malaysian Highlands for sustainability.

Four key themes are introduced in this kit are:

1. Enhancing Stewardship of the Highlands to leave a legacy,
2. Creating Standards for the Highlands,
3. Communicating Ecological Status of the Highlands, and
4. Leading Smart Partnerships for Highlands Conservation

A sustainable highlands environment is one in which *the natural environment, economic development and social life are seen as mutually dependent* - and the interaction between them contributes to the sustainablility and enhancement of the quality of people's lives and the natural highlands environment.

The ultimate aim of such understanding is to develop caring and committed attitudes and the desire to act responsibly in the highlands environment and towards each other.

The main objectives of the four modules in the training kit are

(i) Enhance **Management Commitment** of the Malaysian Highlands,

(ii) Enhance **Public Communications** to the Malaysian public,

(iii) Enhance **support for the Highland's Local Community,**

(iv) **Exploring the present compliance status of Highlands management,**

(v) **Planning Compliance Assurance for Prevention of Highlands Degradation**,

(vi) Plan how you are going to determine and communicate the ecological status of the highlands to members of the public and other interested parties via yearly **Environmental Report Card, and**

(vii) Enhancing Industry Leadership by Developing a Model for Environmental Leadership in the Highlands: and ***Developing Benefit Sharing Initiatives.***

SUMMARY OF MODULES

MODULE / TIME	TASKS	MATERIALS
1. Leaving Your Legacy (8 Hours)	Task 1: Guiding Principles of a Highlands Management Guide Manual Task 2: Domains in the Guide Manual Task 3: Domain checklists for Guide Manual Task 4: Information Package Task 5: Best Practices in Highlands Development	*Main Hard Copy Modules and Soft Copy CD* *Appendices* *General Reading Materials- ON CD (including the Highlands Reports)* *Facilitator's Guide* *PowerPoint Presentations* *Videos* *Overhead Projector Transparencies*
2. Creating Highlands Standards (7 Hours)	Task 1: What is the ISO14000 series? Task 2: Existing Highlands Characterization and Remediation Creating Highlands SOP	
3. A Highlands Environmental Report Card (7 Hours)	Task 1: Determining the ecological aspects / categories of the highlands environmental report card Task 2: Determining the methodologies to measure the ecological aspects of the highlands environmental report card l Task 3: Determining the approaches to communicate the results in a highlands environmental report card	
4. Leading Highlands Partnerships (5 Hours)	Task 1: Looking at an existing environmental partnership initiatives: local & abroad Task 2: How would you initiate environmental partnerships of the highlands for your organisation?	

TRAINER / FACILITATOR'S GUIDE

There are four modules and a total of 12 tasks in this kit. The kit can be used module by module independently, or the tasks within each module can be selected and arranged in a manner that can be most effective by the trainer or the facillitor. This training kit is flexible. In other words, not all the modules (and tasks) need to be used simultanueously, from beggining to the end.

The kit comes with powerpoint presentations, OHP transparencies and selected videos. The training appraoches include lectures role-play, forum, document analysis, interactive discussions and presentations.

Lectures: Individuals can be invited to convey vital information necessary to the basic understanding of the content of the modules.

Role-Play: Role playing, a derivative of a sociodrama, is a method for exploring the issues involved in complex social situations. It may be used for the training of professionals or in a classroom for the understanding of literature, history, and even science.

Forum: Conducting a forum in the classroom will help to tap the different types of knowledge and expertise of each participant.

Interactive Discussion:
The facilitator is not passive and should actively guide the discussions of each group and in the process facilitators learn as well

Presentations: Presentations are important in sharing ideas

Each module designed has a time allocation which is flexible.

The Appendices and General Reading materials for the particpants to refer to get ideas to conduct discussions. These references can be placed in a computer terminal for the particpants to have ready access.

The details about working strategies are given inside the module within each task.

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Trainer /Facilitator's Guide

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Module 2: ***Creating Highlands Standards***

Module 3: ***A Highlands Environmental Report Card***

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National Biodiversity & Environmental Policy

A TRAINING MODULE FOR GOVERNMENT OFFICERS ON THE MALAYSIAN HIGHLANDS

1

MODULE 1
LEAVING YOUR LEGACY

Enhancing Stewardship of the Highlands

MODULE 1
LEAVING YOUR LEGACY

A training module written for the education and training kit under the “Policy Strategies for the Conservation and Sustainable Use of the Highlands of Sabah and Sarawak” project

Author: Esther Gnanamalar Sarojini Daniel

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Economic Planning Unit
Prime Minister's Department
We Strive To Be The Centre of Excellence in Economic Development Planning for Malaysia

WORK AGENDA

SCHEDULE

Activity	Purpose	Time
Ice Breaking	Division into break-up groups; selection of heads	15 minutes
Video watching	Introduction and recall of Highlands ecosystem Introductory lecture	15 minutes 15 minutes
Introduction	Objectives & Working Strategies about leaving a legacy	15 minutes
Task 1	Guiding principles of highlands management Discussion **Presentation**	 60 minutes 30 minutes
	Lecture on Highlands Management	30 minutes
Task 2	Deciding upon domains Discussion **Presentation**	 60 minutes 30 minutes
Task 3	Creating checklists with rubrics Discussion **Presentation**	 60 minutes 30 minutes
Task 4	Creating information packages Discussion **Presentation**	 60 minutes 30 minutes
Task 5	Best practices in Highlands development Discussion **Presentation**	 60 minutes 30 minutes
	Concluding Lecture	30 minutes

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Task 1: Guiding Principles of a Highlands Management Guide Manual

Task 2: Domains in the Guide Manual

Task 3: Domain checklists for Guide Manual

Task 4: Information Package

Task 5: Best Practices in Highlands Development

INTRODUCTION

LEAVING A LEGACY…

This module is for decision making individuals who can share and document their many experiences so as to leave a legacy about good highlands management practices for others who follow after them.

The module will encompass management commitment, public communications and support for the local highland communities.

The environmental legacy you are leaving should be considered throughout the planning process.

There is a need to keep our highlands across the globe healthy, productive and vibrant for today's and future generations. Sustainability should be the core of our operating philosophy.

It has to be ensured that our highlands will support clean air and water, diverse wildlife habitat, recreational opportunities and aesthetic beauty.

ENHANCING STEWARDSHIP

OBJECTIVES

To enhance **Management Commitment** for sustainable development and improved environmental performance of the highlands, by adhereing to state and federal policies that monitor highlands development, health, preservation of indigenious culture and traditions, preservation of natural resources and monitoring human activities such as logging in order to prevent encroachment on water catchments areas and wildlife.

To enhance **Public Communications** in various forms in making available to the public, information on the institution's environmental performances of the highlands and provide avenues for receiving suggestions from and establishing dialogue with the public about the instituition's environmental performance.

To enhance **support for the Highland's Local Community**: in which the institution operates, to strengthen cultural identity through working partnerships based upon culture and traditions to bring about changes in local environmental infrastructure, health and education.

CREATING A HIGHLANDS ENVIRONMENTAL MANAGEMENT GUIDE MANUAL

WHAT YOU NEED TO DO

In this module you will have to **create and draft** a **General Management Guide Manual**, an **Information Package** and **'Find a Best Practice'** solution to a development problem in order to **leave a highlands environmental management legacy** for your respective organizations by:

- **Setting guiding principles** on how your organization can enhance services and administration associated with highlands initiatives;
- **Determining the domains or aspects** to be included in the manual;
- **Creating a related management check list** for each of the suggested domains;
- **Creating an information package** to inform the public of your organization's highlands management practices;
- **Documenting 'best practices'** in solving real problems involving the local communities in the management of highlands development.

WORKING STRATEGIES

It is important that the participants share **their experiences** from their respective organizations in order to incorporate relevant and effective ideas in the preparation of the draft General Highlands Environmental Management Guide Manual.

Suggestions for working strategies: Role- Play

(Drawing on the participants' expertise and professional experiences).

- The first 10-15 minutes should be spent reading the module individually.
- A leader for the whole group may then be appointed. This leader's role would hypothetically be as one who has been appointed to head a committee to plan and draft a General Highlands Environmental Management Guide Manual for Malaysia's Highlands. Other sub-heads and sub-committees can be formed as deemed necessary in order to plan the manual.
- **All the tasks in the module should be discussed together for everyone to realize and understand the overall objectives**
- Smaller break-up groups of four or five members can then be formed with individual group leaders to come up with different specific ideas which can then be put together
- Ideas for discussion should be from personal experience and some ideas can be obtained from the appendices.
- As you discuss please use the flip charts or white boards for noting important points.

CREATING A HIGHLANDS ENVIRONMENTAL MANAGEMENT GUIDE MANUAL

TASK 1

What would be at least **three guiding principles** that you would put forward in your guide for good stewardship administration of highlands development?

1. _____

_____

_____

2. _____

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3. _____

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_____

Working Strategy:

Individual group leaders can brainstorm ideas first with their respective groups. Then, the whole group leader should compile all ideas from the break-up groups. These ideas will be presented.

At the end of the first task the whole group must agree upon three most important guiding principles for the manual.

Please refer to Appendix 1 for additional ideas

CREATING A HIGHLANDS ENVIRONMENTAL MANAGEMENT GUIDE MANUAL

TASK 2

What are the domains (categories) and your rationale for including the domain in your management guide manual for highlands development? A few examples are given.

Three things to remember:

- ***management commitment,***
- ***public communications, and***
- ***support for the local highland communities.***

Domain /Category	Rationale
Understanding International Treaties and Malaysia's stand	**Must have a global view of the highlands and Malaysia's responsibility**
Best Practices Compilation	**Good to look at existing good stewardship practices**
Etc.	

Working Strategy:

As before, each group can brainstorm ideas first.

Then all ideas can be compiled by the whole group leader for presentation.

At the end of the second task the whole group must agree upon relevant domains /categories / aspects to be included in the manual

Please refer to Appendix 2 for additional ideas

CREATING A HIGHLANDS ENVIRONMENTAL MANAGEMENT GUIDE MANUAL

TASK 3

How is each domain being applied in the management of the highlands in your organization? Create a checklist for each domain to demonstrate this application in the development of the highlands. You will probably have to create sub-domains or categories in order to create the checklists. An example has been provided for you. Where necessary you will have to create a rubric for certain items

Domain /category & Sub domain / sub category	**Checklist Items**	**Rubric**	**Yes / No**
International Treaties			
1. Chapter 13, Agenda 21			
Best Practices Compilation			
1. Adhering to state and federal policies for highlands development	Guidelines for Construction on Hill slopes		

Working Strategy:

Work in individual groups first. Then the whole group leader can elicit ideas from all groups for presentation. At the end of the third task the whole group must come to a consensus regarding the items to be included in the checklist for each domain, to be applied in decision making

Please refer to Appendix 3 for rubrics of the checklist

CREATING A HIGHLANDS ENVIRONMENTAL INFORMATION PACKAGE

TASK 4

The **public needs to know** what and how highlands projects are planned and carried out by your organization.

What can you do to be transparent?

- At this point some brainstorming will be carried out by the break-up groups so as to be able to share experiences

Then, based upon the ideas during the discussion and using the ideas put forward in Tasks 1 – 3, create an information package for any enquiries from members of the public. What should it contain?

Hints:

The information package can consist of an annual report summary, a brochure and a poster as well as a feedback form.

The above hints are only suggestions and other ideas from the participants can also be included here

Working Strategy

Work can be divided among the break-up groups.

At the end of the fourth task the whole group should have created a draft of the information package for distribution to the public.

Please refer to Appendix 4 for additional ideas

SUPPORTING THE HIGHLANDS LOCAL COMMUNITIES IN DECISION MAKING

TASK 5

The livelihood of the highlands native inhabitants come first and it must be ensured that they experience and reap part of the benefits of progress and development, and yet preserve cultural identify. This is no easy task.

Imagine that a development project (such as a resort, logging etc.)has been proposed.

What will be your strategy to ensure that the native highlands community will be a part of the project to reap the benefits of the development project and yet safeguard their heritage?

Working Strategy

The break-up groups will first discuss and share ideas from past experiences, followed by presentations and whole group discussions.

At the end of the fifth task the whole group should have ideas for supporting the local communities to safeguard their cultural heritage in the face of development

Please refer to Appendix 5

CONLCUSION

YOUR CONCEPTUALIZATION

In not more than 20 words state what is your conceptualization of Highlands Environment Stewardship?

_____

_____

_____

Draw a simple flow chart to show the 'best practice' strategy for tackling development projects in the highlands.

MODULE 2

A TRAINING MODULE FOR GOVERNMENT OFFICERS ON THE MALAYSIAN HIGHLANDS

2

CREATING HIGHLANDS STANDARDS

Creating Standards for Highlands Management

MODULE 2
CREATING HIGHLANDS STANDARDS

A training module written for the education and training kit under the “Policy Strategies for the Conservation and Sustainable Use of the Highlands of Sabah and Sarawak” project

Author: Esther Gnanamalar Sarojini Daniel

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WORK AGENDA

SCHEDULE

Activity	Purpose	Time
Ice Breaking	Division into break-up groups; selection of heads	15 minutes
Video watching	Introduction and recall of Highlands ecosystem Introductory lecture	15 minutes 15 minutes
Introduction	Objectives & Working Strategies about creating Highlands Standards	15 minutes
Task 1	What is the ISO 14000 series? Discussion **Presentation**	 60 minutes 30 minutes
Task 2	Existing Highlands Characterization and Remediation Discussion **Presentation**	 120 minutes 45 minutes
	Lecture on Creating Standards for the Environment	30 minutes
Task 3	Creating Highlands Standards Discussion **Presentation**	 120 minutes 45 minutes
	Concluding lecture	30 minutes

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What you need to do

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Task 1: What is the ISO14000 series?

Task 2: Existing Highlands Characterization and Remediation

Task 3: Creating Highlands SOP

Do we need the ISO?

INTRODUCTION

STANDARDS …

In the late 1980's ISO was asked to review the potential to write a standard for environmental management. They took up the challenge, and during the 1990's there was a tremendous effort involving thousands of people in over 60 countries to develop consensus standards on how organizations could manage their environmental issues. That effort continues today, with standards being written and reviewed. All ISO standards are reviewed at least every 5 years to make sure that they are still up to date.

ISO 14000 is actually an entire series of standards. ISO 14001 is the environmental management system standard. This is the standard that is used to certify organizations-following the ISO 14001 allows one to become registered as an ISO 14001 organization

There is a need to keep our highlands across the globe healthy, productive and vibrant for today's and future generations. Sustainability should be the core of our operating philosophy.

It has to be ensured that our highlands will support clean air and water, diverse wildlife habitat, recreational opportunities and aesthetic beauty.

CREATING STANDARDS

OBJECTIVES

Exploring the present compliance status of Highlands management by comparing the ISO 14000 series with existing operating procedures.

Planning Compliance Assurance for Prevention of Highlands Degradation by innovative highlands environmental auditing, assessment and improvement programmes to identify and correct current and potential compliance problems to improve overall day to day highlands environmental performance in the institution.

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CREATING STANDARDS

WHAT YOU NEED TO DO

In this module the ISO 14000 series documents will be studied

Also, you will have to create a draft document for Standard Operating Procedures (SOP), Work Process Flowcharts and Conducting Audits related to <u>one aspect of Highlands Management</u> to:

- **Prevent Highlands Environmental Degradation**

You have to determine <u>at least one main area</u> of your organization for the creation of these SOP and process charts.

CREATING STANDARDS

WORKING STRATEGIES

It is important that the participants share **their experiences** from their respective organizations in order to incorporate relevant and effective ideas in the preparation of the **Standard Operating Procedures for Highlands Management**

Suggestions for working strategies: Document Analysis and Interactive Group Discussions

The first 10-15 minutes should be spent reading the module individually.

- A leader for the whole group may then be appointed.
- **All the tasks should be discussed together for everyone to realize and understand the overall objectives.**
- Smaller break-up groups of four or five members can then be formed with individual group leaders to study and analyze the ISO 14000 series documents provided.
- From the analysis, sections of the ISO documents relevant to Highlands Management should be identified.
- Following this, the Existing Highlands Management should be compared against the ISO recommendations.
- Finally, one aspect of Highlands management in your organization should be selected in order to create new Standard Operating Procedures, Work Processes and Flow Charts or existing standards can be reviewed.
- As you discuss please use the flip charts or white boards for noting important points.

ANALYSING THE ISO 14000 SERIES

TASK 1

What is the ISO 14000 series of standards?

The ISO 14000 documents provided will have to be studied to identify the relevant portions for highlands management.

Once the relevant sections have been identified the following questions need to be discussed:

(i) Why are the sections identified important in highlands management?

(ii) If you had a chance to review the sections identified, what would be your suggestions?

Working Strategy:

Each group can brainstorm different portions of the ISO 14000 documents. Then the whole group leader should compile all ideas from the break-up groups for presentation.

Please refer to Appendix 6

EXISTING HIGHLANDS CHARACTERIZATION AND REMEDIATION

TASK 2

Exploring the present compliance status of Highlands management by comparing the ISO 14000 series with existing operating procedures

From the discussions in Task 1, compare and contrast the existing management procedures in your organization against those of the ISO 14000 series.

What conclusions can you make about the existing procedures?

Working Strategy:

Each group can brainstorm ideas first. Then the whole group leader should compile all ideas from the break-up groups for presentation.

Please refer to Appendix 7 and General Reading

CREATING SOP

TASK 3

Preservation of the Highlands

You have to write a draft document for ONE ASPECT of highlands management related to your organization for the Preservation of the Highlands.

Your draft should contain suggestions for Standard Operating Procedures (SOP), Work Process Flowcharts and Conducting Audits

Working Strategy:

Each group can brainstorm ideas first. Then the whole group leader should compile all ideas from the break-up groups.

At the end of the first task the whole group must agree upon six most important ecological aspects to be included in the report

Please refer to Appendices 6, 7 and General Reading

DO WE NEED ISO?

Conclusion

In your opinion why do we need ISO in highlands management?

_____

_____

_____

_____

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MODULE 3

A TRAINING MODULE FOR GOVERNMENT OFFICERS ON THE MALAYSIAN HIGHLANDS

3

A HIGHLANDS ENVIRONMENTAL REPORT CARD

Communicating Ecological Status of the Highlands

Economic Planning Unit
Prime Minister's Department
We Strive To Be The Centre of Excellence in Economic Development Planning for Malaysia

MODULE 3
A HIGHLANDS ENVIRONMENTAL REPORT CARD

A training module written for the education and training kit under the “Policy Strategies for the Conservation and Sustainable Use of the Highlands of Sabah and Sarawak” project

Author: Esther Gnanamalar Sarojini Daniel

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WORK AGENDA

SCHEDULE

Activity	Purpose	Time
Ice Breaking	Division into break-up groups; selection of heads	15 minutes
Video watching	Introduction and recall of Highlands ecosystem	15 minutes
	Introductory lecture	15 minutes
Introduction	Objectives & Working Strategies about a highlands envrionmental ecological report card	15 minutes
	Lecture on ecological indicators	30 minutes
Task 1	Determining the ecological aspects /categories and the indicators to be assessed	
	Discussion	90 minutes
	Presentation	30 minutes
Task 2	Deciding upon the methodologies of assessment	
	Discussion	90 minutes
	Presentation	30 minutes
Task 3	Communicating the assessment results to the public	
	Discussion	90 minutes
	Presentation	30 minutes
	Concluding lecture	30 minutes

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What you need to do

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Task 1: Determining the ecological aspects / categories of the highlands environmental report card

Task 2: Determining the methodologies to measure the ecological aspects of the highlands environmental report card

Task 3: Determining the approaches to communicate the results in a highlands environmental report card

Why?

INTRODUCTION

TRANSPARENCY …

This module is for decision making individuals who have the important responsibility of monitoring the impact of human activities on the highlands ecology and to accurately inform the public of the status of the highlands.

The module will focus upon the process of measuring and reporting the status of the scientific ecological aspects of the highlands.

There is a need to keep our highlands across the globe healthy, productive and vibrant for today's and future generations. Sustainability should be the core of our operating philosophy.

It has to be ensured that our highlands will support clean air and water, diverse wildlife habitat, recreational opportunities and aesthetic beauty.

CREATING AN HIGHLANDS ENVIRONMENTAL REPORT CARD

Objectives

In this module you need to plan how you are going to determine and communicate the ecological status of the highlands to members of the public and other interested parties by:

Production of a yearly **Environmental Report Card** for the Highlands by tracking the ecological conditions through research of aspects such as

(a) Highland population

(b) Biodiversity maintainance – status of genetic resources - plant and animal species

(c) Preservation of highland virgin forest land

(d) Climate change

(e) Natural resource management

DETERMINING THE ECOLOGICAL STATUS OF THE HIGHLANDS

What You Need To Do

In this module you have to discuss and determine the methodologies for assessing the ecological status of the highlands.

First you will have to decide upon the ecological aspects and the indicators that you want to include in your environmental report card.

Then you have to select suitable methodologies to assess each ecological aspects.

Third, you have to explain how your results can be reported and made accessible to one and all.

(Your report could also include the reporting of highlands environmental impact management)

The appendices 8, 9, and 10 should be read and understood as a whole.

DETERMINING THE ECOLOGICAL STATUS OF THE HIGHLANDS

WORKING STRATEGIES

It is important that the participants share **their experiences** from their respective organizations in order to incorporate relevant and effective ideas in the preparation of the **Highlands Environmental Report Card** on the highlands ecological status.

Suggestions for working strategies: Case Study & Interactive Group Discussions

(Use of case studies enables participants to work through an environmental status assessment)

The first 10-15 minutes should be spent reading the module individually.

- A leader for the whole group may then be appointed
- **All the tasks should be discussed together for everyone to realize and understand the overall objectives**
- Smaller break-up groups of four or five members can then be formed with individual group leaders to study and analyze the case studies provided in the appendices.
- From the analysis of the case studies suggestions for a local Highlands Environmental Report Card should emerge.
- As you discuss please use the flip charts or white boards for noting important points.

DETERMINING THE ECOLOGICAL STATUS OF THE HIGHLANDS

Task 1

What are the ecological aspects / categories and the indicators of the highlands that you want to include in your environnmental report card?

You can read Appendix 8 and discuss the ecological aspects you would choose and the rationale for your choice.

Example: Ecological Aspect: Climate Change
Indicator: Gas emisions

Ecological Aspect to be assessed	**Rationale**
Climate Change	
Indicator: Greenhouse Gas Emissions in the highlands	Industry, construction and the number of vehicles are increasing yearly

Working Strategy:

Each group can brainstorm ideas first. Then the whole group leader should compile all ideas from the break-up groups.

At the end of the first task the whole group must agree upon six most important ecological aspects to be included in the report

DETERMINING THE ECOLOGICAL STATUS OF THE HIGHLANDS

Task 2

How can the indicators of the ecological aspects you have decided upon in Task 1 be assessed?

Example of the estimation of greenhouse gas emissions (GHG emissions)
Statistical data about the GHG emissions can be obtained as follows:

1. Identify the sources and sinks of the GHG emissions
2. Data collected from all relevant agencies
3. Data analysed and emissions estimated
4. Reviewed and verified by panel of evaluators

The estimation of the GHG emissions has to be followed by further calculations to determine the status of GHG emissions and to give a Grade in the final report card.

Working Strategy:

Each group can brainstorm one or two ecological aspects first. Then the ideas for all six ecological aspects should be compiled by the whole group.

At the end of the second task the whole group must agree upon assessment methodologies for the six ecological aspects to be included in the report

You can read Appendix 9 for additional ideas to determine the methodologies to measure each aspect put forward in Task 2

DETERMINING THE ECOLOGICAL STATUS OF THE HIGHLANDS

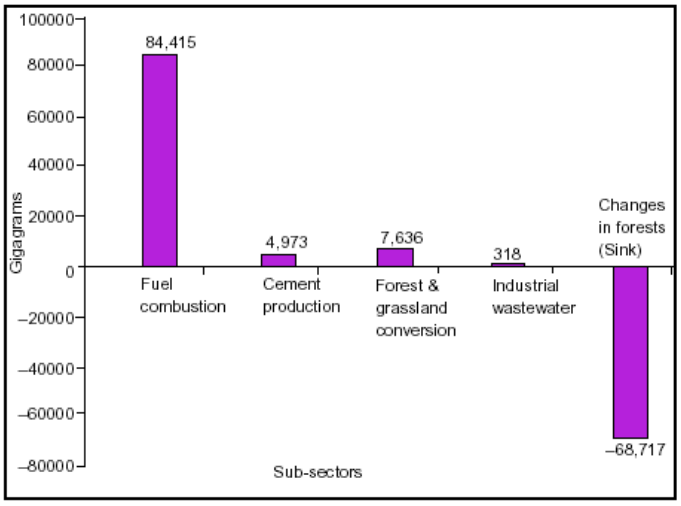
Task 3

How can the eclogical aspects you have assessed be communicated?

Choose one ecological aspect that you have put forward in Tasks 1 and 2 and create a draft report.

An example:Greenhouse gas emissions

Figure 3.1: CO_2 Emissions and Sink from Various Sub-sectors in 1994



Working Strategy:

Once again each break-up group can discuss how to communicate one or two ecological aspects. Then, compile all ideas as a whole group.

At the end of the third task the whole group should be ready with a draft environmental report card for six ecological aspects

You can read Appendix 10 for additional ideas in presentation

WHY ?

Conclusion

In your opinion why is it imperative that your organisation provides an annual environmental report of the highlands?

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MODULE 4

A TRAINING MODULE FOR GOVERNMENT OFFICERS ON THE MALAYSIAN HIGHLANDS

4

SMART PARNERSHIPS

Leading Smart Partnerships for Highlands Comservation

MODULE 4: LEADING HIGHLANDS PARTNERSHIPS

A training module written for the education and training kit under the “Policy Strategies for the Conservation and Sustainable Use of the Highlands of Sabah and Sarawak” project

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We Strive To Be The Centre of Excellence in Economic Development Planning for Malaysia

WORK AGENDA

SCHEDULE

Activity	Purpose	Time
Ice Breaking	Division into break-up groups; selection of heads	15 minutes
Video watching	Introduction and recall of Highlands ecosystem Introductory lecture	15 minutes 15 minutes
Introduction	Objectives & Working Strategies about winning partnerships in highlands conservation	15 minutes
	Lecture on Smartpartnerships	30 minutes
Task 1	Looking at existing environmental partnership initiatives: local & abroad Discussion **Presentation**	90 minutes 30 minutes
Task 2	How would you initiate partnerships for your organisation? Why Discussion **Presentation**	90 minutes 30 minutes
	Concluding lecture	30 minutes

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Working Strategies

Task 1: Looking at an existing environmental partnership initiatives: local & abroad

Task 2: How would you initiate environmental partnerships of the highlands for your organisation? Why

Do we need partnerships?

INTRODUCTION

Partnerships & Collaboration...

...between organizations, notably NGOs, and government is to improve environmental policies, analyze issues or reach consensus on implementation steps;

...encourage the participation of government organizations in developing appropriate environmental programs which demonstrate their commitment to a cleaner environment through alliances with other non-governmental organizations;

...expand the scope and diversity of research institutions and organizations associated with civil society; and

...develop the capacity of indigenous civil society organizations to function as coordinating bodies and information clearinghouses for environmental policy and management issues. (US-AEP, April 2006)

In a new problem-solving model for a globalized world, three things must happen:

- ***A high degree of communication among all stakeholder groups across national borders must be achieved.***
- ***Each stakeholder group must come to see itself as accountable to the others.***
- ***Nations and stakeholder groups must share a sense of ownership of the results. (USDA, 2002)***

CREATING PARTNERSHIPS

OBJECTIVES

Enhancing Industry Leadership by working with companies in the private sector operating in and near the Highlands to improve industry-wide environmental compliance and overall environmental performance that is:-

Developing a Model for Environmental Leadership in the Highlands: Practising ecological work styles *-which includes Eco-technology, Eco-design, Eco-materials, Eco-manufacturing and Green procurement (which gives priority to purchasing items with low environmental impact, to ensure full compliance with the EU RoHS directive which is due to come into force in July 2006).*

Developing Benefit Sharing Initiatives: *drafting a national strategy for research and documentation of biodiversity prospecting activities*

LEADING SMART PARTNERSHIPS

WHAT YOU NEED TO D

In this module you will have to

- ***Determine emerging ideas from examples of smart partnerships***
- ***Develop a highlands partnership leadership model between your organization in collaboration with other organizations for …***
    - ***Creating a draft strategy of research and documentation of biodiversity prospecting activities for shared benefits between organizations***

DEVELOPING SMART PARTNERSHIPS

WORKING STRATEGIES

It is important that the participants share **their experiences** from their respective organizations in order to incorporate relevant and effective ideas in developing a model for smart partnerships.

Suggestions for working strategies: Document Analysis and Forum

The first 10-15 minutes should be spent reading the module individually.

- A leader for the whole group may then be appointed
- **All the tasks should be discussed together for everyone to realize and understand the overall objectives**
- Smaller break-up groups of four or five members can then be formed with individual group leaders to study and analyze the examples of existing smart partnerships
- From the analysis, each group must select one candidate to participate in the forum to brainstorm emerging ideas on leading partnerships.
- Following this, each break-up group will then deliberate their own ideas for a leading partnership model for the purpose of determining strategies for benefit sharing of biodiversity
- Once again each group will field one candidate for a second forum to brainstorm suggestions for successful leading partnerships
- As you discuss please use the flip charts or white boards for noting important points.

EXISTING ENVIRONMENTAL PARTNERSHIP INITIATIVES: LOCAL & ABROAD

TASK 1

What are smart partnerships in highlands environmental conservation?

The documents provided will have to be read and brainstormed in groups. Each group will decide upon their candidate who will take part in a forum entitled,

"Smart Partnerships for the Highlands: What can be achieved?"

Working Strategy:

During the brainstorming session, each group will discuss the points that their candidate will put forward in the forum.

One or two other participants can act as rapporteurs.

Please refer to Appendix 12

INITIATING HIGHLANDS PARTNERSHIPS

TASK 2

How would you go about initiating a highlands partnership leadership model ?

Scenario

You have found that if nothing is done, the biodiversity of the highlands with which your organization is involved in managing, may eventually lose its richness.

In your groups discuss how you would in collaboration with other organizations create a draft strategy of research and documentation of biodiversity prospecting activities for shared benefits between all

Working Strategy:

Each group can brainstorm ideas first. Then the strategies from each group will be put forward in a second forum.

One or two other participants can act as rapporteurs.

Please refer to Appendix 12 and General Reading

DO WE NEED SMART PARTNERSHIPS

Conclusion

In your opinion why are smart partnerships necessary in highlands management?

_____

_____

_____

_____

_____

_____

_____

APPENDICES

Introduction: Environmental Stewardship And Sustainable Development
An organisation strives to facilitate a culture of environmental stewardship and sustainable development. "Environmental Stewardship" refers to the concept that an organisation should recognize the impacts of its activities on environmental conditions and should adopt practices that eliminate or reduce negative environmental impacts. An organisation can reduce its negative environmental impacts resulting directly from its facilities. In addition, by including the concepts of environmental protection and sustainability in its policies, the organisation can help develop the culture of environmental stewardship and sustainable development not only within the organisation but also to those parts of society which are affected by the organisation's activities.

APPENDIX 1

Principle 1
Management Commitment:
The local government makes a written top-management commitment to improved environmental performance by establishing policies and goals, which emphasize management of the environment and the need to ensure compliance with environmental requirements. Commitments address pollution prevention, waste minimization and resource recovery, air quality improvement, and other urban environmental issues.

Principle 2
Compliance Assurance:
The local government implements proactive programs that aggressively identify and address potential compliance problem areas and utilize environmental management approaches (such as pollution prevention, cleaner production, zero emissions etc.) to correct deficiencies and improve environmental performance.

Principle 3
Enabling Systems:
The local government develops and implements the necessary measures to enable personnel to perform their functions consistent with regulatory requirements, agency environmental policies and its overall mission.

Principle 4
Performance And Accountability:
The local government develops measures to address employee environmental performance, and ensure full accountability of environmental functions.

Principle 5
Measurement And Improvement:
The local government develops and implements a program to assess progress toward meeting its environmental goals and uses the results to improve environmental performance.

On September 12, 1995 the Interagency Pollution Prevention Task Force (USA) signed a charter encouraging the federal government to achieve, among other items, environmental excellence through two areas of activity including: a) active agency and facility participation in the Environmental Challenge Program and, b) participation in the establishment of an agency Code of Environmental Management Principles. The above 5 principles are the result of this. Below are three more principles of Environmental Stewardship for the 21 st Century developed through a public/private partnership to promote sustainable development in the U.S./Mexico border area;

APPENDIX 1

***Principle 6*.**
Public Communications:
Consistent with the sovereign host country's domestic laws and policies governing environmental protection and the protection of confidential business information: voluntarily make available to the public information on the organization's environmental performances and releases, as well as on the performance of its environmental management system relative to these Principles, based on established objectives and targets; and voluntarily provide avenues for receiving suggestions from and establishing dialogue with the public about the company's environmental performance.

***Principle 7*.**
Industry Leadership:
Work with other companies operating in the same region or industry sub-sector to improve industry-wide environmental compliance, pollution prevention practices, energy efficiency, and overall environmental performance. For example, explore cooperative strategies such as by-product synergy, joint industry sub-sector efforts, or technical assistance to smaller enterprises, including in the implementation of environmental audits.

***Principle 8*.**
Community Environmental Stewardship:
Promote and give support to environmental stewardship and sustainable development in the community in which the organization operates, for example through investments in local environmental infrastructure, health, education, and improving public environmental awareness.

The information below contains some possible ideas for the domains to be included in the guide manual you are creating for your organization

APPENDIX 2

What is Sustainable Highland Forestry

What is sustainable highland forestry? It is the practice of managing and conserving all highland forest resources to meet the needs of society today and for future generations. But highland forestry is more than just planting and growing trees. It extends to the entire highlands forest environment – trees and other plants, wildlife, soils, air and water – worldwide.

It is essential to use environmentally responsible practices to continually improve the health and productivity of our own highland forestlands. We should partner with a broad range of environmental, academic and non-governmental organizations to find innovative new ways to promote responsible resource stewardship and to identify and protect areas of high conservation value.

Managing the Highland Forest Lanscape

Sustainable highland forest management has two equally important objectives: to keep our forests healthy and productive for future generations and to meet demands of development. We should vary our practices to protect and conserve highland forestlands with special biological, geological or historical significance while managing our highlands forestlands with less conservation value for wood fiber production.

Enhancing Highland Wildlife Habitat and Biodiversity

We should integrate the needs of wildlife on our highland forestlands through day-to-day operations and specific resource and habitat conservation initiatives. Tools such as the Geographic Information System (GIS), can be used to more effectively manage our highland forests at the landscape level to provide a greater diversity of wildlife species and habitat.

Listed threatened and endangered species should be a top priority, and we should work within the framework of the Endangered Species Act to maintain and enhance the highlands habitat

We should enhance our expertise and achieve continuous improvement in our wildlife-related highlands forestry practices through our own research and through partnerships with environmental, academic and non-government organizations.

APPENDIX 2

Reforestation
We should regenerate all highland forest acres we harvest. Sustainable forestry guidelines should require all harvested areas to be regenerated within two planting seasons of harvest by replanting or within five planting seasons by managed natural reforestation.

Protecting Water Quality
Clean water is vital to all forms of life on our planet. Streamside management zones to be buffers beside bodies of water to prevent erosion and provide temperature-controlling shade to protect aquatic life can be set up. We should carefully monitor water quality and buffer effectiveness on our highland forestlands using a variety of compliance checks and internal audits.

Managing Special Places
There are many sites in the highlands that have special biological, geological or historical significance. From scenic overlooks, waterfalls and caves to areas that support unique plants and animals, therefore we should manage these highlands forestlands in a manner that takes into account their special qualities.

Public Accountability
An organization should make information about our progress available to the public in a variety of ways..

Next Century of Stewardship
We must realise that an investment in the long-term health of our highland forestlands is an investment in the health of our company, customers and earth.

Source: International Paper Company (Web site at www.internationalpaper.com)

The following example is a checklist for evaluation of the different domains a single highlands project

Normally background is quite straightforward. The other items can be checked with either with a 'yes' or 'no' format, or a rubric format can be utilised depending on the aspect.

APPENDIX 3

A: BACKGROUND

Name of Highlands Project	
Name of Applicant	
Address and contact Number	
Proposed timing	
Future expansion plans	
Location of proposed project	

B: ENVIRONMENTAL ELEMENTS

***Earth* (yes or no format)**

	Yes	**No**	**Comments**
Is it flat?			
Is it hilly?			
The soil type is clay			
The soil type is sand			
The soil type is peat			
A landslide can occur			

The terms Unsatisfactory, satisfactory and acceptable will have to be descibed in detail.

Example
Air: Automobile emmision

Unsatisfactory	Satisfactory	Acceptable
The API index is above 300 units at the site	The API index is between 100 - 300 units at the site	The API index is below 100 units at the site

APPENDIX 3

Air (Rubric)

	Un-satisfactory	Satisfactory	Acceptable
Automobile emmision during Highlands project			
Industrial emmision during project			
Proposals made to address the problem			

Water (Rubric)

	Un-satisfactory	Satisfactory	Acceptable
The distance berween nearby water body and Highlands project site			
Amount of fill or dredge material that will flow into nearby river etc.			
Waste materials can enter ground water			

The terms level 1, level 2 and level 3 will have to be descibed in detail for each.

Example
Plants: Amount of vegetation removed or altered

Level 1	Level 2	Level 3
Minimum amount of existing vegetation is removed	Between a quarter to half of the existing vegetation is removed	More than half of the existing vegetation is removed including threatened species

APPENDIX 3

Plants (Rubric)

	Level 1	Level 2	Level 3
Amount of vegetation removed or altered			
Kind of vegetation removed or altered			
Use of native plants for landscaping			

Animals (Rubric)

	Level 1	Level 2	Level 3
Proposed measures to conserve wildlife			

Historical and Cultural Preservation (Rubric)

	Archeological Significance	Scientific Significance	Cultural Significance
Description of Highlands project site			

Note: You can add other elements such as natural resources, environmental health, housing, aesthetics, recreation, transportation, public services etc.

1. This example shows the possible contents of an annual highlands environmental report for an organization

Example of A Title and Possible Content:
Title: **Environmental Stewardship and Complete Communities: A Report on Government Highlands Environmental Initiatives in ……., 2006**

APPENDIX 4

Contents:

1. Introduction
    a. Organisational Profile
2. The Challenge of Highlands Environmental Protection for Local Governments
    a. Organisation's Highlands Environmental Charter
    b. Local Government Priorities
    c. Impact of traditional Development Practices
3. Organisation's Staffing Approaches to Highlands Environmental Practices
4. State of Highlands Environmental Protection for 2006
    a. Regional Growth Strategies
    b. Service or Infrastructure limits
    c. Zoning
5. Official Community Plans
6. Protection and Restoration of Highlands Environmentally Sensitive Areas
    a. Environmentally sensitive areas & management guidelines
    b. Development Permit areas
    c. Restoration
    d. Staff Education
7. Shaping Development: Zoning; Design Standards and Development Cost
8. Highlands Parks and Greenways
9. Highlands Water Resources and Management
10. Highalnds Transportation
    a. Demand Management
11. Highlands Animals,Trees and Soil
12. Food: Agriculture and Community Gardens
13. Assessing Highlands Environmental Impacts
14. Brief summary of approved development Highlands projects
15. Public Participation
    a. Highlands Environmental Advisory and Review Committee
    b. Community Partnerships
    c. Public Education
16. Conclusion
17. References

2. Using the above example as a guide, prepare a summary booklet of an annual highlands environmental report for your organisation. The cover has been done for you. The content is yours to create.

APPENDIX 4

HIGHLANDS ENVIRONMENTAL STEWARDSHIP 2006 ANNUAL REPORT SUMMARY

MINISTRY OF.....

KERAJAAN MALAYSIA

APPENDIX 4

3. Plan and design an information brochure to provide a very brief highlands environmental report summary for your organisation. The outline of the brochure is given. You have to create the content.

APPENDIX 4

INFORMATION BROCHURE HIGHLANDS ENVIRONMENTAL STEWARDSHIP 2006 **MINISTRY OF .....** ***KERAJAAN MALAYSIA*** 		

APPENDIX 4

4. Plan and design poster to provide a very brief idea of your organisation's highlands environmental stewardship.

APPENDIX 4

5. Plan a feedback form (such as the example below) specific to the highlands which are managed by your organization, for members of the public to be placed in the information package.

NAME:.....(Optional) **GENDER: MALE/FEMALE**

OCCUPATION: ..... **AGE:.....**

THEME Presentation of environmental issues in strategies and policy documents		
	Yes	**No**
Are environmental issues identified in the policy guidelines and policy goals?		
Are the objectives clearly defined?		
Are environmental issues identified as a part of organisation's values?		
Are environmental goals in balance with the organisation's other programmes and strategic goals?		
Are environmental goals clearly defined both for short and long time spans?		
THEME Impacts on the environment and their identification		
Is there a planning procedure for identifying future challenges related to the environment?		
Are environmental issues and environmental aspects identified on the level of strategic planning?		
THEME Management of environmental issues		
Are environmental issues present in various management systems and processes?		
Are environmental issues taken into account in collaboration with partners, suppliers and customers?		
Are the environmental tasks and responsibilities defined?		
THEME Monitoring of process performance		
Do environmental issues appear in internal reporting?		
Does a measurement and reporting system exist?		
THEME Improvement and correction		
Are internal and external feedback and assessment results taken into account?		
Is the organisation benchmarked with other organisations nationally and internationally in terms of environmental management?		
Are experiences from other organisations, including foreign ones, used?		
THEME Environmental reporting		
Are environmental issues communicated to stakeholders and the public?		
Is information easily attainable		

APPENDIX 5

NGO–Community Collaboration for Ecotourism: A Strategy for Sustainable Regional Development

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An inappropriate mega-tourist project dramatically threatened the communities and ecosystems at Bahias de Huatulco, a beautiful site on the Pacific coast of Oaxaca, Mexico. The indigenous communities in the neighbouring highlands suffered, first as their forests were logged, and then by the economic pressures and cultural onslaught from globalised tourist development. An environmentally sensitive programme to emplace an infrastructure to provide ecotourismservices, supported by the traditional beach-front tourist industry, offers a mechanism to strengthen the social organisation and the economic base of the participating communities. Together with Complementaryactivitiesto rehabilitateand bettermanage the forests,to introduce artisanalactivities and create a local wildlife reserve, ecotourism is stimulating conservation efforts and sustainable management and production practices. By introducing these alternatives to the marginal economic opportunities offered by the beach tourism, the local peoples enjoy a higher quality of life and are better insulated from the cyclical swings in the national and international economy that are taking a high toll on peoples elsewhere.

Introduction

In 1984, a mega-resort, designed to attract beach tourism to international hotels, was initiated on the south Pacific coast of Mexico in the state of Oaxaca. Known as the Bahias de Huatulco, the spectacular setting, in a previously isolated region, is home to about 50,000 people from four different indigenous groups living in some 150 subsistence communities widely dispersed over 700,000 hectares in the surrounding highlands and a number of small fishing villages. The new mega-resort and the accompanying infrastructure integrated the region into the internationalmarket, sparking a self-reinforcing cycle of speculation and investment that accelerated the process of social and spatial polarisation, impoverishing the native populations and raising tensions throughout the region; the destructionwrought by hurricane Paulina in October 1997 suddenly intensified the problems of poverty and environmental destruction. Even before the disaster, a local non-governmental organisation (NGO), the Centre for Ecological Support (CSE, for its Spanish initials), created in 1993 to promote regional development, had begun to implement a resource management programme for sustainable development, by channelling domestic and international resources to attack these problemswith a series of productive programmes designed to stem environmental degradation and strengthen the economy. The isolated existence of the indigenous people who lived in the Huatulco region was violently transformed when the narrow coastal strip (about 30 km) was expropriated by the Mexican TouristDevelopment Fund (FONATUR) in the early 1980s for a transnational beach tourism project. After pushing them from their small fishing villages, little thought was given to the local population; construction attractedworkers of all sorts along with other people seeking their fortunes fromother parts of Mexico. Formore than 10 years, social tensions rose as five large hotels and many smaller installations were built; menial jobs were offered to the nativeswho had taken refuge in the larger settlements dispersed in the surroundingmountain communities or in the shanty

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towns that sprouted to attend to the demands of the new industry. The prevailing pattern of polarising development characteristic of the rest of Mexico became firmly entrenched in this area, with a small, prosperous beach-front community coexisting alongside makeshift facilities for the service workers; the local communities increasingly found themselves in dire straits, as national policy discriminated against rural production in general and poor, small-scale farmers in particular. In this articlewewill examine the creative role of a localNGOin promoting an alternative approach to development that might contribute to reconciling the conflicting interests in the region. By explicitly recognising the special role that NGOs can play in facilitating community participation, the CSE has facilitated the interaction of groups from different cultural backgrounds and social classes in what promises to be an innovative programme of diversified development in which environmental tourism will play a fundamental part.

The River Basins around Bahias de Huatulco

In 1958, the landscape of the coast ofOaxaca, seen from the peaks of the Sierra Sur, was that of multiple greenish tones, contrasting with the multiple bluish tones of the Pacific Ocean. In the river basin feeding the coastal aquifer, minor breaks of less than 5% in the tropical dry forest included traditional fields of corn, beans and fruit trees. The coffee areas were covered by the canopies of shade trees. Forty years later, the forest coverage had been reduced by 50%; only 20% resembled its former condition, while the rest suffered from a partial extraction of its timber resources. During the past 15 years the rate of deforestationdoubled that of the previous 25 years. These tropical dry forests are one of the most fragile ecosystems in the world and are rapidly disappearing. Historically, the inherited culture of forest management within the coastal communities has been eroded by an antiquated and venal commercial structure. In spite of sustained demand for tropical hardwoods and attractive prices for species such as rosewood and lignum vitae, a complex and costly system of intermediation discouraged communal planting and conservation and forcedmore intensive exploitation by drastically reducing local prices. Tourist development induced a heavy flow of migrants from the central highlands and other regions to the coast, overwhelming communal management practices that defined and restricted access to the forests.

Two thirds of this destruction is due to the ‘walking milpa’ (the system of slash-and burn-cultivation that encroaches on the forest for the short termplanting of corn and associated crops) and agrochemicals. The other third is mostly due to the illegal cutting of trees encouraged by developers of the tourist corridor fromHuatulco to Puerto Escondido.Devastationof the forests has been followed by the erosion of the soil and the final result is critical: the water supply to the Bahias deHuatulco tourist development areawill be exhausted by the year 2020, unless some regeneration programme is implemented. Most people in the region are still not even aware of the depths of the impending crisis. International integration assures regular supplies of lumber and food at prices that do not reflect their real costs: producers are poorly paid, water wasted and the environment despoiled. Consumers have become accustomedto these subsidies from the poor, from a clientelist political structure and from nature; in the process, peasants have been forced to eke out an existence, dismembering their communities and devastating their environment. So absurd is the process that the new hotels elected to import rolls of carpet grass from the centre of the country rather than seed new lawns in Huatulco, as if the region’s abundant natural and human resources were not relevant. Even water appears as a gift from heaven: in Huatulco, urban consumers receive it free and, although they complain, the hotels are charged only a fraction of what they would pay in other international resorts. Underpriced resources for the privileged urban population

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are yet another signal discouraging peasant society fromcontinuing its arduous task of environmental management, truncating its time-honoured commitment to assure water for their children and their grandchildren. In the end this combination of factors contributes to a self-devaluation within peasant society, a seemingly irreversible loss of self-esteem.

To add insult to injury, in 1997, hurricane Paulina destroyed six or seven million trees, increasing desertification in the river courses by 80% and damaging two thirds of the peasant homes. But it also instilled a renewed sense of responsibility towardsnature in most of those communities that had been able to maintain communal organisations. This is the basis for the growing enthusiasm of the communities to participate in the regeneration activities.

Communal Organisation and the CSE: A Complex History of Accommodation for Development

Unlike many other groups in Mexico and Latin America, the communities in this part of Oaxaca have strong communal organisations. In spite of having origins in four different ethnic groups, each with its own language and cultural patterns, all of the native peoples in this region share a tradition of strong collective roots based on the collective ownership andmanagement of their land, their abiding support for local forms of communal organisation and well-engrained cultural patterns that reinforce the traditional mechanisms of decision making, known as ‘uses and customs’. These communities have struggled through the centuries to defend their homelands against outside invaders, be they other Meso-American groups, the Spanish conquerors, or the new powers from a modernising nation. Even as they developed relationshipswith these outsiders, they managed to defend substantial areas of community life and decision making from attempts to dictate the terms of their submission or fuller integration into alien societies. When the government decided to create the resort development, the Oaxacan natives were rudely shunted aside. Expelled from their coastal communities, even the meagre compensations promised for expropriations were rarely paid.

Uncomprehending and without alternatives, many of those who resisted were slaughtered in the unrelenting drive to push forward with the programme. Developers moved in with impunity, backed by military might and a political commitment to forge a beach-front paradise. It is no wonder, then, that as the hotels were inaugurated and menial employment offered, many in the region chose to remain in their communities while a few migrated further afield in search of better opportunities. Traditional authorities and elders counselled against integration, moving to reinforce local options. The CSEwas created sometime after the first large hotelswere inaugurated in the new resort. Cognisant of the underlying conflicts that permeated the region, the NGO carved out a niche for itself: working with the native communities to regenerate someof the smaller river basins in the region as partof a broader effort to promote community welfare, through the rehabilitation of the tropical dry forests, replanting denuded areas with native species of trees with cultural and commercialvalue. It startedto workwith the communities to implement a diversified development programme in which the forests would play a central role, but where complementary activities would offer an essential economic underpinning to ensure its economic viability and guarantee sufficient opportunities to persuade people to remain and strengthen confidence in community governance and management capabilities. The complementary activities envisioned in the CSE programme included ecotourism, a renewed emphasis on productionof basic foods for local consumption, and commercial production of goods and services for local and specialised foreign markets. The new strategy was anchored in a carefully designed programme to use reforestation as the centre of a programme to rebuild the deterioratedwatershedthatwould be the foundationof a stronger productive

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system in the region, a prerequisite for supporting the local communities and their cultures. This approach was designed to create a favourable environment to attractvisitorswhomight be interested in a varietyof ecotourismofferings; these would be owned and managed by the indigenous communities participating in the programme and sensitive to the natural heritage that they were rescuing and preserving. The CSE's initial diagnosis of the local ecosystems confirmed its early analysis that the unusual tropical dry forests presented a unique challenge for rehabilitation and conservation. The early decision to organise the work on the basis of water basins proved crucial, as the nurseries and new plantings required regular flows ofwater or irrigation; pruning and other cultivation practices were implemented through a process of joint administration in which outside experts shared their knowledge with the natives who applied their inherited learning about the region.Anewdiversified mixture of species began to thrivewith unexpectedly high growth rates. From the very beginning, bungalows were constructed as part of the programme, creating an opportunity for offering some ecotourism services as part of an effort to demonstrate that the local cultures were also of interest to people fromfar afield, and that local practices formanaging and conserving the environment were valued by others who would be willing to pay for the privilege of visiting the area. The CSE participates in these programmes through a series of trust funds that are administered through a tripartite structure. The indigenous authorities charged with the management of community property and local political representatives join with the NGO to implement decisions about how governmental programmes and outside assistancewill be appliedwithin eachcommunity.One of the programmes that has been in operation longest illustrates howthe process works: the Magdalena River Programme includes a broad series of activities that include the monitoring of aquifers, protection of the integrity of river beds and banks from erosion, reforestation through new planting, soil stabilisation and protection,water conservation, sustainable agriculture, reuse of agriculturaland forest waste products, infrastructure for environmental tourism, and community environmental education. A long period was required to implement this programme, developing themechanisms for communicationwith the communities and overcoming the historicalpattern of paternalism bywhich outside assistance was transferred to such groups in return for political support without a corresponding opportunity for local participation and without any meaningful consultation about the programmes' design or implementation.The devastating hurricane Paulina hit the region in autumn 1997. It proved to be a turning point, demonstrating the effectiveness of many of the CSE programmes and identifying designweaknesses of some of the conservationand construction practices. The storm destroyed millions of trees, accelerating the process of desertification while demonstrating the urgency for increasing the
scale and intensity of the rehabilitation and diversification programmes. The tragedy catalysed the communities, leading to the consolidation of more communal assemblies that began to demand assistance, effectively transferring the initiative from a lethargic bureaucracy to the local groups anxious to initiate their own programmes with the resources that might otherwise have been siphoned off by ineffective governmental agencies. Although the destructionwreaked in the highland communitieswas serious, it turned out that the crisis on the coastwould prove moreworrisome in the long term. As a result of the hurricane, and the river basin approach adopted by the CSE, the NGO began to examine the coastal aquifer closely, revealing a serious shortfall thatwould leave the tourist economywithout local supplies of drinking water in less than a quarter of a century if corrective measures were not implemented. This alarming finding was denied by the official water agency, but most other official organisations joined in supporting the CSE efforts to broaden the scope

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of its programme to prepare to confront the impending crisis. The Forging of a Sustainable Development Strategy With the disaster, the CSE perceived an opportunity to undertake a more ambitious programme for the region as awhole. (The principles of sustainability on which this project is based are discussed at length in Barkin (1998).)Federal agencies quickly took advantage of the Centre's presence and capabilities to charge it with intermediate-term responsibilities for reconstruction, once the emergency disaster relief programmes were terminated. A history of bureaucratic bungling placed theNGOin a favourable position to complement the river basin project with a far more ambitious reforestation programme that would replant target areas with a view to restoring biodiversity, a concern of people within the communities, while ensuring that some of the species serve the demands of the marketplace. The forestry programme was conceived of as part of a broader programme for regional development and environmental protection. Because economic and social viability was a criterion from the beginning, technological innovations associated with existing market opportunities will allowwoodproducts and derivatives rather than rawtrees to bemarketed, creatingmore employment and generating greater value for the communities. This is a fundamental feature of the programme, since these communities have suffered from unfavourable conditions for their products for decades – if not centuries as the market works to exacerbate the discrimination imposed by society against indigenous groups and peasants, placing a low value on their labour, their resources and the products of their work.

The reforestation programme differs dramatically from similar programmes elsewhere. The first round of plantations resulted in germination rates exceeding 90%for the several species and replanting brought the effective rate to virtually 100%.The selection of varieties, the techniques used and the anticipated marketing opportunities are creating an extraction profile that will allow the first harvest of smaller trees only five years after the initial effort. In the meanwhile, the planting of other areas, the construction of bungalows, and other activities will assume increasing importance in the region. The organisational structure is also innovative. The CSE is a constitutive part of several local trust funds that integrate governmental agencies, the communities and the private sector into the programme. Although some local business groups havemade contributions to local public relations efforts, only the SheratonHotel has offered substantial direct support for the conservation activities; it

is remarkable that the other international chain, ClubMed, has resisted participating even in promotional activities. The operating Trust Fund, charged with the eventual coordinationof the individual enterprises that are being established by the communities themselves (including a pure water bottling plant and the ecotourismproject) has established a formula that attempts to create a solid foundation for future activities: prices for goods and services, while remaining competitive, must be sufficient not only to cover the direct costs of production, but also contribute to a fund for additional activities in the community and environmental programmes in the region as awhole; at present, the division is a third going to eachpart.This is the essence of the international 'fair trade'movement. During the initial stages, the communities havedisplayed a remarkable capacity to integrate these programmes into their existing structures. The assemblies where the initiatives are discussed reveal that their forefathers regularly engaged in such activities; we discovered that forest protection and replanting brigades used the same seed collection techniques and plantingmethods that are now being (re)introduced. This same process of interaction with the regional supervisors reveals the importance of water management and protection activities in the communities in past epochs, tasks

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that have been neglected asdiscriminatory governmental policies have forced the peasants to search for income and ployment in nearby towns or even in the USA to ensure the viability of their communities and the survival of their families. The present programme envisages an eventual charge to the coastal communities
to cover part of the costs of the environmental services being provided through the regeneration of the river basin. At present, this cannot be implemented because the water system is controlled by the government tourism agency which has not been able to fulfil its promises to deliver a high-quality product; compounding the problem, the hydraulic infrastructure is not well maintained. In fact, at present the localChamber of Commerce considers the lack of an adequatewater supply to be a major obstacle blocking the constructionof at least a dozen new hotel projects in the area.Once the communities have demonstrated their ability and willingness to maintain their systems, as well as their effectiveness in reducing the damage from seasonal rains, it is expected that the local authoritieswill be able to include a charge for these environmental services for large-scale users. In the interim, other mechanisms are being explored as a way of explicitly integrating the coastal beneficiaries into the programme. They are expected to provide some support for the ecotourism activities; future programmes include reserves for native flora and fauna, with the possibility of areas for larger mammals, once common in the zone. The communities will
shortly begin developing a dependable capacity to supply fruits and vegetables to the hotels, and contracts that will compensate the communities correctly for the real costsof production, including fair wages for theworkers and a charge for the environmental services that are normally not included by the market. The opening of channels for regional discussions of activities that will increase the overall attractiveness of the area for visitors in a sustainable fashion is a fundamental part of the collaboration among dissimilar groups, and essential for the long-term consolidation of the CSE agenda.

The Role of Ecotourism

From the very beginning, it was clear that tourism might play an important
part of the resourcemanagement programme.The communitieswould be able to offer a variety of nature tourism and similar activities as part of a diversified regional development effort. The CSE initiated preparations by designing bungalows that could be built by the communities. Local promoters were already helping people to integrate this type of activity into community life, encouraging women to think about preparing traditional meals, and helping men to improve their skills to ensure that the constructionwould offer a quality service. When the hurricane struck several of the buildings were destroyed or collapsed, forcing design modifications that produced a more solid and attractive structure. If this activity is to be successful, however,many more cottageswill have to be built throughout the larger river basin. Careful thought is being given to the carrying capacity of each area within the region, and the ability of the people in the communities to provide the range of services that will be offered to the visitors, without threatening the structure of local life and production. Some of the local tourist promoters (including one of the hotels) have agreed to participate by
channelling some of their own clients into these facilities on attractive terms that will assure the communities a steady flow of income and gainful employment consistent with strengthening local institutions. TheCSE is proceeding cautiously.The tropical dry forest ecosystem is a fragile environment: its preservation and protection require an infrastructure to assure healthy growth; visitors will have to be carefully guided through the region, constructing trails and training local people on how best to share their knowledgewith the

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visitors.Once initiated, the temptationto attract large groups presents a permanent threat to the project, the ecosystem and the communities themselves: the steadyprogress in incorporating the communities into thedevelopment of a variety of smaller enterprises is part of the long-term process of creating appropriate conditions for the communities to begin direct control the activities. Today's efforts to rehabilitate the region and create the foundations of a basic infrastructure are being financed with development assistance funds from the national government and international sources. Themove to a commercial stage will require different sources of capital: there is no lack of outside investors interested in financing this project. Here the CSE again views its role asmore than that of a promoter; it is not simply attempting to create opportunities so that the communities can take advantage of a potential market. The local hotels have expressed their willingness to support the implementation of the overall resource management programme through the ecotourism activities. Some of the more visionary hoteliers have begun to realise that this offering can complement rather than detract fromtheir ownmarkets and have accepted the position of the CSE that community ownership and control is an essential building block to ensure the viability of the overall reconstruction programme. The main challengewill be to control this development so that it is a complementary part of the larger programme, rather than one that dominates and subsumes the communities and their ecosystems to the short-term demands of a sometimes fickle market. A review of many ecotourism projects in Mexico and Central America reveals their destructive impacts on local processes of sustainable advance. In fact, one of the areas that attracts the largest number of nature tourists in Mexico, the reserve of the monarch butterfly, is actually in the throes of a process of impoverishment because the local population has not been allowed to participate directly in creating adequate facilities to offer the more than 200,000 visitors who visit the area during the four-month period when the lepidopters nest there (Bartin, 1999).Other projects offer crass distortions of the concept, like the site advertised as 'Nature's Sacred Paradise'; it displaced local Mayan communities, dynamited sacred wells, and illegally keeps endangered species in captivity, to attractvisitors to its lucrative 'ecotourism' theme park in Quintana Roo. The difficulties of combining local participation with a socially and environmentally balanced programme that also produces a profit create a constant tension that provokes conflicts among groups with the best of intentions. 3 The CSE model on the coast ofOaxaca offers a promising alternative, by inserting an ecotourism component into a broader project of community- directed regional resourcemanagement, that offers essential environmental benefits to every social group in the area.

Correspondence

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Notes

1. Data collected from the battery of wells that supply water to the coastal areas showed a 26%decline in the levels of the aquifers between 1986 and 1992.Extrapolation of this trend leaves insufficient water for cost-effective pumping in less than a quarter century.

2. The uprising by the ZapatistaArmy ofNational Liberation in January 1994 is dramatic testimony to the depths of this process and the latent reserve of pride in this endangered heritage.

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3. Ron Mader's recent tourist guides to Mexico and Honduras (Mader, 1998a, b) are a testimony to the variety of efforts and the difficulty of finding the ideal model. His constructive comments are an excellent contribution to help visitors make the most of their ecotravels.

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Introduction to the ISO 14000 Series

ISO 14000 is a group of voluntary international standards addressing environmental management systems, environmental auditing, environmental labeling, environmental performance evaluation, and life cycle assessment. The standards are being developed by the International Organization for Standardization (ISO) and are commonly referred to as the ISO 14000 series. The ISO 14000 series provides an organization with a systematic approach to environmental management, and aims to establish a common worldwide approach. The standards are developed through a comprehensive consultation process with national standards bodies and interest groups from the 112 member countries throughout the world.

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Technical Committee 207

The formation of ISO Technical Committee 207 (TC 207) in 1993 marks the beginning of the development of the ISO 14000 series. The US Technical Advisory Group (TAG) for ISO/TC 207 (US/TAG for ISO/TC 207) represents the United States in international negotiations on ISO 14000. The group is accredited by the American National Standards Institute (ANSI) to develop official US positions and responses to the draft standards that are being produced by ISO/TC 207, and sends delegates and experts to the ISO/TC 207 international meetings. The US/TAG is composed of over 500 individuals representing private companies, government agencies, environmental groups and consultants, and organizations and associations. The Department of Defense is represented on the US/TAG.

The ISO 14000 Series

The full list of ISO 14000 documents is provided at the end of this fact sheet. To date, six standards have been finalized and published. The first standard to be published (in 1996) was ISO 14001 – Environmental Management Systems – Specification with Guidance for Use. It is this standard which has received the most attention and has become widely implemented throughout the world. ISO 14001 takes a "quality management" approach to environmental performance, and aims to produce a culture of continuous environmental performance improvement within the implementing organization. ISO 14001, along with the European Union's Eco Management and Audit Scheme (EMAS), has provided international alternatives to early national EMS standards such as the British Standard BS 7750 (published in 1992).

As the first standard in the ISO 14000 series, ISO 14001 provides an organization with the framework for a structured environmental management system (EMS) that can be easily integrated into the organization's overall management process. Such a structured system enables an organization to move away from reactive, fragmented responses to environmental issues, and engenders a proactive approach allowing for the early identification of impacts, liabilities, and opportunities. ISO 14001 provides an organization with the ability and the management system needed to achieve increasingly high standards of environmental performance, and move beyond the opportunities stemming from traditional compliance-based environmental programs.

The other finalized and published standards in the ISO 14000 series cover guidelines, procedures, and qualifications for environmental auditing. ISO 14040 covers the principles and framework behind life cycle assessment. Future standards are expected on life cycle assessment, environmental labels and declarations.

The ISO 14000 series is listed below:

ISO 14001	EMS – Specification with guidance for use	Published September 1996
ISO 14002	EMS – Guidelines on ISO 14001 for small and medium sized enterprises	No draft or published version available. Discussion in June 1998.
ISO 14004	EMS – General guidelines on principles, systems and supporting techniques	Published September 1996
ISO 14010	Guidelines for environmental auditing – General principles	Published October 1996
ISO 14011	Guidelines for environmental auditing – Audit procedures – Auditing of EMS	Published October 1996
ISO 14012	Guidelines for environmental auditing – Qualification criteria for environmental auditors	Published October 1996
ISO 14015	Environmental assessments of sites and entities	Publication expected 2000
ISO 14020	Environmental Labels and Declarations – General Principles	At draft voting stage. Publication expected late 1998.
ISO 14021	Environmental Labels and Declarations – Self-declaration environmental claims – Guidelines and definition and usage of terms	At draft voting stage. Publication expected 1999.
ISO 14024	Environmental Labels and Declarations – Environmental Labeling Type I – Guiding Principles and Procedures	At draft voting stage. Publication expected end 1998.
ISO 14025	Environmental Labels and Declarations – Environmental Labeling Type II – Guiding Principles and Procedures	At working draft stage. Publication expected 2000.
ISO 14031	Environmental Management – Environmental Performance Evaluation – Guidelines	At draft voting stage. Publication expected 1999.
ISO 14040	Environmental Management – Life Cycle Assessment – Principles and Framework	Published June 1997
ISO 14041	Environmental Management – LCA – Goal and Scope Definition and Inventory Analysis	At draft voting stage. Publication expected 1998.
ISO 14042	Environmental Management – LCA – Life Cycle Impact Assessment	At committee draft voting stage. Publication expected end 1999.
ISO 14043	Environmental Management – LCA – Life Cycle Interpretation	At committee draft voting stage. Publication expected end 1999.
ISO 14050	Environmental Management – Vocabulary	At draft voting stage. Publication expected 1998.

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The Standards and Industrial Research Institute of Malaysia Berhad (SIRIM) is one of the major certification bodies for ISO 14000 in Malaysia. SIRIM invited more than thirty companies to participate in a pilot scheme for ISO 14000 certification in 1996, and by 1998 a total of 70 companies had received ISO 14001 certification from SIRIM. SIRIM also has a program (funded by DANCED) concerning clean technology for SMEs in the electroplating, food, and textile industries.

APPENDIX 7

MEASURES FOR INTEGRATING ENVIRONMENTAL CONSIDERATIONS INTO AGRICULTURE

E. Environmental management systems: possible effects of the ISO 14001 standard on Malaysian exports

Increased use of standards regarding environmental management systems, and in particular the development of international standards under the ISO 14000 series, have generated both interest and concern in Malaysia. The principal concern is that to the extent that the ISO 14000 (in particular the ISO 14001 certification standard) becomes a *de facto* condition for doing business, at least in certain sectors, Malaysian producers will face additional costs. Such additional costs, it is argued, may be higher for Malaysian firms, in particular small and medium-sized firms, than for their competitors in developed countries, which are already implementing environmental strategies and are using more environment-friendly production processes. On the other hand, the continuous environmental improvements encouraged by ISO 14000 may induce cost savings, e.g., through reduced input costs resulting from a more efficient use of materials and energy. Also, participation in ISO 14001 provides a basis for the certification of a firm's environmental management system, which may give it greater credibility with overseas clients and the government. The government itself may benefit from ISO 14000 to the extent that environmental management systems put greater emphasis on self-regulation on the part of industry, providing enforcement officers with more time to spend on controlling the most polluting industries. A National Committee on Environmental Standards has been established in Malaysia to study the impacts of the ISO 14000 series.

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The potential effects of ISO 14001 on exports from Malaysia are difficult to project. Any such effects are expected to occur principally in relation to firm-to-firm operations, in particular with overseas customers. The closest analogue to environmental management systems can perhaps be found in the ISO 9000 series on quality control, and experience with ISO 9000 may shed some light on the possible impact of ISO 14001. It should be noted, however, that the impact of ISO 14001 relative to that of ISO 9000 may be reduced by the fact that, whereas quality concerns are of direct importance to all companies, environmental concerns may be of relevance mainly to industries in certain environmentally sensitive sectors. Thus, ISO 14001 may have relatively little effect on certain sectors.

As to the costs of participation, two elements are important: (a) the additional costs involved in meeting the environmental objectives of environmental management systems; and (b) the costs involved in registration.

With regard to element (a), the main requirement of ISO 14001 is for producers to establish and maintain an environmental management system based on self-determined environmental policy and goals. Compliance with all applicable environmental regulations is a minimum requirement. It should be noted that in the case of Malaysian producers, that requirement refers to domestic environmental legislation in Malaysia. Statistics from the Department of Environment show that the rate of compliance with domestic environmental regulations varies from sector to sector. It may also vary according to farm size. It should also be noted, however, that ISO 14001 also expects participating companies to go beyond the levels of the environmental requirements established by law, by committing themselves to the continuous improvement of environmental management systems. That aspect may imply additional costs for many producers in all sectors. At the same time, environmental management systems themselves may contribute to environmental improvements and economic benefits, e.g., through savings on input costs or improved business opportunities.

With regard to (b), obtaining and maintaining certification is expensive. In general, companies in developing countries may have to rely on the services of expensive consultancy firms when setting up environmental management systems. In addition, registration fees may be an important cost factor. In the case of Malaysia, it is likely that MAC will become responsible for accrediting registrars.

APPENDIX 8

Definition of Environmental Indicators:

Environmental indicators are measurements that track environmental conditions over time. The data collected can be presented in text, tables and graphs so that the public and policy makers can readily understand the status of the environment. The indicators provide a comprehensive look -- from water quality to native species. The indicators presented in the Annual Report of an organisation can be organized in categories reflecting the principles of ecosystem sustainability. In order for an ecosystem to be sustainable, it must:

1) Use sunlight or other renewable alternatives such as wind as the source of energy
2) Dispose of wastes and replenish nutrients by recycling all elements
3) Maintain biodiversity
4) Maintain the size of human or animal populations so that .overgrazing. and overuse do not occur

It may be possible for an ecosystem to sustain itself for long periods without adhering strictly to these principles. However, sustainability in perpetuity can be achieved only if the above principles are met.

(Hawaian Environmental Report Card 2003)

Examples of Environmental Scientific Indicators or Aspects

Box 7.1 INDICATORS FOR MONITORING ENVIRONMENTAL SUSTAINABILITY

Six key indicators are used here to monitor the progress of the MDG to ensure environmental sustainability. These are (i) proportion of land area covered by forest; (ii) ratio of area protected to maintain biological diversity to surface area; (iii) energy use (kg oil equivalent) per $ GDP (PPP); (iv) carbon dioxide emissions (per capita) and consumption of ozone-depleting CFCs (ODP tons); (v) proportion of population with sustainable access to an improved water source, urban and rural and (vi) proportion of urban and rural population with access to improved sanitation.

The proportion of land area covered by forest is defined as a share of total land area, where land area is the total surface area of the country less the area covered by inland waters, such as major rivers and lakes. Changes in forest area reflect the demand for land for other competitive uses. Forests fulfil various functions that are vital for humanity, both in terms of goods and services.

The ratio of area protected to maintain biological diversity to surface area is defined as nationally protected area as a percentage of the total surface area of a country. Protected areas are vital for safeguarding biodiversity, supporting local livelihoods, protecting watersheds, harbouring the wealth of genetic resources, promoting recreation and tourism industries, and providing areas for research and education, as well as fostering cultural values.

The energy use (kg oil equivalent) per $ GDP purchasing power parity (PPP) is the commercial energy used, measured in units of oil equivalent per $1 GDP converted from national currencies, using PPP. It provides a measure of energy intensity. The lower the ratio, the better the energy efficiency.

The carbon dioxide emissions (per capita) and consumption of ozone-depleting chlorofluorocarbons (CFCs) (ozone depleting potentials (ODP) tons) show total amount of carbon dioxide emitted by a country as a consequence of consumption and production activities and sum of the consumption of the weighted tons of the individual substances in the group—metric tons of the individual substances multiplied by its ODP respectively. They signify the commitment to reducing carbon dioxide emissions and progress in phasing out the consumption of CFCs by the countries that have ratified the Montreal Protocol.

The proportion of population with sustainable access to an improved water source, urban and rural, is defined as the percentage of the population who use any of the following types of water supply for drinking: piped water, public tap, borehole or pump, protected well, protected spring, or rainwater. It monitors access to improved water sources based on the assumption that improved sources are more likely to provide safe water. Unsafe water is the direct cause of many diseases in developing countries.

The proportion of urban and rural population with access to improved sanitation is the percentage of the population with access to facilities that hygienically separate human excreta from human, animal, and insect contact. Good sanitation is important for the health of the urban and rural populations.

Source: Millenium Development Goals 7: Malaysia

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There are <u>other ecological environmental aspects or indicators</u>. Some examples from Hawaii are shown below. Please take note of the various <u>presentation formats.</u>

From the Hawaian Environmental Report Card 2002.

<u>Examples from the Hawaian Environmental Report Card</u>

The examples given are biodiversity maintenance which includes status of native plant and animal species as well as forest and natural areas.

Biodiversity Maintenance

Status of Plant Species

Hawai'i is the most isolated high land mass on Earth and most of our native plants are found nowhere else in the world. Species that reached the islands before the arrival of humans evolved with minimum competition. As a result, most native plants are easily damaged by feral animals and do not compete well with introduced, aggressive plants. Land use changes and exotic plants and animals cause major problems to our native species.

The table below shows the number of rare native plant species in Hawai'i.

Number of Plant Species in Hawai'i by Status

Year	Listed Endangered or Threatened	Proposed Endangered or Threatened	Candidate for Endangered or Threatened Listing	Species of Concern	Total Rare Plant Species
1999	292	0	92	204	588
2000	292	0	92	204	588
2001	292	0	92	204	588

Source: U.S. Fish and Wildlife Service.

Status of Native Animal Species

The loss of native species in Hawai'i has been tremendous. Flora and fauna that evolved over millions of years have been devastated in less than 2,000 years. Twenty five percent of the U.S. endangered taxa occur in Hawai'i.

The table below shows the status of native animal species (except invertebrates) in Hawai'i.

Status of Animal Species

Number of Species	Mammals			Birds			Turtles			Fishes		
	1999	2000	2001	1999	2000	2001	1999	2000	2001	1999	2000	2001
Total Native Species	4	4	4	93	93	93	5	5	5	22	22	22
Extinct Species	0	0	0	26	26	26	0	0	0	0	0	0
Listed Endangered	4	4	4	31	33	33	2	2	2	0	0	0
Listed Threatened	0	0	0	1	1	1	3	3	3	0	0	0
Proposed for Listing	0	0	0	1	0	0	0	0	0	0	0	0
Candidate Species	0	0	0	2	2	2	0	0	0	0	0	0
Species of Concern	0	0	0	4	4	4	0	0	0	0	1	1

Source: U.S. Fish and Wildlife Service

Note: i) The status of Hawaiian invertebrates is hard to assess due to lack of information on abundance and distribution for described (5,500+ species) and undescribed (3,000 - 5,000 species) taxa. ii) Four native mammals include the Monk Seal, Hoary Bat, Humpback Whale and Sperm Whale.

The data on the plant and animal species was collected systematically via research.

Biodiversity: The Issue

Biodiversity describes the variety of life, including genes, species and ecosystems. It is essential to society, providing us with food and raw materials. But it is being lost faster than ever before due to rising human population and development. The conservation organisation World Wildlife Fund estimates that over 30% of the World's ecosystems have been lost since 1970. Most of the World's remaining species are concentrated in biodiversity hotspot such as rainforests (inclusive of highland forests) which need particular protection. An international agreement to protect biodiversity was reached in 1992, known as the Conservation on Biological Diversity. As well as leading to loss of biodiversity, insensitive land development can spoil the aesthetic value of an area.

Forest and Natural Areas

Managed Forest Areas

Hawaiian native forests have evolved over millions of years. Invasive species that choke out native plants, and feral animals that cause erosion on the fragile forest floor can cause serious damage to the native forest. Keeping out invasive species and feral animals and planting more native plants promotes healthy forests.

Acres of Forest and Natural Areas

Year	Forest Reserve Land	Private Forest Land	Natural Areas
1995	622,339	328,742	122,703
1996	622,339	328,742	122,703
1997	643,134	328,742	109,164
1998	643,134	328,742	109,164
1999	643,134	328,742	109,164
2000	643,134	328,742	109,164
2001	643,134	328,742	109,164

Source: State of Hawai'i Data Book 2002.
Note: Forest Reserve Land = State-owned and privately-owned lands under surrender agreement in forest reserve system.
Private Forest Land = Private forest land within conservation district. The majority of these lands were previously in the forest reserve system.
Natural Areas = The State of Hawai'i created the Natural Area Reserves System, or NARS, to preserve and protect representative samples of the Hawaiian biological ecosystems and geological formations.
In 1937, 1,027,299 acres were in forest reserves.

Some Malaysian Data

Malaysia is a country that has been recognized as one of the twelve mega biologically diverse countries in the world. It is estimated that there could be over 15,000 known species of flowering plants, 286 species of mammals, 150,000 species of invertebrates, over 1,000 species of butterflies, 12,000 species of moths, and over 4,000 species of marine fish in the country. The recent discovery of a new tree species *Vatica yeechongyii* in May 2004 in Selangor and Negeri Sembilan demonstrates that the extent of diversity is still not fully known. To ensure the protection and conservation of its biodiversity, Malaysia has created a network of protected areas that are representative of the ecosystems found in Malaysia. As previously noted, the network of protected areas for forests is covered under Wildlife Sanctuaries, National Parks, State Parks, and Wildlife Reserves and totals up to 3.3 million hectares. In addition, there is a total of about 0.2 million hectares of protected forest within the Permanent Reserve Forests. In addition to these areas, Malaysia has also gazetted a total of about 3.3 million hectares as protected areas, under the network of Wildlife Sanctuaries, National Parks, State Parks, and Wildlife Reserves scattered throughout the country. This increase is due to the gazetting of more state parks, of which the Royal Belum State Park, covering an area of about 117,500 hectares, gazetted in 2003, is the latest example. (Source: Millenium Development Goals 7: Malaysia)

APPENDIX 9

In Appendices 6 and 7 the possible presentation formats of the results can be seen. In this appendix some addtional ideas can be obtained. Below is another example from the British Columbia Environmental report. Simple statements are made under a theme and are ticked X or ✓.

Subject: Wildlife and Parks

FAIL

- ✗ Cuts to Parks staff leave only 120 staff, or one person per 7 parks. Parks interpretation is cut entirely, leaving B.C. and Mississippi as the only two jurisdictions in North America with no public park interpretive programs
- ✗ While it works to increase logging, the government closes all 1,300 forest recreation sites, 500 trails, and many forest service roads unless local groups or commercial operators take over their management
- ✗ Lifts moratorium on sport hunting of grizzly bears
- ✗ Ignores Tlingit First Nation, previous court ruling, and approves mining in Taku wilderness area
- ✗ Awards heli-skiing licence in endangered mountain caribou habitat

Subject: Resource Management

FAIL

- ✗ Rolls back forest practice rules, claims "results based" rules sufficient, but releases no rules and allows companies to propose their own logging practice rules
- ✗ Lifts salmon farming moratorium
- ✗ Rolls back rules governing oil and gas industry; allows cabinet or minister to exempt any company from Petroleum and Natural Gas Act regulations
- ✗ Backtracks on promise to cut industry subsidies with result that taxpayers subsidize mine exploration to the tune of 65 cents of every dollar spent
- ✗ Approves raw log exports while sawmills close

***Has the government done anything right?* Yes.**

Some examples from the BCFacts.Org web site:

- ✓ Enters agreement with Haida nation and commits to process to protect cultural values and to "ecosystem based" planning
- ✓ Expands program to capture and recycle more lubricating oils and oil filters
- ✓ Creates $2 million trust fund which will be used to research B.C.'s watersheds, increase public awareness, strengthen partnerships and enhance the effectiveness of community organizations
- ✓ Protects 20 key B.C. rainforest valleys until June, 2003; however, orders permit road building in these valleys by mining companies
- ✓ Opposes construction of Sumas 2 gas fired energy plant in Washington State

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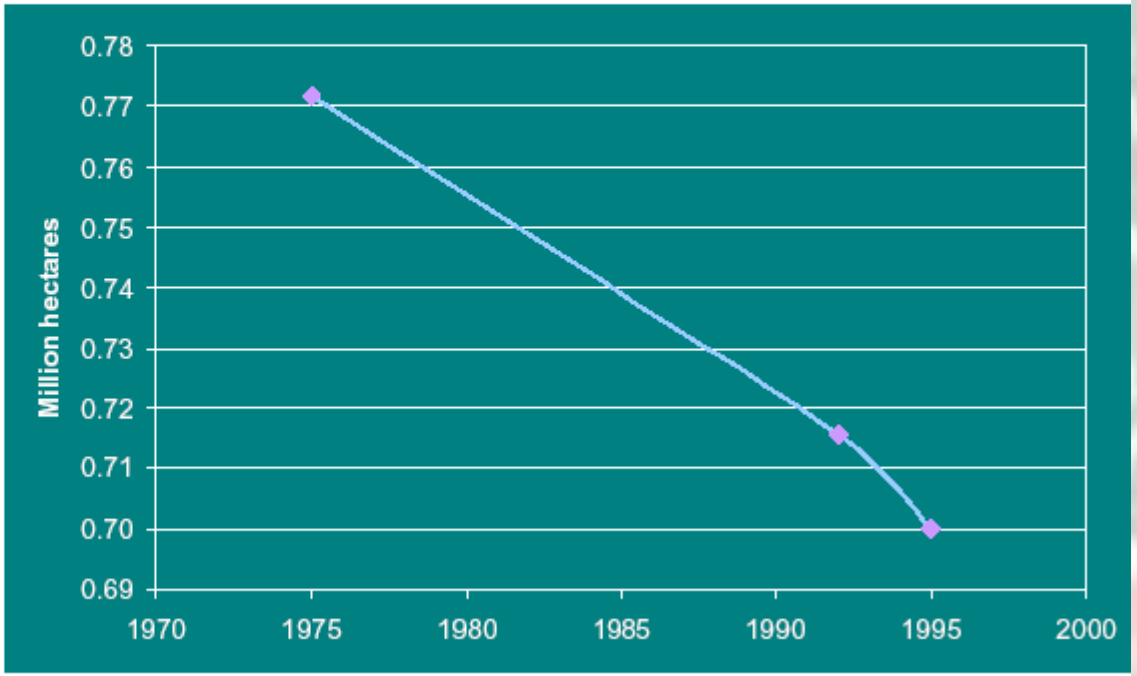
Indicator 4 : Montane forests

In the past, the cool and wet conditions of the tropical montane cloud forests were not readily exploitable and many of the montane forest area remained intact until recently. The traditional environment for agriculture was restricted to upper lowland terrains, the highest being at about 1,200–1,400 m above sea level, corresponding to the lower limits of the lower montane forest where cloud cover descends daily and the daily minimum temperature is 18°C. Under these conditions, fruits of some important crops abort, such as bananas and coconuts. However, more recently, cultivation has rapidly invaded the upper montane forest zone. This became possible through the combination of the introduction of temperate crops such as cabbage, asparagus and modern cultivation skills i.e. the use of fertilisers and pesticides and road accessibility. Consequently, temperate vegetation cultivation has now reached 2,100 m. In addition, other modern activities have impacted this forest type including dairy farming, golf course development, tourism and the incursion of logging activities to the very limit of harvestable forest. Montane forests comprise about 10 per cent of Sabah's total land area.

Montane forests decreased from about 770,000 ha in 1970 to about 700,000 ha in 1995 (Source: Sabah Department of Forestry, 2002)



APPENDIX 10

INDICATOR ASSESSMENT: 2 EXAMPLES ARE GIVEN BELOW

The example below shows a descriptive qualitative assessment and a X or ✓ form of presentation format.

Example 1: British Columbian Report Card

Wildlife and Parks

"Beautiful BC" is a part of our culture. Images of mountains, salmon, bears and eagles dominate commercials about BC and our sense of who we are. BC is fortunate to have more richness of plants and animals than any other province in Canada.

Unfortunately, over 1,300 species are currently threatened or endangered in BC and there is no effective law to protect them. BC's parks are also being neglected, receiving only one-fifth of what the federal government invests in national parks to keep them healthy. Here are just a few of the key decisions made on wildlife and parks over the past years.

X **Government Fails BC's Endangered Wildlife**

BC still has no effective endangered species legislation. In May 2004, the government amended the Wildlife Act giving cabinet power to designate a species as endangered and protect residences. There are no requirements, however, to base decisions on science or to designate the broader habitat that species need to survive. Only four species out of hundreds that are threatened are listed. Meanwhile, in July 2003 the government approved logging of habitat of the spotted owl, which has fewer than 25 breeding pairs in BC. In March 2005, the independent Forest Practices Board noted that BC endangered species are falling through the cracks.

X **Government Allows Resorts And Skiing In Sensitive Areas**

In October 2004, the government ignored the public input of thousands of people in awarding an environmental permit to the Jumbo ski resort in sensitive grizzly bear habitat near Invermere. The resort with over 6,000 beds would double the local population and stress local infrastructure. The government has also awarded heli-skiing permits in endangered mountain caribou habitat in Eight Peaks near Blue River and in the Quesnel Highlands.

X **Government Weakens Urban Salmon Protections**

In July 2004, the government weakened habitat protections for salmon in urban areas by removing provisions that would require buffers between salmon streams and development. Instead, buffers may be designated on a case-by-case basis in most cases based on assessments paid for by developers.

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X Government Lifts Moratorium On Grizzly Hunting

Despite the fact that BC grizzlies are listed as a Species At Risk and their old growth forest habitat continues to be clearcut, in July 2001 the government lifted a moratorium on sport hunting of grizzly bears. Some areas were left off-limits to hunting. The government claims that a science panel it appointed confirms a hunt is sustainable, yet a draft report commissioned by that panel leaked in early 2003 predicted a decline in grizzly populations as a result of hunting and other human induced mortality.

√ Government Helps Buy Burns Bog

In March 2004, the BC government joined those of Canada, the Greater Vancouver Regional District, and the Corporation of Delta in buying Burns Bog near Vancouver for preservation. The $73 million deal includes over 5,000 hectares of the largest remaining raised bog on the West Coast of North America. The bog plays a key role in local air quality and is home to a range of species.

Resource Management

To promote a short term economic boom in a resource economy, you do two things: lower the price of resources and/or give subsidies to industry, and get rid of laws that direct corporations to do anything other than what they want to do. Over the past four years, BC has done both.

Unfortunately, this leads to a bubble economy. BC's forest industry is dangerously dependent on nearly free beetle-kill wood. BC's oil and gas and mining industries are dependent on non-renewable resources. Sustainability requires a different kind of thinking. Here are some of the key decisions of the past years.

X Government Subsidizes Mining Industry

Despite a promise to end business subsidies, the government gave a wide range of subsidies to the mining industry. The industry was given a provincial sales tax break on machinery and a ten year mining flow-through tax credit for investors. Taxpayers are also subsidizing research for mineral deposits. The BC government estimates that for every dollar spent on mining exploration in BC, taxpayers now provide 65 cents.

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√ Government Moves Ahead With Community Forests

The government either announced several community forests, or else invited communities to submit proposals. Among others, community forests were awarded to Terrace and Burns Lake. Meanwhile, communities like Creston, Sechelt, and Ucluelet have been invited to apply. Community forests can be an important part of a new social contract in BC's forests, ensuring that benefits from forestry stay local. But, less than 3 percent of BC's timber is in community forests.

Source: BC Facts: 2001-2005 Summary of BC Environmental Decisions

Example 2: the Hawaiian Report Card. It shows how the assessement can be converted into grades. The final report can be in a quantitative format as below.

2002 Environmental Report Card

In this section, the Environmental Council grades the status of Hawai'i's environment. This report card provides citizens and policy makers with a quick assessment of how well we are caring for our environment. The Council hopes this evaluation stimulates the public to learn about and take action to improve our environment. Your thoughts and suggestions on the content and methodology of this report card are welcomed.

Environmental Report Card	2001	2002
Energy Use	D	C-
Use & Recycling of Resources	C	C
Biodiversity Maintenance	D	D-
Air Quality	A+	A+
Water Quality	A-	A-
Terrestrial Quality	B	B
Public Awareness & Concern	C	C-
Overall Grade	**C+**	**C+**

APPENDIX 10

The method for the actual calculations in the Hawaiian Report Card are shown below

Method for Calculating Environmental Status Grades:
Step 1. (Table 7.1)
Environmental Status Scores and Grades
The method used is based on the National Wildlife Federation.s 1971 Environmental Quality Index (Kimball, 1972).
Individual indicator scores are assigned as follows:
Present condition equal to or better than optimum condition = 100
Present condition equal to unacceptable condition = 0
A linear scale is employed to assign scores for conditions falling between the limits listed above. Letter grades corresponding to the assigned scores are given.

Step 2. (Table 7.2)
The environmental indicators are then organized into seven categories. The categories are: Energy Use, Use and Recycling of Resources, Biodiversity Maintenance, Air Quality, Water Quality, Terrestrial Quality, Public Awareness & Concern.
A weight is assigned to each of the indicators in a given category. This weight is used to obtain the score for each category. The weights are assigned to each indicator in relation to the empirical importance of the indicator itself as well as the reliability of its related data. For simplicity in interpreting the .0. to .100. scores, letter grades are used.

Step 3. (Table 7.2)
Finally, a weighted average of the nine components is used to obtain a grade for Hawai`i.s environment.
Limitations:

The comprehensiveness and accuracy of the grades are limited by the following factors:
a) The assessment is based on a sample of 20 environmental indicators. This small sample is not a full representation of Hawai.i.s environment.
b) The benchmarks for unacceptable and optimum conditions are based on assumptions and judgments made by the Council (see below). Others may have very different opinions about the figures.
c) The relative importance value to compute the weighted averages for the categories and total index is also subjective based on the Council.s beliefs.
This is the fifth attempt to assess the status of Hawai.i.s environment. The Council hopes to continually refine and improve this assessment process.

APPENDIX 10

Benchmarks, Trends and Status Scores

Indicator	Unacceptable Condition	Latest Year Condition	Optimum Condition	Status	
				Points	Grade
% of Energy from Renewable Sources	0.0	4.9	25.0	20	D-
Greenhouse gas emissions in million tons	23.0	18.7	15.7	59	C+
Water Consumption in Million Gallons	100,000	78,748	50,000	43	C-
% of Treated Wastewater Reused	0	13.3	25	53	C
Daily per capita Waste Generated in pounds	10.8	8.1	3.6	38	D+
% of Waste Diverted	0	25	75	33	D
Hazardous Waste Generated in Tons	3,000	1,456	500	62	B-
Number of Rare Native Plant Species	1000	588	0	41	C-

Table 7.1

Scores and Grades for Environmental Status

Category	Indicator	Status Points	Indicator Weights	Category Scores	Category Grade	Category Weights	Total Score	Total Grade
Energy Use	% of Energy from Renewable Sources	20	50%	40	C-	15%	59	C+
	Greenhouse Gas Emissions	59	50%					
Use & Recycling of Resources	Water Consumption in Million Gallons	43	20%	46	C	15%		
	% of Treated Wastewater Reused	53	20%					
	Daily per capita Waste Generated in pounds	38	20%					
	% of Waste Diverted	33	20%					
	Hazardous Waste Generated in Tons	62	20%					
Biodiversity Maintenance	Number of Abundant Native Plant Species	41	50%	24	D-	10%		
	Onaga Spawning Potential Rate	6	50%					

APPENDIX 10

The Hawaiian Environmental Council's assumptions were taken into account in the report.

Assumptions:

The Environmental Council's assumptions for unacceptable conditions, year 2002 goals, and optimum levels for Hawai'i's environmental indicators are listed below.

a) Renewable Energy: The Council prefers a goal of 25% for the amount of energy from renewable sources.

b) Greenhouse Gasses: The Council supports the Kyoto Protocol which calls for emissions of 7% below 1990 levels by 2010. This works out to 5.7 million tons by 2010 for optimum. The unacceptable level is 23 million tons.

c) Water Consumption: The Council has set 50,000 million gallons per year as the optimum level. 100,000 is unacceptable.

d) Treated Wastewater Reused: The reuse target is 25%.

e) Waste Generated: According to Healthy Hawai'i 2000, the national objective is to reduce the average pounds of municipal solid waste produced per person each day to no more than 3.6 pounds. The optimum level is the same as the national objective. It is unacceptable to produce 3 times the national objective.

f) Waste Diverted: Pursuant to section 342G-3, HRS, it was the goal of the state to reduce the solid waste stream prior to disposal by 50% by the year 2000. The Council sets 75 as an optimum level.

g) Hazardous Waste: The optimum target is 500 tons. 3,000 tons is unacceptable.

h) Native Plant Species: Optimally, all native species should be in abundance. 1,000 species listed as rare would be unacceptable.

Letter Grades:

For the sake of simplicity in interpreting the "0" to "100" scores, letter grades are used. The scale that we used was obtained from A Rating Guide to Life in America's Fifty States (Thomas, 1994).

100 = A+
85-99 = A
80-84 = A-
75-79 = B+
65-74 = B
60-64 = B-
55-59 = C+
45-54 = C
40-44 = C-
35-39 = D+
25-34 = D
20-24 = D-
0-19 = F

APPENDIX 11

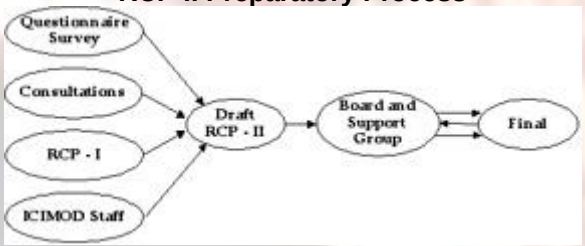
Regional Collaborative Programme (RCP2)

Programme Goals, Priorities and Operating Principles

Introduction

Experiences gained through implementing the first Regional Collaborative Programme for the Sustainable Development of the Hindu Kush-Himalayas (RCP-I) have confirmed the importance of ICIMOD having a comprehensive medium-term work programme and budget that can be used as the main framework for collaboration with institutions and organizations in its Regional Member Countries (RMCs) and to solicit multi-donor funding through members of the ICIMOD Support Group. RCP-II has been developed on the solid foundation of RCP-I, through extensive consultations that involved all the major stakeholders in the sustainable development of the HKH or their representatives.

RCP-II Preparatory Process



The preparatory process consisted of consultations with institutions and organizations in the region, in-house reviews and assessments of ongoing programmes and future needs, and intensive interactions between ICIMOD's management and the Members of the Board of Governors and the Support Group. This is reflected in the following figure.

To begin this process, a survey was organized to acquire a better understanding of the views of institutions and organizations in the HKH on sustainable development, the nature of their work, past collaboration with ICIMOD if any, its benefits and drawbacks, and priority areas for future collaboration with ICIMOD if this was desirable. To this end, a questionnaire was sent out to more than 400 institutions and organizations; and these included government line agencies; academic, research, and teaching institutions; and non-government organizations. More than 60 per cent of the questionnaires were returned and the response has been highly encouraging (see box below).

Responses from Survey (to the questionnaire distributed)

- The most common positive response was the appreciation for ICIMOD's role in information sharing and training on critical issues affecting sustainable development in the HKH.
- ICIMOD's mandate in poverty alleviation and environmental conservation was strongly endorsed and specific subjects for priority attention included improved agricultural technologies, biodiversity preservation, risk engineering and disaster mitigation, area planning, gender concerns, employment generation, youth, GIS training, mapping, diagnostic surveys, fellowships, support for programmes, etc.
- The findings of the survey also reveal that there are large geographic gaps in terms of the coverage of ICIMOD's activities in the member countries. Associated with these areas are specific priorities that ICIMOD should begin to address.
- Those organizations that collaborated with ICIMOD have also indicated a number of drawbacks, and this is relevant for RCP-II programmes. The most common drawback was lack of continuity in activities. In view of the difficulties involved in bringing about changes in mountain areas, programmes need to be of longer duration while ICIMOD activities appeared to be of relatively short duration.
- Related to this, another important gap was the limited funding available to carry out field research and demonstration activities. Improving location-specific technologies and practices require adequate resources for local testing, demonstration, and extension over a longer time period.

Subsequently consultations were held in all seven, active RMCs, in which the Director General and other senior staff of ICIMOD participated. The regional members of the Board contributed substantially to these consultations.

Following the survey and consultations, the views of ICIMOD staff were solicited and a first draft was prepared and discussed with the Members of the Board and Support Group during a series of meetings which were held in Burban, Pakistan, from 2 - 5 November 1997. Subsequent drafts were reviewed by Members of the Board and the Donors to RCP-I before the present version was finalised. In the meantime, evaluations by the Governments of Germany, Norway, and Switzerland in early 1998 also made recommendations for further improvement.

RCP-II has been designed in such a way that it will focus on those areas in which ICIMOD can make use of its unique mandate with respect to the development of the HKH. By implementing its four statutory functions of information exchange, research, training, and advisory services the priorities for the Centre should be to concentrate on its mountain-specific focus, its multidisciplinary approach, and its regional focus. As such, ICIMOD's role will be complementary to those of many other development organizations - government and non-government, bilateral and multilateral, sectoral and area-based; all of which are playing a very active role in implementing a wide range of mountain development activities. While ICIMOD's area focus will continue to be the HKH, a further and even greater association with UNCED based on Chapter 13 of Agenda 21 and with FAO as the Task Manager for Chapter 13, within the United Nations System, is envisaged.

Programme Goals

During the period 1999 - 2002, ICIMOD will focus its activities on five major programme areas. These reflect the three principal thematic concerns in sustainable development of the HKH and the two main mechanisms that ICIMOD uses to increase the capacities of local and national institutions to apply the knowledge generated by the thematic programmes.

i) Promoting Sustainable Livelihoods for Mountain Households

The focus will be on eradicating the poverty of mountain households by introducing appropriate technologies for sustainable farming systems, marketing farm products, promoting opportunities for income generation and enterprise development, and integrating environmental and socioeconomic concerns of mountain households in a sustainable manner.

ii) Gender Balanced Mountain Development

The focus here will be on ensuring that women will be equal partners and beneficiaries of the development processes taking place in the HKH and on removing inequities where they exist. Although this is also an integral part of the main programme areas, it is presented separately because of the special emphasis needed in the early stages of development and integration.

iii) Sustainable Management of the Mountain Commons

This programme will focus on the sustainable management of more than 60 per cent of the HKH consisting of rangelands and forests, of the water resources that are so essential for maintaining and/or improving farming systems, and of the biodiversity of this unique ecosystem

iv) Capacity Building of Mountain Development Organizations

This programme will concentrate on strengthening the capacities of institutions and organizations in the HKH to implement their mandate in (aspects of) sustainable development with focussed training programmes and tailor-made institutional strengthening activities. This will be complementary to the training components of the activities undertaken under the first three thematic thrusts.

v) Information and Outreach

The collection of information and its distribution to as wide an audience as possible will be strengthened. While traditional methods will continue to be used, innovative approaches for reaching out to the 140 million inhabitants or their representatives will also be explored.

Each of these five programmes consists of a number of activities with distinct objectives and outputs. While each of these activities are self-contained in their objectives and outputs, there are close linkages between activities. The activities to be undertaken under each programme are listed in the following 2 pages.

Activities

A total of 28 activities has been identified under the five major thrusts. Together, they address issues of principal concern to individual households, sustainable management of the Region's natural resources, and institutions and organizations engaged in sustainable development in the HKH. Among these activities, priorities have been identified to which the Centre will allocate a major share of its resources and for which it will also mobilise maximum country participation. These have been indicated in the respective programme discussions (Chapters 4-8).

Detailed plans for each of the activities will be prepared by each of the concerned divisions to identify clearly how the Activities will be planned and implemented during the RCP-II period. This strategy is discussed in part III.

- Soil-water-nutrient management on marginal farms in different agro-ecological zones and other related technology and management options
- Diversification and expansion of income and employment opportunities for marginal and landless households
- Dependency of mountain farms on common property resources (CPRs) in different agro-ecological zones
- Balanced development of physical and social infrastructure and services, including various renewable energy technologies
- Development of isolated areas with emphasis on the essential roles of small town and market centres and participatory land-use planning
- Identifying the impact and appropriateness of national development policies and the global economic liberalisation process for mountain development
- Integration of gender in decision-making processes and organizational development related to natural resources' management and social development
- Exploring opportunities for improving their future
- Reducing drudgery and workloads in mountain women's time allocation
- Promoting and facilitating the expansion in professional skills among mountain women and also their entrance into positions of professional importance and in the commercial sector
- Developing sustainable management of mountain watersheds by working jointly with the people
- Decentralizing decision-making processes and responsibilities for managing common property resources and changing property rights and its impact on sustainable resource management
- Developing measures and mechanisms to increase the benefits from mountain forest resource management for the rural poor, including the economics of forest resources
- Developing measures and mechanisms to improve the productivity of rangeland resources and increase the benefits thereof to poorer households
- Understanding the flow regimes of rivers and streams in mountain areas and increasing the contribution of water to farm productivity and the living standards of rural households.
- Reviewing the status of biodiversity conservation in the HKH and identifying options for sustainable management of biodiversity; including the role of Parks and Protected Areas
- Introducing and promoting new technologies for increasing farm productivity; through improved soil-water-nutrient management on sloping lands in particular

- Strengthening gender and development aspects in research and development institutions with a mandate in agriculture and natural resources' management
- Skill development in managing slope instability hazards
- Providing analytical methods, tools, and approaches for optimum area-based land use and economic development
- Introducing geo-information as a major decision-support system for sustainable development
- Assisting national institutions with the design and implementation of GIS training programmes
- Training in the design and management of information, communications, and outreach programmes at national and local levels
- Improving mountain-specific capacities in key partner institutions
- Promoting the sharing of information on common geo-information platforms
- A framework for classifying mountain farming systems to begin with, followed by mountain natural ecosystems and use of the framework and database as a monitoring system
- Expanding ICIMOD's role as a 'knowledge bank' on sustainable development in the HKH
- Reaching out to the people of the HKH and their representatives

Operating Principles

While each of these Activities will be implemented in the ways in which it is most appropriate for their respective issues to be addressed, the following operating principles and concerns will be considered by all programme activities.

- Integration of social, economic, and environmental concerns so that programmes and activities proceed in an integrated manner and do not simply result in short-run gains with long-run costs
- Policy Focus on appropriate changes and reforms in national policies so that they provide chances for improving the well-being of a greater number of people
- Human Resource Development for improving skills and promoting self-reliance
- Participatory approaches involving all the important stakeholders so that achievements are sustained. (Development must be based on sharing, alliances, and partnerships and space should be made available for all key actors to participate in the decision-making process.)
- Reaching the Last Mile: emphasising how mountain households will benefit from ICIMOD's work, either directly or indirectly?
- Working through Partners: ICIMOD cannot reach the 140 million people who live in these mountains. However, there are many national and local organizations that have the skills and the resources to reach these people. ICIMOD will not only work with appropriate partners to ensure that the results of its efforts are reaching mountain households but that it will also be prepared to use information and issues that are affecting mountain livelihoods. Table 3.1 lists the various types of intermediaries ICIMOD is expected to involve in reaching out to its ultimate beneficiaries.
- Macro-Micro Linkages: What are the macro implications of micro-level work and vice versa? This has become an extremely important issue for ICIMOD - given the hazards of generalising to mountain development. Each and every activity of ICIMOD should examine this issue from its respective areas of focus.

Table 3.1 ICIMOD Programme Beneficiaries

Intermediate Partners	Ultimate Partners
• Government planning agencies and line ministries and departments (Agriculture, Forests and Environment, Energy and Infrastructure Development, Human Resource Development, etc) responsible for planning, programming, and implementation • NG0s and community groups engaged in assisting rural households	*Rural households, particularly,* • small landholders and farmers, • landless and other poor and vulnerable groups, and • women and children who stand to benefit from productive and sustainable agricultural systems, better natural resource management, and diversification of the economy and area planning
• Government line agencies in agriculture, forestry, and cottage and village crafts and rural development institutions dealing with the promotion of craft and high-value, low-bulk products • Research institutions; NG0s and institutions responsible for training and technology dissemination	*Households and groups dependent on traditional highland-lowland trade* • deriving income from traditional crafts, livestock products, collection of forest products, and other unprocessed trade items
• Government line agencies in Tourism,Infrastructure, and Urban Development • NG0s engaged in training in small business promotion	*Incipient trading enterprises and households* • deriving income from growth of market towns and infrastructure, and • from growth in tourism and other trading opportunities
• Government line agencies in industries and related support services; Development Banks, Cooperatives, and Energy-and Technology-related enterprises; NG0s assisting such developments	*Small/medium industrial enterprises* • creating non-farm employment and generating income from agro-processing and processing of horticultural, sericultural products, medicinal herbs, etc • benefitting from decentralized energy systems and technologies

• Government line agencies in forestry, watershed management, erosion control, pasture management, irrigation and hydropower, and disaster mitigation • Grassroots' NG0s, community development organizations	*Households/ communities dependent on fragile environmental resources* • deriving products, income, and employment from better management of fragile lands, common property resources, forests, pastures, and water resources
• Universities, Research Institutions, and Development NG0s	*Researchers, and Development Professionals* • engaged in understanding the problems, constraints, and processes of multisectoral and integrated development in mountain areas • engaged in training, education, and awareness raising and human resource development
• International and regional organizations with a mandate in mountain development (related) issues (FAO, International Agricultural Research Centres, other Multinational Agencies, Bilateral Donors, ING0s)	*Mountain households and the communities identified above, benefitting from:* • international agricultural research • improved policies • donor support

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APPENDIX 12

Country Report 2003

Malaysia

COLLABORATION AMONG STAKEHOLDERS FOR HIGHLANDS CONSERVATION AND MANAGEMENT FOR SUSTAINABLE DEVELOPMENT

INTRODUCTION

Highlands are environmentally sensitive areas. The fragmented administrative and management of highlands resources pose difficulties for holistic and integrated decision making. Given that many highlands in Malaysia straddle over two or more states, managing them as single entities would lead towards holistic solutions. Many districts have common boundaries in the highlands, making it necessary to plan and manage highlands as integral and physical planning units. As such, the strategy and recommendations presented in the Country Report are to improve inter-agency and inter-stakeholder collaboration on environmental management, development planning and biodiversity conservation of the highlands, so as to ensure sustainable economic development.

THE RECOMMENDATION OF BEST PRACTICES FOR COLLABORATION AMONG STAKEHOLDERS

Local Residents should be educated on environmental conservation.

Local Residents need to be educated on environmental conservation and the importance of sustainable development in the highlands. The Local residents as key stakeholders should be encouraged to gain further knowledge and detailed understanding of environmental issues. This process would help lead to a change of perception and attitudes towards environmental conservation and sustainable development in the highlands. Local residents should also be expected to acquire

skills in identifying, preventing and resolving environmental problems. The extend of civic consciousness should be greatly enhanced in the highlands.

Government decision-makers, officers and administrators should be educated on environmental conservation.

Government decision makers, officers and administrators should be educated on environmental conservation and management in order to integrate environment concerns into the decision making and policy making process. Environmental education would include awareness rising on highlands issues. The Local Authorities are a prime candidate for environmental education, since they are frontline agencies involved in day-to-day operations. Administrative training programmes should include environmental education modules to raise awareness.

Environmental awareness and capacity among all stakeholders shall be increased.

Environmental education should be promoted and intensified to enable and encourage all stakeholders to participate in the sustainable development of the highlands. The first step in environmental education is raising awareness. Then stakeholders would be encouraged to gain further knowledge and understanding of environmental issues and of each stakeholder's role in overcoming the problems. This would lead to a change of perception and attitudes towards environmental conservation and sustainable development, which should then motivate people to actively participate in and continue towards sustainable development. Individuals and communities should also acquire skills for identifying, preventing and solving environmental problems.

The emphasis on environmental education in the schools in the highlands should be increased.

The Ministry of Education should increase the emphasis on environmental education in the schools in the highlands in order to raise environmental awareness and educate students on the importance of environmental conservation right from a young age. The Ministry of Education should continue its partnership work with non-governmental organisations to incorporate environmental education module into the formal education curriculum. Nature education centres in the highlands should be utilized to expose students to environmental issues unique to the highlands. Teachers and trainers will also need to be trained to teach the environmental subjects and use the teaching aids developed for the purpose. Some NGOs are presently involved in conducting environment education modules for students and in training teachers to include environmental awareness elements in the school curriculum.

A systematic slope maintenance programme should be undertaken with emphasis on early detection and prevention of slope instability problems.

Based on the regular inspection and monitoring slopes, government agencies and private property owners and occupants should formulate and implement slope maintenance programmes to carry out preventive maintenance of slopes. This is especially important for slopes which pose risk to the public, such as slopes along main roads and slopes adjacent to densely populated areas. Its is recommended that the Local Authorities, and Public Works Department (PWD) undertake a systematic slope maintenance programmes that include:

i. establishment of a database of slopes characteristics.
ii. identification and mapping of critical slopes.
iii. regular inspection of all slopes.

iv. establishment of a physical monitoring programme of all critical slopes.

v. a system to disseminate information on slopes to relevant stakeholders including the local community.

Occupants and property owners should be educated on ways to monitor slopes within their property.

The Local Authorities should educate occupants and property owners on the importance of regularly monitoring slopes within their properties. Example may be drawn from Hong Kong, where Civil Engineering Department of the Local Government provides information to the public on ways to inspect slopes and walls within private property. Property owners should be given guides on early detection of potential slope problems and how to recognise the warning signs of potential slope failure. The public will then be able to assist the authorities in monitoring slopes on a wider scale. The public can be further motivated for being informed on the catastrophe that could befall them should any major slope failure occurs. The Public Works Department could assist by providing technical advice to the Local Authorities.

An annual essay competition focusing on the highlands should be organised.

It is recommended that a nationwide essay competition focusing on "Sustainable Development in the Malaysian Highlands" be organised by The Ministry of Science, Technology and the Environment. The aim of such an essay competition, which should be devided into appropriate categories, would be for further knowledge, awareness and interest among the Malaysian public, including school children, in sustainable development.

The role and function of the Nature Education Centres in the Highlands should be enhanced.

The education centres run by the government departments and NGOs should be made to function as a place of information dissemination and environment awareness for the local community, with an emphasis on targeting students and farmers who reside in the highlands. In addition, the education centre should be promoted as a stopover for local and foreign tourists. Exhibits on the ecology and natural attractions of the highlands should be set up and open for public viewing. The education centre should be a place for visitors to learn about environmental issues through various exhibition units, literature, audio-visual, posters and displays. Nature trail guides and brochures should also be made available to tourists as reference materials and souvenirs.

The participation of the aborigines (Orang Asli) in all phases of economic development must be encouraged.

The aborigines should be given sufficient opportunities to be involved in future development, especially those close to their settlement. The opportunities could be in the form of employment opportunities, local product development, entrepreneurship and management of their cultural heritage. The Departments concerned should ensure that there will be efforts to establish, where appropriate, arrangements to strengthen the participation of the Orang Asli as stakeholders in the formulation of national policies and programmes relating to resource management.

CONCLUSION

There is at present, no overarching policy or strategy with regard to the land use in highland areas, often resulting in haphazard and ecologically insensitive development. Therefore, strategies for the optimal sustainable utilization of the highlands and the resources are essential to guide the

development plans for the Main Range as well as the highlands in the rest of the country. In this context, the current situation in Malaysia with regard to highland conservation, has presented the critical need for a holistic and integrated approach to disaster reduction, mitigation and preparedness, which focuses on collaboration among all stakeholders. This would enable a much better basis for the conservation and management of the highlands environment for sustainable development.

GENERAL READING

Mountain Biodiversity
Agenda 21

Chapter 13
MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT

13.1. Mountains are an important source of water, energy and biological diversity. Furthermore, they are a source of such key resources as minerals, forest products and agricultural products and of recreation. As a major ecosystem representing the complex and interrelated ecology of our planet, mountain environments are essential to the survival of the global ecosystem. Mountain ecosystems are, however, rapidly changing. They are susceptible to accelerated soil erosion, landslides and rapid loss of habitat and genetic diversity. On the human side, there is widespread poverty among mountain inhabitants and loss of indigenous knowledge. As a result, most global mountain areas are experiencing environmental degradation. Hence, the proper management of mountain resources and socio-economic development of the people deserves immediate action.

13.2. About 10 per cent of the world's population depends on mountain resources. A much larger percentage draws on other mountain resources, including and especially water. Mountains are a storehouse of biological diversity and endangered species.

13.3. Two programme areas are included in this chapter to further elaborate the problem of fragile ecosystems with regard to all mountains of the world. These are:

a. Generating and strengthening knowledge about the ecology and sustainable development of mountain ecosystems;
b. Promoting integrated watershed development and alternative livelihood opportunities.

PROGRAMME AREAS

A. Generating and strengthening knowledge about the ecology and sustainable development of mountain ecosystems

Basis for action

13.4. Mountains are highly vulnerable to human and natural ecological imbalance. Mountains are the areas most sensitive to all climatic changes in the atmosphere. Specific information on ecology, natural resource potential and socio-economic activities is essential. Mountain and hillside areas hold a rich variety of ecological systems. Because of their vertical dimensions, mountains create gradients of temperature, precipitation and insolation. A given mountain slope may include several climatic systems - such as tropical, subtropical, temperate and alpine - each of which represents a microcosm of a larger habitat diversity. There is, however, a lack of knowledge of mountain ecosystems. The creation of a global mountain database is therefore vital for launching programmes that contribute to the sustainable development of mountain ecosystems.

Objectives

13.5. The objectives of this programme area are:

a. To undertake a survey of the different forms of soils, forest, water use, crop, plant and animal resources of mountain ecosystems, taking into account the work of existing international and regional organizations;
b. To maintain and generate database and information systems to facilitate the integrated management and environmental assessment of mountain ecosystems, taking into account the work of existing international and regional organizations;
c. To improve and build the existing land/water ecological knowledge base regarding technologies and agricultural and conservation practices in the mountain regions of the world, with the participation of local communities;
d. To create and strengthen the communications network and information clearing-house for existing organizations concerned with mountain issues;
e. To improve coordination of regional efforts to protect fragile mountain ecosystems through the consideration of appropriate mechanisms, including regional legal and other instruments;
f. To generate information to establish databases and information systems to facilitate an evaluation of environmental risks and natural disasters in mountain ecosystems.

Activities

(a) Management-related activities

13.6. Governments at the appropriate level, with the support of the relevant international and regional organizations, should:

a. Strengthen existing institutions or establish new ones at local, national and regional levels to generate a multidisciplinary land/water ecological knowledge base on mountain ecosystems;
b. Promote national policies that would provide incentives to local people for the use and transfer of environment-friendly technologies and farming and conservation practices;
c. Build up the knowledge base and understanding by creating mechanisms for cooperation and information exchange among national and regional institutions working on fragile ecosystems;
d. Encourage policies that would provide incentives to farmers and local people to undertake conservation and regenerative measures;
e. Diversify mountain economies, inter alia, by creating and/or strengthening tourism, in accordance with integrated management of mountain areas;
f. Integrate all forest, rangeland and wildlife activities in such a way that specific mountain ecosystems are maintained;
g. Establish appropriate natural reserves in representative species-rich sites and areas.

(b) Data and information

13.7. Governments at the appropriate level, with the support of the relevant international and regional organizations, should:

a. Maintain and establish meteorological, hydrological and physical monitoring analysis and capabilities that would encompass the climatic diversity as well as water distribution of various mountain regions of the world;
b. Build an inventory of different forms of soils, forests, water use, and crop, plant and animal genetic resources, giving priority to those under threat of extinction. Genetic resources should be protected in situ by maintaining and establishing protected areas and improving traditional farming and animal

husbandry activities and establishing programmes for evaluating the potential value of the resources;

c. Identify hazardous areas that are most vulnerable to erosion, floods, landslides, earthquakes, snow avalanches and other natural hazards;
d. Identify mountain areas threatened by air pollution from neighbouring industrial and urban areas.

(c) International and regional cooperation

13.8. National Governments and intergovernmental organizations should:

a. Coordinate regional and international cooperation and facilitate an exchange of information and experience among the specialized agencies, the World Bank, IFAD and other international and regional organizations, national Governments, research institutions and non-governmental organizations working on mountain development;
b. Encourage regional, national and international networking of people's initiatives and the activities of international, regional and local non-governmental organizations working on mountain development, such as the United Nations University (UNU), the Woodland Mountain Institutes (WMI), the International Center for Integrated Mountain Development (ICIMOD), the International Mountain Society (IMS), the African Mountain Association and the Andean Mountain Association, besides supporting those organizations in exchange of information and experience;
c. Protect Fragile Mountain Ecosystem through the consideration of appropriate mechanisms including regional legal and other instruments.

Means of implementation (a) Financing and cost evaluation

13.9. The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about $50 million from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

(b) Scientific and technological means 13.10. Governments at the appropriate level, with the support of the relevant international and regional organizations, should strengthen scientific research and technological development programmes, including diffusion through national and regional institutions, particularly in meteorology, hydrology, forestry, soil sciences and plant sciences.

(c) Human resource development

13.11. Governments at the appropriate level, and with the support of the relevant international and regional organizations, should:

a. Launch training and extension programmes in environmentally appropriate technologies and practices that would be suitable to mountain ecosystems;
b. Support higher education through fellowships and research grants for environmental studies in mountains and hill areas, particularly for candidates from indigenous mountain populations;
c. Undertake environmental education for farmers, in particular for women, to help the rural population better understand the ecological issues regarding the sustainable development of mountain ecosystems.

(d) Capacity-building

13.12. Governments at the appropriate level, with the support of the relevant international and regional organizations, should build up national and regional institutional bases that could carry out research, training and dissemination of information on the sustainable development of the economies of fragile ecosystems.

B. Promoting integrated watershed development and alternative livelihood opportunities

Basis for action

13.13. Nearly half of the world's population is affected in various ways by mountain ecology and the degradation of watershed areas. About 10 per cent of the Earth's population lives in mountain areas with higher slopes, while about 40 per cent occupies the adjacent medium- and lower-watershed areas. There are serious problems of ecological deterioration in these watershed areas. For example, in the hillside areas of the Andean countries of South America a large portion of the farming population is now faced with a rapid deterioration of land resources. Similarly, the mountain and upland areas of the Himalayas, South-East Asia and East and Central Africa, which make vital contributions to agricultural production, are threatened by cultivation of marginal lands due to expanding population. In many areas this is accompanied by excessive livestock grazing, deforestation and loss of biomass cover.

13.14. Soil erosion can have a devastating impact on the vast numbers of rural people who depend on rainfed agriculture in the mountain and hillside areas. Poverty, unemployment, poor health and bad sanitation are widespread. Promoting integrated watershed development programmes through effective participation of local people is a key to preventing further ecological imbalance. An integrated approach is needed for conserving, upgrading and using the natural resource base of land, water, plant, animal and human resources. In addition, promoting alternative livelihood opportunities, particularly through development of employment schemes that increase the productive base, will have a significant role in improving the standard of living among the large rural population living in mountain ecosystems. Objectives

13.15. The objectives of this programme area are:

a. By the year 2000, to develop appropriate land-use planning and management for both arable and non-arable land in mountain-fed watershed areas to prevent soil erosion, increase biomass production and maintain the ecological balance;
b. To promote income-generating activities, such as sustainable tourism, fisheries and environmentally sound mining, and to improve infrastructure and social services, in particular to protect the livelihoods of local communities and indigenous people;
c. To develop technical and institutional arrangements for affected countries to mitigate the effects of natural disasters through hazard-prevention measures, risk zoning, early-warning systems, evacuation plans and emergency supplies.

Activities

(a) Management-related activities

13.16. Governments at the appropriate level, with the support of the relevant international and regional organizations, should:

a. Undertake measures to prevent soil erosion and promote erosion-control activities in all sectors;
b. Establish task forces or watershed development committees, complementing existing institutions, to coordinate integrated services to support local initiatives in animal husbandry, forestry, horticulture and rural development at all administrative levels;
c. Enhance popular participation in the management of local resources through appropriate legislation;
d. Support non-governmental organizations and other private groups assisting local organizations and communities in the preparation of projects that would enhance participatory development of local people;
e. Provide mechanisms to preserve threatened areas that could protect wildlife, conserve biological diversity or serve as national parks;
f. Develop national policies that would provide incentives to farmers and local people to undertake conservation measures and to use environment-friendly technologies;
g. Undertake income-generating activities in cottage and agro-processing industries, such as the cultivation and processing of medicinal and aromatic plants;
h. Undertake the above activities, taking into account the need for full participation of women, including indigenous people and local communities, in development.

(b) Data and information

13.17. Governments at the appropriate level, with the support of the relevant international and regional organizations, should:

a. Maintain and establish systematic observation and evaluation capacities at the national, state or provincial level to generate information for daily operations and to assess the environmental and socio-economic impacts of projects;
b. Generate data on alternative livelihoods and diversified production systems at the village level on annual and tree crops, livestock, poultry, beekeeping, fisheries, village industries, markets, transport and income-earning opportunities, taking fully into account the role of women and integrating them into the planning and implementation process.

(c) International and regional cooperation

13.18. Governments at the appropriate level, with the support of the relevant international and regional organizations, should:

a. Strengthen the role of appropriate international research and training institutes such as the Consultative Group on International Agricultural Research Centers (CGIAR) and the International Board for Soil Research and Management (IBSRAM), as well as regional research centres, such as the Woodland Mountain Institutes and the International Center for Integrated Mountain Development, in undertaking applied research relevant to watershed development;
b. Promote regional cooperation and exchange of data and information among countries sharing the same mountain ranges and river basins, particularly those affected by mountain disasters and floods;
c. Maintain and establish partnerships with non-governmental organizations and other private groups working in watershed development.

Means of implementation

(a) Financial and cost evaluation

13.19. The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this programme to be about $13 billion, including about $1.9 billion from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

13.20. Financing for the promotion of alternative livelihoods in mountain ecosystems should be viewed as part of a country's anti-poverty or alternative livelihoods programme, which is also discussed in chapter 3 (Combating poverty) and chapter 14 (Promoting sustainable agriculture and rural development) of Agenda 21.

(b) Scientific and technical means

13.21. Governments at the appropriate level, with the support of the relevant international and regional organizations, should:

Consider undertaking pilot projects that combine environmental protection and development functions with particular emphasis on some of the traditional environmental management practices or systems that have a good impact on the environment;
Generate technologies for specific watershed and farm conditions through a participatory approach involving local men and women, researchers and extension agents who will carry out experiments and trials on farm conditions;
Promote technologies of vegetative conservation measures for erosion prevention, in situ moisture management, improved cropping technology, fodder production and agroforestry that are low-cost, simple and easily adopted by local people.

(c) Human resource development

13.22. Governments at the appropriate level, with the support of the relevant international and regional organizations, should:

a. Promote a multidisciplinary and cross-sectoral approach in training and the dissemination of knowledge to local people on a wide range of issues, such as household production systems, conservation and utilization of arable and non-arable land, treatment of drainage lines and recharging of groundwater, livestock management, fisheries, agroforestry and horticulture;
b. Develop human resources by providing access to education, health, energy and infrastructure;
c. Promote local awareness and preparedness for disaster prevention and mitigation, combined with the latest available technology for early warning and forecasting.

(d) Capacity-building

13.23. Governments at the appropriate level, with the support of the relevant international and regional organizations, should develop and strengthen national centres for watershed management to encourage a comprehensive approach to the environmental, socio-economic, technological, legislative, financial and administrative aspects and provide support to policy makers, administrators, field staff and farmers for watershed development.

13.24. The private sector and local communities, in cooperation with national Governments, should promote local infrastructure development, including communication networks, mini- or micro-hydro development to support cottage industries, and access to markets.

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National Biodiversity Policy - As a follow-up to the Earth Summit at Rio de Janeiro in 1992, Malaysia formed a National Committee on Biodiversity under the aegis of the Ministry of Science, Technology and Environment to formulate a National Biodiversity Policy. Its initial draft was in 1993, and since then there have been various versions. The policy is almost ready and is expected to be launched in 1998. The vision of the National Biodiversity Policy is "to transform Malaysia into an international centre of excellence in conservation, research and utilisation of tropical biodiversity by the year 2020." Its policy statement is "to conserve Malaysia's biological diversity and to ensure that its components are utilised in a sustainable manner for the continued progress and socio-economic development of the nation." Its main objectives are:

- to optimise economic benefits from sustainable utilisation of the components of biological diversity
- to ensure long-term food security for the nation
- to maintain and improve environmental stability for proper functioning of ecological systems
- to ensure preservation of the unique biological heritage of the nation for the benefit of present and future generations
- to enhance scientific and technological knowledge, and educational, social, cultural and aesthetic values of biological diversity.

It outlines 14 strategies for effective management of biodiversity including improving scientific knowledge and research, enhancing the use of biodiversity, improving the institutional framework, strengthening conservation programmes, integrating biodiversity considerations into planning, enhancing skills and capability, reviewing existing legislations, minimising human impacts on biodiversity, improving international cooperation, and funding. Under the strategies, 86 action plans are proposed. Critics questioned the implementation of the policy. The overriding concern is the lack of jurisdiction that the Federal Government has over biodiversity since natural resources comes under the purview of each state. The policy in its present form, at best, is merely another framework to guide conservation efforts.

National Environmental Policy - The National Environmental Policy objectives are:

- To maintain a clean and healthy environment
- To maintain the quality of the environment relative to the needs of the growing population
- To minimize the impact of the growing population and human activities relating to mineral exploitation, deforestation, agriculture, urbanization, tourism, and the development of other resources on the environment
- To balance the goals of socio-economic development and the need to bring the benefits of development to a wide spectrum of the population, against the maintenance of sound environmental condition.
- To place more emphasis on prevention through conservation rather than on curative measures, inter alia by preserving the country's unique and diverse cultural and natural heritage.
- To incorporate an environmental dimension in project planning and implementation, inter alia by determining the implications of the proposed projects and the costs of the required environmental mitigation measures through the conduct of environmental impact assessment studies
- To promote greater co-operation and increased co-ordination among relevant federal and state authorities as well as among the ASEAN governments.

The ultimate aim of the federal government working in close co- operation with the state governments is to ensure as far as possible that all man's activities are in balance with his environment. To this end, in recognizing that the environment transcends national boundaries, the government will also co- operate with foreign governments either directly or through competent regional and international organizations'.

National Park - The National Parks Act 1980 is not popular with the State Governments. Since its inception, no National Parks have been gazetted under the Act. There has been no shortage of proposals for national parks. The Third Malaysia Plan (1976-80) proposed 11 parks under the Act, including forests in Belum, Grik, Segari and Kuala Gula (all in Perak), Ulu Terengganu and Pulau Redang (in Terengganu), the Ulu Muda forest in Kedah, and Sungai Nenggiri in Kelantan. In the case of Belum and Ulu Muda forests, proposals have been forwarded to the state executive councils countless times but to no avail.

Natural Gas Vehicles (NGVs) - The national oil and gas company, PETRONAS embarked on a pilot program in 1985-1988 to promote the use of natural gas vehicles (NGVs), which are now being introduced on a wider basis. PETRONAS arranges cheap loans for the conversion of vehicles at about RM2300, and organizes training program for mechanics. The government, through exemptions from import and excise duties, subsidizes the program. The retail price of fuel for natural gas vehicles has been set at half the price of premium petrol. The goal of the program is to convert 1,100 petrol vehicles to bi-fueled natural gas/petrol vehicles by the end of 1993. NGVs emit less of a number of air pollution than petrol or diesel vehicles. The program was restricted to the Klang Valley and Miri in Sarawak.

Natural Resources Inventory - Areas gazetted under existing other categories do not fully represent all the major biological communities and ecological habitats in the country. Freshwater swamps, mangroves, open lake systems, limestone hills, and quartz ridges which have many specialized biological species have received inadequate protection. There are still no national repositories where live as well as preserved biomaterial can officially be deposited. There has never been any priority placed on national natural resource inventories and systematic studies. A review of the major habitats within the country taking into consideration bio-geographical, latitudinal, and edaphic factors that need protection, is long overdue. It is also urgent to establish national policies and strategies to protect the biological diversity, which should be incorporated within the national development program.

Nenasi, Pahang - Since 1988, Song Cheng Sdn Bhd, a joint venture involving Taiwanese, Japanese and Korean partners, has been involved in the construction of the world's largest eel farm on 5,000 acres of rich peat swamp forest in Nenasi, Pahang. More than 400 tube wells, each 100 meters deep, were constructed to pump groundwater 24 hours a day, and to fill up several hundreds of its ponds for eel cultivation. The massive extraction of groundwater and the conversion of the peat swamp forest into freshwater ponds resulted in the depletion of groundwater. The disruption was so drastic that there was no water during the dry season in 1992. The PWD was forced to supply water from house to house - the first time in the Bebar district's history.

Nibong - Nibong, a commercial palm, whose stem is resistant to salt water and marine borers, is under threat as mangrove forests are rapidly being destroyed. Among other uses, Nibong is used to build kelong, large fish traps erected at river mouths.

Noise Levels - Noise levels are becoming higher due to the increase in the number of motor vehicles, air traffic volume, industries, construction, and population concentration in urban areas. DOE surveys in 1984 and 1988 showed that the noise levels in urban areas were high. Kuala Lumpur recorded the highest level followed by Prai and Ipoh. Nearly 90 per cent of the sites surveyed in Kuala Lumpur had values exceeding 70 dB(A). Exposure to excessive noise can significantly damage human health. The recommended guideline value by the World Health Organisation (WHO) for urban communities is 55 dB(A).

Noise Levels in Schools - All the schools monitored by the Department of Environment (DOE) showed that students were exposed to a maximum noise level exceeding that recommended by the World Health Organization (WHO). The noise levels could affect the students' concentration. The problem has been identified as rapid urbanization leading to noise pollution. Installing noise barriers and relocating schools to areas 'free from noise pollution', are costly and short-term solutions. A more realistic solution would be to introduce traffic-calming, pedestrianisation, improved public transport, tariffs on private vehicles, and cycling.

Nuclear - In response to the Papan protests against the dumping of radioactive waste in their vicinity, Prime Minister Dato' Seri Dr. Mahathir Mohamed said: "If nobody wants the dump to be situated anywhere, it would put an end to Malaysia's nuclear industry". He said the government "has taken every precaution, and the people who are conversant with the problem think it isn't dangerous". However, he added that the government "can't guarantee the safety of the people if they get into the area, dig the soil, bathe in it or throw it over their heads".

Occupational Heatlh - With rapid industrialization and urbanization currently taking place in Malaysia, occupational health problems as a result of environmental pollution are becoming more common. The number of industrial mishaps especially death at workplace has been increasing since the 1990. In 1991, 541 deaths were reported and in 1996, 925 deaths were reported. In the majority of these cases, proper preventive action was either not fully understood or totally neglected. Concern

about the quality of the workplace is also rising.

Oil and Grease Contamination - Despite the existence of the International Convention for the Prevention of Pollution from Ships 1973 and tighter regulations, studies show that the Straits of Malacca are suffering a progressive increase in oil and sediment levels in the water. Grease and oily substances and tar balls are the main forms of pollution from the heavy shipping traffic in the Straits of Malacca and the South China Sea. The threat of oil spills and operational discharges is greatest in the narrow and shallow Straits of Malacca in particular. 30 percent of the ships passing through the Straits were found to be tankers. From 1975 and 1993, 30,000 tons of oil were released into the sea in 71 incidents. From 1976 to 1992, there were a total of 42 oil spill incidents in the Straits of Malacca. The largest spill was estimated at 13,000 tons. In 1995, the Department of Environment reported the highest number of oil spills in twenty years - 92 in all. Of these, 59 spills occurred in the South China Sea, 26 in the Straits of Malacca and seven in the Johor Straits. In 1995, a 400-meter oil slick in the waters off Port Dickson resulted in the removal of 72 tons of stained sand. The presence of a total of 16,033 licensed vessels registered in the states bordering the Straits of Malacca in 1991 adds another dimension to the pollution of the sea. Reducing the world's dependence on oil for fuel would reduce global warming as well as water pollution.

Orang Utan - It was the Europeans who gave the Malay name of Orang Utan to Malaysia's most celebrated and loved mammal. The misnomer has since been accepted as the animal's official name. Orang Utan means literally 'Man of the Forest'. The Malays themselves call this mammal 'mias' or 'mawas'. Changing the scientific name of Orang Utan from Simia satyrus to Pongo pygmaeus, further confused the identity of the 'man of the forest'. Why an animal exclusively confined to the archipelago was given the African Bantu name for Chimpanzee has never been satisfactorily explained. The Kadazans of remote parts of Sabah killed the Orang Utan for both food and trophies, collecting ape heads as they would those of humans. The Orang Utan now is jeopardized by loss of forests to logging and development. The Orang Utan is totally protected under the Fauna Conservation Ordinance 1963 in Sabah, and under the Wild Life Protection Ordinance 1990 in Sarawak. The Sepilok Orang Utan Rehabilitation Centre and the Danum Valley Field Centre are two sanctuaries dedicated to ensuring the survival of this species.

Orchids - It is estimated that there are now 2,500 species of orchids in Sabah and Sarawak. Based on very preliminary data, over 200 species fall into the rare, endangered or vulnerable categories of the World Conservation Union (IUCN) Species Survival

Commission. This is mainly due to the rapid rate at which forest land is being cleared for agriculture and other development, and to the drastic disturbances caused by the poorly managed logging industry in the permanent forest reserves. Commercial harvesting of desirable species from their natural habitat has also caused their depletion. Various ex-situ orchid conservation centres managed by state or federal governments have been established in Sabah and Sarawak. In-situ conservation is realized in new parks and special reserves. In future, special emphasis has to be place on conserving unique habitats rich in rare or endemic species of orchid. These must have forested buffer zones around them to protect them against the ever-increasing hazard of shifting cultivation, illegal logging and other human encroachments.

Organic Farming - Organic farming in Malaysia is still in its the infancy. With increasing public awareness of the health problems posed by the chemical contamination of foods, particularly by pesticides, organically grown and pesticide free vegetables are in demand. However, the number of genuine organic farms is small. Some of the organic farms in Malaysia are the CETDEM Community Farm in Sungai Buloh, Selangor; Penang Organic Farm; Ecofarm Centre, Sinkyo Sdn Bhd; GK Organic Resources near Dengkil, Selangor; OMX Marketing Sdn Bhd at Sungai Long in Kuala Lumpur; Pahang Association of Consumers; MINSOC (Management Institute for Social Change) in Kuantan, Pahang; 7th Adventist Church in Melaka; Helen Todd in Negeri Sembilan and Consumers' Association of Penang (CAP). Small-scale organic farms range from one to five hectares in size.

Padi Angin - Padi angin is a hybrid between weed rice Oryza rufipogon and cultivated rice Oryza sativa. The plant, which appears together with cultivated padi, can reduce padi yields by between 65 and 90 per cent. In 1993, a total of 178ha of padi land in Kedah was infested with padi angin and this figure increased to 300ha the following year. The padi angin menace also surfaced in Tanjung Karang, Selangor. Scientists believed that padi angin could spread to the whole country by the turn of the century. Herbicides commonly used in rice cultivation has been found to be ineffective against padi angin. The presence of water suppresses the germination of padi angin, and so traditional planting out as opposed to the current cultivation of direct seedlings is still the best means of controlling it.

Palms - Malaysia boasts a wealth of palm species, about of which are rattans. The great majority of palms are found in lowland rain forest. There are least 385 palm species of 32 genera in Malaysia. Of these only 37 are common to Peninsular Malaysia, Sabah and Sarawak. One species is possibly extinct in Sabah, and 47 percent of Peninsular Malaysian species and 41 percent from Sarawak fall into the IUCN conservation categories of 'endangered', 'rare' or particularly 'vulnerable'. Comparable figures

for Sabah are not available. In 1988, 6,154 tons of rattan valued at RM8.7 million were exported from Peninsular Malaysia and in 1987, 2,574 tons valued at RM6 million were exported from Sarawak. In 1988, it was estimated that 15,000 Orang Asli and rural Malays were employed in rattan collecting in the Peninsula, many of whom have no alternative means of earning a living. Rattan collecting has been carried out on an unsustainable rate, further aggravated by the loss of forest land to agriculture. In 1989, Peninsular Malaysia banned the export of all types of rattan following over-harvesting. Threats to the continued survival of species include loss of lowland rain forest to logging, land clearing and commercial collection of valuable species such as rattans and ornamentals. Although about half the species grow in national parks, these species tend to be common and widespread. Rare and endangered local species are not protected. At present there is no legislation in Peninsular Malaysia and Sabah to control the export of high value, endangered or rare ornamental palms. In Sarawak, legislation does not appear to be enforced.

Palm Oil Fuel - Converted into energy, palm oil fibre, palm oil and its mill effluents can become an alternative source of energy for Malaysia, once the world's leading producer of the commodity. Palm oil wastes can meet approximately 17 percent of the country's energy requirements and thereby reduce her dependence upon petroleum.

Pantai Acheh - Pantai Acheh, on the northwest corner of Penang Island, is one of the last areas of jungle on an island undergoing rapid development. Pantai Acheh has a varied flora, including some of the valuable tropical timber species such as meranti, rengas and merawan. Small mammals are well represented in the area. Its beaches are nesting sites for a number of species of turtles including the Ridley and Green Sea Turtles. It is also endowed with a meromitic lagoon - with sea water at the bottom and fresh water above. The Malayan Nature Society campaigned for years for the designation of Pantai Acheh as a National Park. The Tourist Development Corporation supported it in its bid for national recognition.

Papan - Controversy is synonymous with Papan, a former mining town in Perak. By the 1980's Papan had become "something of a political hot spot" for its courageous "fight to the end" over the proposal to dump radioactive waste there. A demonstration lasting 18 days staged by the people of Papan entered the annals of environmental history as "the first time in Malaysia, a protest demonstration was organized on an environmental issue..." They became known popularly as the "Papan protests".

Papan also made history when 1,500 residents went on a mass hunger strike, the nation's first. In 1991, Papan was in the news again - this time it was chosen as the site for a permanent non-toxic industrial waste and rubbish dump for the Kinta district as well as a temporary industrial toxic waste. In the face of mounting public protest, the proposal was called off in 1994.

Parks - The Chior Game Reserve was the first game reserve established in 1902. Taman Negara, Malaysia's only significant National Park, was established in 1939. There are six state parks in Sabah, all re-gazetted in 1984. They include the Kinabalu Park, the largest of the state parks covering an area of 75,370 hectares. There are also two bird sanctuaries, and ten areas that have been set aside for wildlife and habitat protection. In Sarawak, there exist six protected areas designated as national parks. Except for the Gunung Mulu National Park, covering 52,887 hectares, the rest are less than 10,000 hectares in area. In Peninsular Malaysia, the Fisheries Department has identified 22 marine parks. But as long as the state governments can change the status of reserves and forests, their position remains unstable. For example, the Krau Wildlife Reserves has been gazetted and degazetted several times. The Dewan Negara was told in 1997 that about 21,609ha of permanent forest reserves in Peninsular Malaysia were approved for logging as of July that year. The figure for 1996 was 37,587ha while that for 1995 was 39,656ha. Nine islands of the coast of Malacca gazetted as wildlife reserves were degazetted by the state government without the knowledge of the Department of Wildlife and National Parks (Perhilitan) who manages them.

Peat Swamps - Southeast Asian countries particularly Indonesia and Malaysia, have over 20 million hectares or 60 percent of the world's tropical peatlands. Peat swamps occur inland just beyond coastal mangroves and often spread over some 3km to 5km on the floodplain of rivers. They are characterised by an 8m to 20m thick layer of peat, which is mainly semi-decayed plant material accumulated over some 8,000 years. As long as the peaty soil is saturated with water, the swamp eco-system is in balance. Peat swamps are like sponges that absorb and soak up excessive rain and river water, thus controlling floods during the rainy season and releasing much needed water supplies during the dry season. Draining peat swamps for oil palm, rubber, logging, aquaculture, industrial and residential development, or to mine tin and peat, spells trouble. Canals dug into the peat bleeds the swamp of its water content. When the water level recedes, the upper layer of plant material dries up, thus becoming combustible fuel especially during the dry seasons.

Lowering water tables and opening up the forest canopy promotes the risk of fire in peat soils. In October 1995, 16ha of the Bukit Tunggal Forest Reserve, adjacent to the North Selangor Peat Swamp Forest in Batang Berjuntai, went up in smoke. In early 1989, a fire at Batang Berjuntai raged for three months. In 1997, Wetlands International noted four blazes in Malaysia in Southeast Pahang Peat Swamp Forest, Raja Musa and Sungai Karang Forest Reserves, which make up the North Selangor Peat

Swamp Forest in Sabak Bernam, Selangor, and parts of the Kuala Langat North Peat Swamp, also in Selangor. The most publisized peat fire was the Kampung Penadah in Pekan, Pahang, where 160ha of forest were razed. It took two weeks for fire fighters to douse the flames. Peat fires produce many times more smoke per heactare than other forest fires, and they are almost impossible to extinguish without restoring the water levels in the swamps.

Drained peat swamps will lose their ecological functions of soaking and storing water to mitigate floods and as a water catchment; buffering coastal lands from the intrusion of salty marine water; filtering pollutants which will otherwise degrade lakes, rivers and groundwater; providing timber and non-timber products; and providing critical wildlife habitat, particularly for the endangered Sumatran rhinoceros. Once dried, the peat will oxidise and break down, causing the soil to collapse. Peat swamp also functions as a carbon store. The semi-decayed vegetation locks up large amounts of carbon, preventing it from escaping into the atmosphere as carbon dioxide, the main contributor to global warming. If peat swamps in Malaysia continue to be drained, the peat fires here coupled with the Indonesian peat fires, would worsen the haze situation. Prolonged peat fires release massive amounts of carbon dioxide, contributing to global warming and long-term climate disruption.

Nearly all state-owned peat forests are earmarked for farms, plantations, residential estates or industrial sites - all of which require the peat forest to be drained. Of the 800,000ha of peat swamp in the peninsula, over half - 340,000ha remains today. Of this only about 200,000ha are protected as forest and game reserves. The largest remaining peat swamps are found in Pahang and Selangor:

- South-East Pahang Swamp Forest (75,842ha) comprising the Nenasi, Pekan, Kedondong and Resak Forest Reserves.
- North Selangor Par Swamp (72,816ha) comprising the Raja Musa and Sungai Karang Forest Reserves.
- The Kuala Langat South Forest Reserves (2,053ha) and the Kuala Langat North Forest Reserve (1,265ha) in Selangor.
- Kuala Kemaman Forest Reserves (1,986ha).

In Perak, the Melintang and Teluk Intan Swamp Forests have been almost totally converted to oil palm plantations.

Penang Hill - Dating from around 1800, Penang Hill is the oldest hill station in the country. The term Penang Hill refers to a chain of hills in the north central uplands of the island. In September 1990, the Penang State government signed a memorandum of understanding (MOU) with Bukit Pinang Sdn. Bhd., a subsidiary of Berjaya Corporation, to develop Penang Hill. The proposed development would involve 900 acres, consisting largely of water catchment areas and forest reserves. Friends of Penang Hill, an alliance of NGOs and individuals critical of the project, say that the development would fundamentally alter the hill's biodiversity and ecological balance, destroy its heritage importance, and damage the water catchment areas. It would also

involve transferring large tracts of public land and state assets to private developers.

Penan - The Penan tribal people of Sarawak caught the world's attention in 1987 when they barricaded the road to the forest, their traditional home, preventing loggers from felling trees. In response to the offer of bribes, the Penan snubbed the loggers: "Keep your money. You can print money, but you can't print land. We want our land." The Penan's attachment to the land is best summed up in the words of Dja-au Lat: "Our land means life. The forest gives us food and everything we need for our life."

Pergau - The Pergau affair began in 1988 when Lady Thatcher, pursuing an aggressive arms sales policy in Asia and the Middle East, saw an opportunity to do business with Malaysia and repair relations. The Pergau hydro-electric project received "the largest cash sum ever provided for a single scheme under the British Government's Overseas Development Administration (ODA) Aid and Trade Provisions. The provisions were established in 1977 to support "overseas aid projects of developmental value that are of particular industrial and commercial importance to the UK". The Pergau Dam project costing 417 million pounds involves the construction of a 600 megawatt hydroelectric power station on the River Pergau in Kelantan state. A British daily claimed that the "virtually free loan of 417 million pounds" was given to Malaysia as a 'sweetener' for about 1 billion pounds of arms contracts to British manufacturers of frigates, jet aircraft and communications systems. The Economist claimed that the 234 million pounds in aid was linked by 'a mathematical formula' to the 1.3 billion arms deal. The British government has always maintained that Pergau aid was not linked to arms. Tenaga Nasional Berhad was privatized in May 1992 after receiving the aid, and profits from the privatization went to fund pilgrimages to Makkah and pensions for Malaysian soldiers.

Peripatus - The Peripatus, Peripatus sp, is a queer-looking creature that lives in rotten logs and leaf litter. It is heavily dependent upon the forest remaining dank and humid. The only known record is a sighting in the Gombak valley.

Permanent Forest Estate - In recognition of the rapid depletion of the country's natural forest resources by aggressive land

development and timber exploitation since the late 1950s, the National Forestry Council approved in principle the creation of permanent forest estate in Peninsular Malaysia in 1973. The Malaysian Government has already set aside 12.70 million hectares of forested land to be managed as 'Permanent Forest Estate'. Of this, 3.65 million hectares will be designated as 'Protected Forests'.

Pesticides - The quantity of pesticides used in Malaysia has increased tremendously since 1960, and is now estimated to be 5 million tons a year. 1990 statistics indicate that RM315 million a year was spent on agrochemicals with RM250 million being spent on herbicides alone. The most widely used herbicide for many years has been paraquat or "kopi-o" (black coffee) as it is called by plantation workers. A survey conducted by Sahabat Alam Malaysia (SAM) in the 1980s revealed that at least 14 pesticides which are either restricted or banned in several countries are widely used in Malaysia. There are 1,300 pesticides registered in the country. In 1989, rubber and oil palm plantations accounted for more than 60 percent of the herbicides used. Cocoa took 10 percent; rice - 9 percent; orchards - 7 percent; and vegetables - 3 percent. The remaining 11 percent were for forestry and non-agricultural use. In Sarawak, 70 percent of the farmers use pesticides.

The majority of these farmers are illiterate and have no knowledge whatsoever of safe use of pesticides. Apparently, Malaysian farmers do not observe the pre-harvest lay-off period, and continue application of pesticides right up to two-three days prior to harvest. At one time, Malaysians were warned to soak and wash their vegetables before cooking and not to consume vegetables that are not supposed to taste bitter. In the plantation sector alone, there are about 30,000 female pesticide sprayers. Complaints of sore eyes, skin rashes, burnt fingernails and disruption of menstrual periods are common. A study revealed that the level of DDT in the blood serum of spraymen in the government Malaria Eradication Programme is between six to ten times higher than that found in other Malaysians.

Among padi farmers, the mean concentration of DDT in the blood serum was found to be 0.11 ppm (parts per million), the level for rubber estate workers at 0.09 ppm and that for the general population at 0.066 ppm. A study carried out by a scientist from the Agriculture University of Malaysia (now Universiti Putra) at Serdang found that the total amount of ecylochienes, a pesticide element measured in the general population in Malaysia, is 14 times higher than that measured in the US. Studies have shown that pesticides can cause lowered sperm counts, decreased ovulation, inability to conceive and birth defects. The extent of occupational health and safety hazards related to pesticide poisonings is still poorly documented.

Pesticide Poisoning - Pesticides refer to all types of chemicals used in agriculture for pest control, for example insecticides,

rodenticides, weedicides and herbicides. Over a 10 year period (1979-1988), pesticides accounted for 40.3 percent of the total cases of poisoning in Malaysia. It has been estimated that about 73 percent of poisonings involving paraquat are suicide attempts compared with 14 percent due to accidents and 1 percent to occupational exposure. A 1987 survey showed that an estimated 715,000 rubber and oil palm smallholders used paraquat. Another survey showed that poisoning had been experienced by 14.5 percent of the 4,531 vegetable farmers in the Cameron Highlands. Hospital admissions revealed that 32.1 percent of pesticide poisoning cases were accidental and 67.9 percent were suicide cases. A 1991 Malaysian Factories and Machinery Department report disclosed that the accident rate for improper handling of pesticides is four times higher than that of other industries, at 93 per 1,000 workers compared to the national average of 23 per 1,000. This seems to indicate that there is insufficient education and information on safety in handling pesticides.

Petrochemical-Based Products - Most of the household products in our home contain, in one way or another, petrochemicals. Cosmetics, shampoos, household cleansers, pesticides, fertilizers, textiles and paint thinner are some of the items made from petrochemicals. These products, when not managed properly, can contaminate the water we drink and the air we breathe. Given the rising consumerism in the country, it is very likely that the use of petrochemical-based products will increase. Depending on the level and length of exposure, petrochemicals can make the user ill through inhalation, skin contact or ingestion. If the exposure is great enough, or the exposed person is chemically sensitive, the effects can be fatal. Most of these petrochemical plants are and will be concentrated in Kerteh and Tok Arun in Terengganu. According to the Malaysian Petroleum Club Members' resource magazine, Kerteh and Tok Arun are slated to be "the ethylene centre of Malaysia."

Physical Environment - Basic amenities such as potable water, sanitation and electricity used to be provided by the government. Some of these have been or are in the process of being privatized. Electricity supply, for instance, has been privatized. It is likely that all these amenities will be privatized in the years to come. What this means is that the public will probably have to pay for the full cost of such services, though some of them may enjoy some consumer surplus because of government subsidies. The concern over privatization is that the poor may not be able to afford the rates fixed by market forces although they may get to enjoy a wider range of facilities. This concern is compounded by the fact that these huge privatized entities are monopolies which are not checked by competition or efficiency. This is evident with roads, electricity and telecommunications.

Pig Waste - Based on the Veterinary Services Department's 1990 statistics, the average number of pig farms of the coastal states of Peninsular Malaysia stands at 717 with an approximate pig population of 2.3 million. Pig farms generate large quantities of waste and some of these farms discharge effluents directly into estuaries and tidal rivers without any pre-treatment. Waste abatement is practised only in large farms because of cost constraints. Piggery wastes not only contaminate the water with bacteria and parasites, but also exert high demand for oxygen (BOD) and cause eutrophication.

Pitcher Plants - Malaysia has more than 30 species of pitcher plants which derive its name in English from its pitcher shape appendage. The pitcher is an artful trap for insects. Its rim glands secrete a sweet juice that entice insects and its numerous digestive glands produce digestive enzyme which 'consume' these insects for nitrogenous and other food materials. The black pitcher plant Negenthes gracillima grows only in Genting Highlands. Unsympathetic development is threatening their natural habitat.

Plastic - The plastics industry is one of the fastest growing sectors of the Malaysian economy, with growth forecast at 20 per cent per year over the next five years. Plastics, being non-biodegradable, are a major pollutant and are taking up scarce landfill space. Had the Seberang Prai Municipal Council (MPSP) succeeded in restricting the use of plastic packaging in areas under its jurisdiction, it would undoubtedly have been the first municipal council to do so. The visionary and courageous move forward did not happened because the authorities succumbed to the pro-plastic lobby. Plastic is environmentally unfriendly. In the ocean and waterways it suffocates seabirds and mammals such as turtles and dolphins to death. Millions of tons of packaging are discarded as solid waste each year. The packing industry, the leading user of plastics, accounts for about 40 percent of the total world plastics production.

Although the content of plastic materials in a municipal solid waste (MSW) has been estimated at 7-12 percent in weight, it actually represents 18-30 percent of the volume of solid waste. Solid waste recycling alone will not be sufficient to handle all the plastic waste expected to be generated over the next decade. In Malaysia, the method of disposal of municipal solid waste particularly has been largely through landfilling (90 percent) and incineration (1-2 percent). Only 8 percent is recycled. Globally, new environmental regulations, societal concerns and a growing environmental awareness throughout the world has triggered a paradigm shift in developing products and processes which are compatible with the environment. In tandem with this awareness, a new concept of designing materials from Cradle to Grave has been proposed which integrates material design concepts with ultimate disposability, resource utilization and conservation.

PM10 - Particulate matter smaller than 10 microns in diameter (PM10), which was present during the haze episode in Malaysia, poses a variety of health problems. These include increased incidence of respiratory diseases, especially in children; aggravating existing respiratory diseases; reduced resistance to infection; and reductions in lung function. Epidemiological studies demonstrate that airborne particulate matter can cause premature mortality, particularly in elderly and ill persons. Particulate matter also causes various lesser symptoms such as irritation of the eyes and throat.

Prescribed Activities Under the Environmental Quality Act 1987 - The prescribed activities requiring Environmental Impact Assessment Reports are:

- Agriculture
- Airports
- Drainage and irrigation
- Land reclamation
- Fisheries
- Forestry
- Housing
- Industry
- Infrastructure
- Ports
- Mining
- Petroleum

- Power generation and transmission
- Quarries
- Railways
- Transportation
- Resort and recreational development
- Waste treatment and disposal
- Water supply

Pulau Redang - The Pulau Redang archipelago off the Trengganu coast has one of the richest coral reefs in Peninsular Malaysia. The island, one of the 22 gazetted marine parks and reserves in Malaysia under the Fisheries Act, has the largest nesting population of Green Turtles in Peninsula. However, the turtle population in the country has decreased by 60 per cent since 1960s. The development of a RM30 million tourism project on the island, which includes a 9-hole golf course, a club house and a 100 room hotel, has been blamed for erosion, siltation of the Sungai Redang and Teluk Siang, waste water, oil and heavy metal pollution, and destruction of corals. The fishing village was relocated to clear the beach for the use of tourists. The resort and recreational development on the island have not been subjected to any impact assessment or town planning requirements.

Quarrying - In the last two decades the increased affluence of the people and considerations for the quality of life, in particular leisure, loss of amenities and nuisance considerations, have directed public outcry to quarrying activities. Quarrying deals with rock such as marble being mined in Kramat Pulai, Perak and Pulau Taski Dayang Bunting, Langkawi, granite for floor tiles in Tampin, Negri Sembilan and aggregate in all states in Malaysia, with the biggest operations being in Selangor and Johor. The Perak Quarry Rules 1992 is the only state law dealing with control of quarry operations. Depending on the location of the quarry, the scale and method of operation and the mineral characterization, quarrying undeniably effects changes in the geographical features. The use of explosive, ground vibrations and air blast waves can also cause structural damage to buildings. Long-term exposure to high noise levels can cause permanent hearing damage and similar exposure to dust can

damage lung tissue, and in extreme cases cause premature death. Airborne dust can cause damage, the extent of which depends upon its composition and concentration. Some environmental issues resulting from quarrying activities, such as visual intrusion or disruption and nuisance, are difficult to quantify or pose some problems in drawing up generally acceptable standards and criteria.

LECTURE NOTES FOR THE FACILITATOR

SECTION 1: INTRODUCTION

BACKGROUND

The highlands, have in recent years, been under development pressure, particularly from the tourism and agriculture sectors. Empirical evidence at some highland sites in Malaysia has shown that these sites are very fragile and vulnerable and the cost of development (both financial and environmental) is very high. Prudent and long-term planning is seen as vital to safeguard the highlands while enabling sustainable utilization of the resources that these areas offer.

EXAMPLES OF SPECIFIC AREAS

(1) Ranau – Kundasang

Ranau – Kundasang is the most important highland area in Sabah. This site has numerous land use conflicts, particularly between agriculture, tourism and protecting the natural environment. Temperate agriculture, which is a tourist attraction, also contributes to the degradation of the river system in the area. Gunung Kinabalu, a World Heritage Site, offers tremendous potential for tourism that has yet to be fully tapped. Poring Hot Springs in the vicinity has the potential to be better developed to complement Gunung Kinabalu.

Most of the Ranau-Kundasang area is mountainous with slope amplitudes in excess of 300 m and normally greater than 25 degrees. Ridge crest and narrow valley bottoms are also found in this area. Another main physiographical feature is the Crocker Range and the Pinousuk peak in the northern part, Ranau valley in the east and Trus Madi Range as well as the Labuk highlands in the south. Generally, the Ranau-Kundasang area has an undulating characteristic with valley plains and mountainous in most places. The highest point in this area is Mount Kinabalu (4095m).

Based on the 2000 census, the total population of the Ranau district was 70,649 people. Between 1991 to 2000, the average annual growth rate was 3.98%, slightly higher than the state average of 3.83%. Based on the above rate, the total projection of population for the district by the year 2020 is estimated to be 154,205 people. The Kadazandusun community group is the largest community in Ranau and Kundasang. Other groups include Malays, Bajau, Murut and the Chinese. The involvement of the local community in the agriculture sector is mainly in planting wet and hill paddy and vegetables. Paddy is considered a traditional crop for the locals whereas vegetables and fruits are considered new and more commercialized run. Kundasang and Bundu Tuhan area are the main producers of highlands vegetables in Sabah and locals in these areas are involved significantly in this sector. Other than the highland vegetables, the local communities in Ranau also plant tropical fruits such as durian, banana, rambutan and pineapple.

There are increasing number of chalets and resorts being built in the area, many of them without approvals and without land conversion. This has given rise to a lot of problems. Water scarcity is a problem during peak holiday season. Given that tourist arrivals in Sabah is increasing rapidly, the demand for accommodation and

tourism facilities in this area is expected to increase. It is therefore vital that this area is better planned and that strategies previously defined revisited.

(2) Ulu Padas

Ulu Padas was chosen for several reasons. First is the issue of forestry activities and its adverse impacts on the natural environment in that area. Ulu Padas is very rich in biodiversity and hence the conservation of the area is vital. Secondly, although the development pressure is not as great as that in Tambunan – Tenom, Ulu Padas area is more rugged, higher (elevations exceeding 1000m) and steep meaning which the impacts of development would be greater. Thirdly, the proposed Sabah – Sarawak link road and the proposed Sipitang – Tenom link road would make this area more accessible. Fourthly, the area is actually located on the eastern flanks of the Maligan Range which has Long Semadoh – Ba Kelalan area (one of the focal sites in Sarawak) on its western flanks. Finally, Long Pasia is, in many ways, the “last frontier” town in Sabah and as such has tourism potential.

There are two villages in Ulu Padas, namely Long Pasia and Long Miao. Located about 120 km away from Sipitang town, a 4WD vehicle can take visitors to Ulu Padas in about 3 hour. The Ulu Padas state land area comprises 12,300ha, which was allocated for the Lundayeh settlers in the two villages. The dominant ethnic group in this area is the Lundayeh and the total population of both villages is about 800 people. In terms of infrastructure facilities, the two villages share most of the government aid facilities at Long Pasia such as the primary schools and a hostel for the children, health clinic, and a resource centre, which also provides Internet and telephone facilities. Since 10 years ago, both villages have enjoyed the solar power as source of electricity energy.

Most of the Lundayeh people of Long Pasia and subsistence farmers. The main crops planted are the hill and wet paddy. For cash crops they plant maize, vegetables, chili, coffee and tobacco. Although highland vegetables such as cabbage, tomatoes, peppers and other leafy vegetables were once planted on moderate scale, the production have now ceased due to failure in marketing the produce. Coffee was also once planted on a large scale and although the coffee plantation still exists, the communities have stopped harvesting them due to the drop in the price of coffee and were unable to breakeven from the sales of coffee. Many of the coffee plantations have now been abandoned and only harvested for own consumption. Presently, chilly is the only agricultural commodity that is viewed as profitable by the community and the main source of income of the communities. Rice and leafy vegetables are only grown for self-consumption. The rice for consumption is self processed through mini-rice mill powered by generator.

There are also proposals to build roads into Kalimantan from Long Pasia, mainly to serve the logging industry. Although the opening up of more border crossings brings along economic opportunities, they also pose security issues and potential economic leakages which need to be examined and appropriate strategies developed. Ulu Padas area also neighbours the Kayan – Mentarang National Park in Kalimantan.

SECTION 2: OBJECTIVES OF CONSERVATION & SUSTAINABLE USE

INTRODUCTION

The concept of sustainable development of the highlands underpins the need to strike a balance between economic growth, social well-being and environmental conservation. Essentially the three entities of economy, society and environment are interrelated and there is a need to take account of the links that exist among them. Ultimately sustainable development will lead to a better quality of life for the community, the state and the nation at large. In other words, sustainability means growth that can be achieved over a long period of time without causing imbalances in the economy. In simpler terms, it requires that the utilization of resources to achieve growth today must not impair the availability of resources to achieve growth in the future.

The formulation of strategies for the conservation and sustainable use of the highlands of Sabah is aimed at overcoming the many challenges that are present in the highlands and capitalizing on the many opportunities that the highlands have to offer. To ensure that the strategies achieve their goal of conservation and sustainable use, they must be objective-driven. The objectives that underlie the conservation and sustainable use of the highlands are :

Objective 1	:	Protecting the Natural Environment
Objective 2	:	Improving the Quality of Life of Highland Communities
Objective 3	:	Promoting Sustainable Economic Activities and Enhancing Economic Opportunities for Communities in the Highlands
Objective 4	:	Building and Improving Administrative Capacity for the Management of the Highlands

OBJECTIVE 1: PROTECTING THE NATURAL ENVIRONMENT

Background

The National Policy on the Environment states “the nation’s growth has unquestionably drawn from nature and its natural resources. As it moves towards attaining developed nation status, Vision 2020 envisages that the land should remain productive and fertile, rich in natural diversity, the air clear and clean, the water unpolluted. These resources will assume an even more important role as sources of wealth creation, as essential support systems for the uniquely diverse Malaysian culture, as manifestations of natural heritage and symbols of national pride”.

Mountains and highlands, regardless of the definition, are extremely important components of the nation’s natural resources. In Sabah, more than 40% of the land area is made up of highlands and mountains, ecosystems which are particularly

fragile and which play important roles in sustaining life. The highlands have, in recent years, been under development pressure, particularly from tourism and agriculture. Evidence from some highlands in both states has shown that these sites are very fragile and vulnerable and the cost of development (both financial and environmental) is very high. Prudent and long-term planning is seen as vital to safeguard the highlands while enabling sustainable utilization of the resources that these areas offer.

The highlands are environmentally sensitive areas. They are particularly vulnerable to soil erosion due to their steep slopes, deeply weathered soils, and the heavy rainfall which can be as high as 3000mm per year. These areas generally have high value as water catchment areas due to their location in the headwaters of streams and rivers. Gunung Trus Madi in central Sabah forms the headwaters of the Kinabatangan and Padas rivers, the two largest rivers in Sabah. The Labuk Highlands and Segama Highlands form the headwaters of the two other large rivers in Sabah, namely the Labuk river and the Segama river. All major towns in Sabah rely, in one way or another, on the highland catchments for their water supply. The highlands also support hydropower dams and minihydro schemes, which are vital for meeting the electricity requirements for both states. The protection of the highlands is vital for the sustainability of these hydro schemes.

The highlands have rich and unique biodiversity. Unusual conditions exist in the highlands (e.g., peat formation, sphagnum areas, exposed rock faces) that are lacking or are less common in the lowlands. The primary productivity (mainly plant growth rates, e.g., affecting agricultural production and natural regeneration) is lower possibly because the chemical breakdown is slower than in the lowlands (especially because of lower temperatures). The abiotic components of the environment contribute to higher risk factors (landslide, run-off, sedimentation, and other forms of potential damage). Species richness in the highlands is outstanding in certain groups (e.g., of orchids, rhododendrons, mosses, ferns, amphibians). High endemism is a feature of the highlands in Sabah (e.g., birds, mammals, reptiles, plants) and as a part of the Borneo ecoregion. Many of the highland animals and plants have restricted distributions because mountains provide small and isolated habitats, and their distributions may also be fragmented by intervening lowlands.

On the other hand, these features also provide many opportunities. Unusual growth forms like physiology and biochemistry in plant and animal life occurring in high altitude, nutrient-poor, often acidic substrates; high species diversity and unique plant associations; plants amenable to horticultural exploitation; genetic diversity amongst traditional crops; knowledge of medicinal, pharmaceutical and culinary resources not available elsewhere: all these provide potential economic values .

Furthermore, protection of forest in the highlands (synonymous with watersheds and headwaters) can be viewed as benefiting people, agriculture and industry throughout the State by protecting watercourses, freshwater fisheries and water supplies for both domestic and commercial use. Maintenance of forest on slopes is likely to minimize the impacts of those landslides that occur naturally, and prevent the multiplication of landslides caused by man.

There are numerous geological features in the highlands that require protection and could be showcased as geotourism products including rock outcrops, salt licks and caves. The tourism potential of these unique geological features has not been fully

tapped. On the other hand, there are also sites in the highlands that are geohazards. These areas have the potential to cause disasters if built upon and therefore need to be identified.

The oral traditions of the indigenous people of the highlands contain a wealth of botanical expertise. Only the surface of this knowledge has been documented. Unless documentation exercises are carried out, this knowledge is threatened and could be lost when more indigenous people settle down in non-forested areas.

Mountain ecosystems are also under threat from climate change. The IPCC has predicted that the average global temperature will rise between 1 – 5°C over the next 100 years. Research in other areas has shown that the rise in temperature in the mountains could be higher than that in the lowlands. The implications to the highlands of Sabah are that plants and animals in the higher elevations could be eliminated. For example, the lifting of the cloud base from 1000m to 1500m could mean that lowland plant species on hill slopes can survive at higher than previous altitude limits but plants limited to mountain peaks would have no suitable habitat condition left at all.

Statement of Objective

Protecting the natural environment in the highlands means we need to :

- Manage natural resource utilization to sustain the resource base and prevent degradation of the environment;
- Conserve the natural ecosystems and habitats to ensure integrity of species and genetic diversity, the long-term survival of native plant and animal populations;
- Address the pressures from habitat loss, land use change and degradation, climate change and pollution.
- Protect traditional knowledge, innovations and practices associated with biological diversity of highland ecosystems including the rights of indigenous and local communities over their traditional knowledge and practices, and their rights to benefit-sharing.
- Protect the environmental quality and beneficial uses in the lowlands by better managing resource utilization in the highlands.

OBJECTIVE 2 : IMPROVING THE QUALITY OF LIFE OF HIGHLAND COMMUNITIES

Background

The Malaysian Quality of Life Report defines the quality of life as that encompassing personal advancements, a healthy lifestyle and freedom to pursue knowledge, attaining a standard of living which surpasses the fulfillment of the basic and psychological needs of the individual to achieve a level of social well being compatible with the nation's aspiration (Malaysia Quality of Life 2002 & 2004). The Malaysia Quality of Life Index (MQLI) 2004 compares the change in the MQLI over the period 1990 to 2004. It is a composite measure using 42 indicators which

represent eleven components of life, namely, income and distribution, working life, transport and communications, health, education, housing, environment, family life, social participation, public safety, and culture and leisure. In 2002, an assessment was undertaken at state level but only five components were used because of data constraint. The five are income and distribution, transport and communications, health, education and public amenities.

The MQLI 2002 at national level moved upwards by 9.8 points over the period 1990. In 2004, the MQLI improved further by 10.9 pointst compared to 1990. All the components, with the exception of public safety and the environment, showed positive improvements. The findings at state level (2002) also showed improvements in the quality of life. The improvement was attributed to the regional balance development strategy designed to help slower states , and to encourage various states to step up their own development efforts.

The objective of the regional balance strategy is to reduce imbalances between the more developed and less developed states, among which are Sabah and Sarawak. These two states are known to have vast land resources as well as ample natural resources. The two states are also known to rely heavily on the primary sector for their growth and development. Compilation of the MQLI at national or state level does not reveal local differences. This is not found either in the absolute MQLI values or in the relative contribution of its different components. Within the two states the highland people, because of their remote location, have greater difficulty in accessing the advantages and benefits of economic growth and development taking place mainly in the lowlands within their respective states. They, however, have greater access to the environmental components in their own country, and therefore, are more dependent on them for their livelihood and the sustainability of their communities. Also, the maintenance of environmental quality in remote highlands is a measure of the quality of life of all citizens and hence, contributes to the overall level of the MQLI at both state and national level.

Breaking down the components of the MQLI to understand how the quality of life could be ascertained for the highland communities, it is observed that monthly household income, per capita income and income distribution are used to reflect poverty conditions; employment, unemployment and industrial accident rate are used to reflect on working life conditions; and ownership of private cars and motorcycles, telephones, personal computers and internet, and roads are indicators of transport and communications.

Health is reflected in infant mortality rate, in life expectancy, in doctor-population ratio, while education is seen in terms of literacy rate, pre-school participation rate, secondary school participation rate, participation rate in public universities, in primary school student-teacher ratio, and secondary school student-teacher ratio. Housing is reflected in average price of medium cost housing units to average household income ratio, percentage of houses with piped water, electricity, and the proportion of low-cost houses to total low-income households.

Environment is measured in terms of air quality, percentage of clean rivers, percentage of forested to total land area; family life is reflected in divorce rates, in juvenile crime rate, in crude birth rate per 1000 population; and social participation is measured by the number of members registered non-profit societies, and the number of registered voters. Public safety is seen in terms of crimes rate and road

accidents and culture and leisure is assessed based on membership of public libraries, television viewers per 1,000 population, and hotel occupancy rate by domestic guests.

The majority of these indicators have no significant relevance to the highland people. Many do not operate within or depend solely on a monetized system for their livelihood, thereby making it very difficult to assess their income or wealth, and hence their level of poverty. For the farmers or fishermen from the highlands, their products have to reach markets to enable them to enjoy a monetised system of exchange; and to do this, they have to travel down to the lowlands, a formidable task when there is a lack of good roads and transport. Some depend on barter system to get their essentials; while others try to live with and on what they could get within the highlands. Similarly, working life would be difficult to measure. Skills level is limited to agricultural activities, and because of the remoteness of some highland areas, and the difficulty in accessing education, it is doubtful whether this group of people have access to new technologies and knowledge of better techniques to carry out their work.

A large number of the indicators that are linked to material assets are not commonly found in the highlands, especially among those who live in the more remote and hard to reach places. Private cars, telephones, personal computers, internet, roads, and modern housing equipped with electricity and water are not common items in the highlands. Some areas that are nearer to the lowlands and are easily accessible may enjoy some of these facilities; again the more remote the areas, the harder for them to have access to these material items, and even if they do have access to some, often the conditions upon which they do have can be difficult such as intermittent supply, breakdowns, delays in repairs, and high maintenance costs.

Health and education are two most important individual assets, especially for the poor. They are important because they provide the means by which individuals, who find themselves and their families in poverty, especially chronic or hard-core poverty, to move out of poverty and break out from the cycle of being poor. In the highlands, the availability or the form in which these two are made available may not always be in line with what is considered desirable or preferred. In some cases, even if they are available, families in the highlands, due to ignorance, may not make full use of them. Furthermore, the level of services is not always comparable to the lowlands; it is likely to be worse off even when compared to those in rural lowlands. The constraints are always linked to problems of access to the highlands.

It is the non-tangible, assets-based indicators such as environment, social participation, and public safety where the conditions in the highlands are better, and could, therefore, be further enhanced to improve the quality of life.

In enhancing the quality of life of highland communities, the aim should be to take small steps at a time to improve the conditions upon which the highland people live. Each progressive step allows the rural communities to continue to rely on their own social and cultural values to adjust to change and growth; to build up their internal resilience in order to accommodate abrupt changes to their lifestyle, their religious beliefs, and to take pride in their highland heritage that forms the backbone of their society and culture.

Although opinions diverge on how mountains should be defined in relation to altitude, there is a general consensus that they are areas with steep slopes and

marked topographic relief. This means that they are high-energy environments, facing many challenges with regard to minimizing the impacts on human populations from a wide range of natural hazards. Interactions of high rainfall, great variations in temperature and steep slopes often result in natural hazards such as floods, landslides and rockfalls. Soil erosion, landslides and slope failures are more intense and more common in the highlands compared to the lowlands.

The importance of understanding and managing all of these risks has become increasingly significant for several reasons. First, the total number of people living in, visiting and traveling through highland areas is rising. Second, the density of transport and other infrastructure within highland areas, and the linking of highlands and lowland areas are increasing. Third, climate change is likely to be linked to a greater frequency of extreme events, higher instability of slopes and general uncertainty regarding trends. Fourth, many of these risks can have significant downstream consequences.

Statement of Objective

Improving the quality of life of highland communities should aim to:

- Provide an enabling environment with various alternative options for people to earn and sustain a living in the highlands so they do not have to migrate to the lowlands to find employment; nor do they have to be chronically poor or remain poor most times because they cannot make a decent living.
- Invest in education and training to enable the highland communities to build up their individual assets and their social capital. Provision of education and having access to higher education are ways in which poor communities can improve their capabilities. With improved capabilities, they are able to make informed choices when faced with options on means of livelihood, where they would want to live and work. Formal education is often found to be strongly associated with decreased probability of chronic poverty because it improves the quality of labour as an asset.
- Invest in health care and health facilities because these are vital for maintaining the capacity of the people to work and it raises their productivity levels. Highland people very often rely on their own labour and ill-health affects their capability to work. Poor health, chronic illnesses and high mortality rates among children could reduce the community assets because people form the main asset in such highland communities.
- Invest in the delivery of public services such as roads, telecommunications, power, and water because these are considered productive assets in the highlands. Access to these productive assets enables the highland people to have a better standard of living, to increase their productivity, to create jobs and employment, and generally to enjoy the comforts of living usually found in the lowlands.
- Provide opportunities for highland communities to advise on management of environmental assets that they depend on (agricultural land, water, forest products).
- Nurture cross-border social, cultural and economic relationships without compromising national or state security.
- Ensure that buildings, settlements and infrastructure are designed and built according to safety factors related to highlands such as landslides and erosion.

OBJECTIVE 3 : PROMOTING SUSTAINABLE ECONOMIC ACTIVITIES AND ENHANCING ECONOMIC OPPORTUNITIES FOR COMMUNITIES IN THE HIGHLANDS

Background

At the macro level, enhancing economic activities and opportunities is based on the strategic development thrusts in the National Vision Policy (NVP) and the New Development Policy (NDP). Both form the basis of the Third Outline Perspective Plan (OPP3). The NVP continues from the previous New Economic Policy (NEP), emphasizing poverty eradication and restructuring of society regardless of race. The NDP takes the NEP a step further by emphasizing on balanced development while striving for the goals of Vision 2020. The NDP has various policy thrusts, among which are to develop a knowledge-based economy, to strengthen domestic investment and innovation and capacity from within; to strengthen the main economic sectors of the economy; to address pockets of poverty in remote areas, and to increase the income of those in the lowest 30% percentile of population; to raise Bumiputera participation to 30%; to develop human resources for the k-economy; and to pursue environmentally sustainable development.

From a national to a regional perspective, this means that development strategies should aim to balance regional growth, focusing on less developed regions or states. The remote areas, usually rural, would need further development in order to reduce disparities between urban and rural areas. The OPP3 states that rural institutions would be strengthened (OPP3, p13); there will be greater use of information and communications (ICT) in rural areas, linkages between urban and rural economies are to be strengthened and rural communities would be regrouped into small townships to facilitate the provision of infrastructure facilities and services. In referring to rural areas, the OPP3 makes no distinction between highlands and lowlands and yet no same rural development strategies could apply to both areas because it would be definitely harder to develop remote highland areas compared to rural lowlands. The former would always be confronted with formidable cost constraints because of their locations. Development strategies to enhance economic opportunities and activities in the rural highlands would have to be different from those aimed at developing rural lowlands.

Access is always an issue. The lack or difficulty of access tends to create situations of isolation, economic marginalization, and poverty. The remote highlands are often characterized by the absence of infrastructure or poor infrastructure and inadequate facilities. The conditions tend to vary across regions; some are worse off than others. In some highland areas, economic hardships are tolerable; in others, the problems are more serious and poverty abounds in the rural highland communities.

The mainstay of the highlands' economy is agriculture. It supports a large proportion of the rural highlands communities. Very often, agriculture here is not the commercial, money-generating type (with the exception of Kundasang); instead it is more of a subsistence-form of livelihood, with a tendency to put the highland communities at risk of poverty. Crops failure, soil exhaustion, environmental damages, climate changes could all create adverse conditions that impact on the rural communities and their livelihoods. This is not even taking into consideration access to markets. Market failures and under-pricing are additional constraints. It is very difficult for most highland crops to reach a sizeable lowland market to justify considerable investments in commercial planting and to make it feasible to build

supporting infrastructure. With limited opportunities to earn income from other sources, most highland communities are at risk of dropping into hardcore poverty. Despite marked improvements in income levels in Malaysia, rural poverty remains relatively high at 11.9% in 2004 (Ninth Malaysia Plan,Table 16-1, p 300). Sabah and Sarawak are among the states in Malaysia, with relatively high rates of poverty incidence. Sabah, in particular,has the highest rate of poverty incidence among the states at 23% (Ninth Malaysia Plan, Table D, p 329). The likelihood of this incidence occurring in the more remote highlands in this state is far greater than in the lowlands which have better access to urban markets, and other income-earning opportunities owing to better roads, infrastructure and amenities. In fact, its incidence of hardcore poverty is also the highest at 6.5% in 2004.

The highlands are rich in natural resources. The highlands serve as the source of primary products which benefit the lowland economies. Mass extractions of these resources are often costly and beyond the means of the highland communities. When it happens, it is likely to be undertaken by businesses in the lowland. The selective extraction of natural resources (e.g. timber, water, biodiversity) from the highlands tends to favour the lowlands. There is a tendency to under price highlands products which benefits the lowlands more. The highland communities are seldom deeply involved in commercial extraction of the highland resources. The resource and commodity flows towards the highlands are usually small, making the highland-lowland linkage a one-way traffic in favour of the latter. The main forms of investment in the highland are often in infrastructure and related developments but these are often guided by the needs of resource-extraction development; and not by the needs of the highland communities themselves.

Cross-border movements (among Sabah, Sarawak and Kalimantan) of people and goods have a long history and are vital to the communities on both sides. As the volume of trade and movement of people increases across the borders, there will be a need for better management of such movements. The current arrangement is *ad hoc* and informal. The Government does not derive any revenue from taxes and excise duties from these cross-border trade. While there are several official border crossings (mostly in the lowlands) that facilitate the movement of goods and people between the two countries, there exists many “jalan tikus” or traditional forest footpaths connecting many of such highland settlements to their neighbours in Kalimantan. Although the opening up of more border crossings brings along economic opportunities, they also pose security issues and potential economic leakages which need to be examined and appropriate strategies developed.

Enhancing economic activities and opportunities in the highlands will provide the much needed enabling environment to improve the highland economy. Priority in the economic transformation process is to benefit the highland communities. Economic transformation of the highlands should be based on comparative advantage while at the same time, it should ensure conservation and regeneration of natural resources. Enhancing economic growth in the highlands should also seek to improve the inequitable terms of trade between the highlands and lowlands. Development of the highlands should, therefore, encourage greater involvement of the highland communities. This does not mean that the economic development in the highlands should be at the expense of the lowlands. It may not be possible to separate the two economies; both are inextricably linked. An integrated development approach that looks at the symbiotic relationship between lowlands and highlands is necessary. The emphasis on enhancing economic opportunities

and activities in the highlands is intended to reduce the inequities in the flow of resources between the two areas.

Therefore, the sustainable development of the highlands and their growth are inevitably intertwined. Both moves in tandem but the objective of economic growth and development must consider impacts on the highlands and the footprints it leaves behind. Highland communities are vulnerable, the resources are also vulnerable which means that development strategies on agriculture, tourism and any forms of natural resource extraction must be pragmatic and yet be sensitive to the cultural and social practices of the highland people, bringing them benefits that could eventually help to reduce the inequities between them and the lowlands.

Statement of Objective

Enhancing economic activities and opportunities should consider taking steps to promote the following areas:-

- Socio economic improvements through the provision of better education and health care to the highland communities. Access to education and health should be considered an important goal of development in the highlands because they empower the highland people to make informed decisions on the environment, upon which they live, socialise and build their communities. They, just like the lowland communities, have equal rights to better health facilities and social amenities.
- Development in the highlands should encourage their respective niches in productive activities that would increase income without having any serious adverse impacts on the environment. Alternative sources of income that are less land-intensive and more labor-intensive should be considered while providing the people with the option to remain in the highlands and earn a reasonable livelihood.
- Diversification of the highland economy from subsistence agriculture to more modern, more productive agricultural activities, and other forms of economic activity such as tourism, and trading. Tourism is encouraged because it brings in income and investment. Tourism also provides an alternative means of livelihood for the highland communities. They do not always have to rely on farming and subsistence agriculture to support their families. Having alternative means of livelihood gives highland people choices. It could help to stem out-migration trends, especially among the young people who are afraid that the present situation could not sustain them nor their families, forcing them to leave to seek jobs in the lowlands. Once they leave the highlands, their unique culture cannot be preserved, resulting in cultural and social losses.
- Rationalization of extraction of the natural resources in the highlands that should consider the highland communities, their livelihoods, and their close relationship with the mountains and forests in which they leave. There are opportunities to improve natural resource management and forest management (including forest product management) which would enable highlands residents to share in the benefits accrued as well as bring them closer to the mainstream of economic development.
- Upgrading agricultural techniques to increase productivity in the most important economic activity in the highlands. The difficulty of farming conditions in the highlands makes it unprofitable unless there is access to special techniques for intensive farming or subsidies to offset competition.

Some farming techniques are antiquated and require upgrading. The underlying principle of promoting agriculture should be seen in the context of "helping to preserve cultures and to keep a balanced ecosystem". Over-use of land on mountain hillsides has led to soil degradation which forces people to either continue to over-use specific plots of land or to degrade ever larger plots of land in search of suitable soil. Farmers need to be taught more about the fragility of the soil as well as about better methods of farming that may allow them to preserve the soil.

- Capitalize on the economic potential of the border crossings and minimize economic leakages without compromising national and state security.

OBJECTIVE 4 : BUILDING AND IMPROVING ADMINISTRATIVE CAPACITY FOR THE MANAGEMENT OF THE HIGHLANDS

Background

The main challenges of administrating the highlands are the size and extensiveness of the area they cover, their remoteness, their inaccessibility, their small and scattered communities and the rugged terrain. Most highlands are far from major control centres. Few personnel are available for planning, management and supervision of the highlands, especially personnel on the spot, who also have limited travel budgets and this further exacerbates the difficulties of supervision and enforcement.

There are numerous legislations in both the states governing the conservation and utilization of the natural resources, protection of environment, utilization of land, and legal mandate for the development of the various sectors (including modernization of agriculture, forestry development etc). There is a need to strengthen existing legislations that are governing the management of resources and utilization of the highlands in order to ensure that agencies concerned have a clear mandate to pursue effective and efficient implementation of policies formulated for the development and management of the highlands.

While there are many institutions that have responsibilities in the highlands, the institutions at village and district levels have a particularly important role in the planning and management of the highlands. The key challenge is to identify the key institutions in the management of the highlands where the administrative capacity can be further improved. Capacity building is focused on educating and training the relevant people and providing practical and workable tools and step-by-step guidelines. More critically, there is an urgent need to empower local communities and village-level institutions. Given that the highlands straddle state and international borders, improving cooperation with Sarawak and Kalimantan is vital.

There is also the need for funds to promote the conservation of the highlands. A variety of economic and financial instruments are adopted and used worldwide for the conservation of their natural resources. New concepts and approaches have been proposed including user charges and fees, taxes and fiscal grants involving inter-governmental transfers. What is critical here is the identification of one key instrument or a set of instruments that will be (i) appropriate for the highlands (ii) linked to the conservation strategies being generated, (iii) practical and can be implemented, and (iv) effective and sustainable in the medium and long term.

The identification of appropriate and relevant financial and economic instruments is insufficient, without identifying the sources of funds from which these instruments could access. These instruments could tap into various state financial resources and thus, it is important to identify and assess such resources to determine their elasticity, their capacity and their appropriateness for financing conservation efforts. Raising sufficient money for conservation efforts is not a short-term, one-off campaign; it has to be seen as a long-term, sustaining measure because conservation efforts are often long-term, taking time to yield social and even financial benefits and very often the initial costs are relatively high.

Support from both public and private sectors is also needed. Public support here refers to the general public, in particular, private individuals. Public awareness of the significance of conservation efforts, (and supported by taxation policies), could provide a source of long-term funding, especially in providing endowments for a trust fund. The culture of donating and endowing funds among individuals has to be initiated and cultivated to support conservation efforts not only from private individuals, but also from the private sector who should be encouraged to give and contribute towards these efforts. The private sector is seen in terms of public and private corporations. Private sector working hand-in-hand with non-governmental organizations can play an important role in extending financial support to help sustain conservation efforts in the long term. Without this support, it would difficult to adopt some economic instruments and ensure that they are effective.
There is currently only limited involvement of local communities and non-government stakeholders in the decision making process for land use planning and infrastructure development. This situation is not unique to the highlands but throughout the country. The challenge is to find a mechanism on how best to involve stakeholders in decision-making.

Statement of Objective

Building and improving administrative capacity for the management of the highlands should aim to :

- Improve the functions, activities and organization of key agencies, especially at the local level, to ensure that the agencies concerned could be effective in the implementation of the policies formulated for the highland development and management.
- Improve the capacity of key institutions and its personnel to service the highland communities better.
- Enhance the functions and roles of village-level institutions and empower local communities.
- Enhance transboundary cooperation.
- Identify economic instruments to ensure that the strategies formulated can be implemented and sustained.
- Enhance stakeholder awareness on the importance and fragility of the highlands.

SECTION 3 : CHALLENGES IN CONSERVATION & SUSTAINABLE USE

Plate 3-1: The construction of the Sipitang – Tenom road

Plate 3-2: Organic farming in Bundu Tuhan, Ranau

Plate 3-3: Example of successful fish-rearing in Tambunan

Plate 3-4: Hotel development and farming on slopes in Kundasang

Plate 3-5: An isolated settlement in Ranau

Plate 3-6: Mt. Kinabalu, world heritage site and the state's main tourist attraction

Plate 3-7: Logging is still an important activity in the highlands

Plate 3-8: The Mendalong river during dry season

Plate 3-9 : Satellite phones powered by solar cells in Long Pasia

Plate 3-10: An abandoned strawberry farm in Ranau

Plate 3-11: Cleared hill-slope near Kundasang

Plate 3-12: Fruit & vegetable stalls, along the Ranau – Kundasang road

Plate 3-13: A view of the Keningau town centre

Plate 3-14: Slash and burn cultivation in Long Mio, Ulu Padas

Plate 3-15: More slash and burn cultivation in Ulu Padas

Plate 3-16: A view of the now abandoned Mamut Copper Mine

Plate 3-17: Entrance to the Australian War Memorial at Kundasang

SECTION 4 : STRATEGIES AND INTERVENTIONS

INTRODUCTION

Ten strategies have been formulated to achieve the four objectives of promoting conservation and sustainable use of the highlands of Sabah. Each strategy is made up by various strategic thrusts and supported by a range of recommendations. The fragility of the highlands is the underlying premise for all the strategies.

The ten strategies are :

Strategy 1

The highlands are environmentally sensitive areas that shall be holistically planned and managed to safeguard the local sustainability and the sustainability of the highland – lowland linkages.

Strategic thrust

1.1 Planning for the highlands as environmentally sensitive areas
1.2 Rationalising highland - lowland linkages

Interventions

1.1 Adopt a uniform terminology for highlands throughout the state
1.2 Incorporate the permissible land uses into statutory plans
1.3 Strengthen the Environmental Impact Assessment procedure for projects in the highlands
1.4 Provide incentives for highland communities to protect the environment
1.5 Undertake Strategic Environmental Assessment part of statutory land use plans and in the formulation of state policies and programmes
1.6 Formulate the National Highlands Policy

Strategy 2

The unique biological resources of the highlands shall be conserved and used with due consideration to the long-term sustainability of ecosystems, the well-being of local communities and state's economic aspirations.

Strategic thrust

2.1 Improving management of the forest matrix
2.2 Strengthening the protected area network
2.3 Supporting trans-boundary conservation initiatives and networking
2.4 Enhancing the economic potential of biological resources
2.5 Improving forestry operations
2.6 Strengthening the administration of biological resources
2.7 Improving understanding and preserving knowledge

Interventions

2.1 Initiate a programme to mitigate impacts of road crossings through Crocker Range Park
2.2 Introduce "Traditional Use" zoning to resolve customary land claims at Crocker Range Park

2.3 Initiate a programme to restore forest linkages between Kinabalu Park, Crocker Range Park and Ulu Padas
2.4 Establish the Kuala Maga-Bukit Rimau Conservation Area
2.5 Establish the Long Pasia Park
2.6 Establish the Pasia Peat Swamp Conservation Area
2.7 Reclassify Bayaan Forest Reserve from Class II to Class IV
2.8 Reclassify Mt. Mandalam Forest Reserve from Class IV to Class I
2.9 Reclassify part of Sungai Tagul Commercial Forest Reserve as Pensiangan Amenity Forest Reserve
2.10 Undertake a tri-partite management plan of the area between Ulu Padas, Pulong Tau (Sarawak) and Kayan Mentarang National Park (Kalimantan)
2.11 Submit all production forest areas above 600m elevation to third-party certification.
2.12 Manage Gunung Trus Madi as a single biological unit
2.13 Produce guidelines for SFMLA holders to integrate wildlife within Forest Management Plans
2.14 Formulate the Game Hunting Strategic Plan for Sabah
2.15 Strengthen the community based forest management programme at Kiau adjacent to Kinabalu Park
2.16 Strengthen the community based forest management programme at Kerangas forest areas in Ulu Padas
2.17 Prepare a Sabah Red Data Book for plants and for animals
2.18 Prepare a biogeographical map of Sabah

Strategy 3

The natural resources in the highlands shall be utilized in a manner that secures their long-term sustainability, respects the fragility of the highlands and ensures that the benefits are fairly accrued to the highland communities.

Strategic thrust

3.1 Protecting water catchments
3.2 Maintaining water quality
3.3 Sustainable extraction of mineral resources
3.4 Protecting unique geological features
3.5 Sustaining fisheries

Interventions

3.1 Develop inventory of Type III and Type IV water catchment areas in the highlands
3.2 Gazette water catchment areas in the highlands
3.3 Adopt water quality targets for highland rivers
3.4 Establish pilot community water pollution monitoring programme
3.5 Implement the Mineral Enactment 1999
3.6 Enforce the Land (Quarry) Rules 1997 of the Land Ordinance (Sabah Cap. 68)
3.7 Develop an inventory of unique geological features
3.8 Gazette unique geological features under the Sabah Parks Enactment 1984
3.9 Expand the Tagal system for recreational fishing

Strategy 4

The highland community shall be empowered with the means to strengthen their individual assets and capabilities, and sustain their social and cultural values.

Strategic thrust

4.1 Improving earning capacity
4.2 Enhancing education opportunities and facilities
4.3 Provision of technical training and skills upgrading
4.4 Improving the delivery of health care
4.5 Enhancing community participation in decision-making
4.6 Improving basic infrastructure
4.7 Nurturing cultural and social practices and norms

Interventions : Strategy 4

4.1 Establish Rural Tourism Information Centers to facilitate rural tourism activities
4.2 Intensify the production and promotion of handicrafts and souvenir items
4.3 Expand the INFODESA database
4.4 Provide hostels at selected primary schools in the highlands areas of Sabah
4.5 Organize exposure program through study trip/ visits/ student exchange to the pupils of primary schools in the highlands area
4.6 Establish a Skills Training Centre in Tambunan
4.7 Increase the frequency and coverage of mobile clinic services to remote villages
4.8 Promote the Primary Health Care Voluntary Program (Program Sukarelawan Penjagaan Kesihatan Asas)
4.9 Support to establish "Alumni Association" at each school as a platform for the local community to contribute positively to the village development
4.10 Strengthen the socio-economic component within the EIA procedures for major projects in the highlands
4.11 Implement the E-Village Program
4.12 Document traditional knowledge of the highlands community
4.13 Recognize the Kinabalu porters as a State Cultural Heritage

Strategy 5

Agriculture in the highlands shall focus on improving the economic livelihood of the local community, develop niche products that are economically viable and give due consideration to the fragility of the environment.

Strategic thrust

5.1 Improving the existing agricultural practices
5.2 Introduction of new and higher value crops
5.3 Expansion of organic farming
5.4 Improving processing, packaging and marketing
5.5 Enhancing livestock farming
5.6 Adhering to crop matrix
5.7 Enhancing fisheries

Interventions

5.1 Reactivate of the coffee project in Long Pasia and Long Mio
5.2 Implement the “Organic Farming Initiative” at Bundu Tuhan and Masilau
5.3 Train farmers in organic farming and composting
5.4 Establish a network of wholesalers and retailers in Kota Kinabalu to market organic produce
5.5 Train extension staff in processing, preservation and packaging of agricultural produce
5.6 Establish pilot drying centre in Ranau District
5.7 Zone the existing agriculture areas in Keningau as corn and pasture belt
5.8 Establish feed processing and packaging facilities in Keningau
5.9 Intensify rice production in Tambunan and Binaung Apin –Apin
5.10 Convert Keningau and Sook Plain and Nabawan and Tenom as food crop districts

Strategy 6

Tourism in the highlands shall preserve and enhance the character of the area to be developed, benefit the local community, be demand driven and the scale of development shall take into account the environmental and cultural sensitivity of the areas being developed.

Strategic thrust

6.1 Improving tourism development and marketing information
6.2 Improving visitor information services
6.3 Building institutional capacity at the district level
6.4 Identifying new tourism opportunities and improving existing products
6.5 Developing settings for the domestic tourism market
6.6 Encouraging local community involvement in tourism

Interventions

6.1 Conduct detailed surveys of visitor trends in the Mt. Kinabalu – Ranau – Kundasang area
6.2 Establish tourism information centres in all districts in the highlands
6.3 Conduct training courses for District Tourism Development Coordinators
6.4 Develop hiking and cycling trails around Kundasang to connect the main attractions and services
6.5 Promote unique geological features as tourist attractions
6.6 Promote the War Memorial at Kundasang
6.7 Expand facilities at the Kinabalu Park Centre
6.8 Expand climbing options at Kinabalu Park
6.9 Develop and promote high-end Kinabalu themed souvenirs
6.10 Produce documentary on the porters of Kinabalu
6.11 Initiate a programme to implement Environmental Management System EMS at highland hotels
6.12 Develop and promote domestic tourism facilities for Tambunan area
6.13 Develop and promote domestic tourism facilities for Keningau area
6.14 Develop and promote domestic tourism facilities for Tenom area
6.15 Promote tourism to Long Pa Sia
6.16 Provide training courses to develop village level tourism capacity
6.17 Promotion of homestay and guesthouse accommodation

Strategy 7

Planning and development of settlements in the highlands shall focus on the social and economic well-being of the communities, and the built environment shall be in harmony with the fragile eco-system and character of the highlands.

Strategic thrust

7.1 Controlling urban sprawl
7.2 Maintaining highland character
7.3 Adopting development themes that promote the highland environment

Interventions

7.1 Delinetate boundary for Special Management Areas
7.2 Incorporate the Special Management Area (SMA) plans in Statutory District Plans
7.3 Undertake terrain mapping for all SMAs
7.4 Prepare Comprehensive Development Plan (CDP) for the urban areas of Keningau and Ranau
7.5 Strengthen the procedure for approving development plans in the SMAs
7.6 Refine building guidelines that suits the highlands environment

Strategy 8

Infrastructure development in the highlands shall consider the sensitive physical setting and the unique needs of the communities and economic activities in the highlands.

Strategic thrust

8.1 Improving reliability of energy supply
8.2 Improving transportation to and within the highlands
8.3 Enhancing telecommunications
8.4 Improving water supply reliability
8.5 Improving waste management
8.6 Enhancing disaster relief facilities

Interventions : Strategy 8

8.1 Conduct feasibility studies for the implementation of community-led micro-hydro power schemes in remote highland villages
8.2 Undertake feasibility study for public transport to and from the highlands as well as within the highlands
8.3 Initiate a tourist shuttle bus service from Ranau – Kundasang – Poring.
8.4 Upgrade the Sipitang – Long Pasia road to JKR R1 standard
8.5 Improve accessibility in Tenom to promote its tourism attractions
8.6 Expand public telephone network in remote communities using satellite telephone technology
8.7 Promote water demand management as a tool for water conservation in the highlands
8.8 Integrated solid waste management systems shall be implemented at all urban settlements in the highlands
8.9 Develop additional disaster relief facilities in the highlands
8.10 Implement an effective community-watch landslide monitoring system

Strategy 9

Appropriate institutions shall be strengthened, legislations streamlined and suitable funding mechanism established to facilitate conservation and sustainable use of the highlands.

Strategic thrust

9.1 Institutional strengthening
9.2 Streamlining legal framework
9.3 Enhancing the use of economic instruments for conservation

Interventions : Strategy 9

9.1 Provide adequate and appropriate training for members of the JKKK
9.2 Increase the mandate of the JKKK sub-committee on Kemudahan Awam dan Kesihatan
9.3 Establish Kelab JKKK at all districts
9.4 Develop the Sabah JKKK Handbook
9.5 Establish the District Tourism Development Committee
9.6 Establish Committee on the ConservatIon of Geological Features (CONGEF)
9.7 Expand the mandate of the Malaysia-Indonesia border committee
9.8 Establish a taskforce under the Jawatankuasa Tindakan Negeri to monitor the implementation of the strategies for the highlands
9.9 Establish a Special Select Committee on highlands
9.10 Formulate Reduced Impact Logging Rules under the Forestry Enactment
9.11 Amend the Customs Import and Export Prohibition Order to comply with CITES guidelines – non detriment findings for species of highlands flora
9.12 Issue communal titles to the Long Pasia and Long Miao community under section 76 of the Land Ordinance
9.13 Amend section 7 of the Town and Country Planning Ordinance to allow for public participation in the decision-making process
9.14 Review existing government royalty and premium rates for forest produce
9.15 Increase entry fees at Kinabalu Park
9.16 Introduce Ecological Cost Recovery Surcharge (ECOS) at all hotels
9.17 Tap into international environmental funds and Local Philanthropy Sources
9.18 Establish the Sabah Conservation Trust Fund
9.19 Provide rebates or discounts on Sales and Service Taxes for businesses involved in the promotion of sustainable development in the highlands

Strategy 10

Comprehensive research on the highlands shall be encouraged to increase and expand scientific knowledge about the highlands as a means towards better resource management and conservation.

Strategic thrust

10.1 Enhancing research on natural resources planning and management
10.2 Enhancing research on highlands agriculture
10.3 Documenting traditional knowledge
10.4 Promoting awareness about the highlands

Interventions

10.1 Undertake research to increase knowledge and understanding on highlands flora
10.2 Undertake research to increase knowledge and understanding on wildlife in the highlands
10.3 Undertake research to increase knowledge on freshwater fish and other aquatic life in the highlands
10.4 Undertake research on montane hydrology to enable better water resource management
10.5 Establish State Clearing House for Biodiversity
10.6 Establish the Long Pasia Highland Biodiversity Field Centre
10.7 Undertake research on the causes and effects of climatic change in the highlands
10.8 Undertake research on cultivation of herbal plants in the highlands
10.9 Undertake awareness programme on the highlands for school teachers
10.10 Undertake awareness programme on the highlands for government officers at the district and local levels
10.11 Establish web-site on the highlands of Sabah

The ten strategies provide a holistic approach to the conservation and sustainable development of the highlands of Sabah. The strategies and strategic thrust are not prioritized as all the strategies are needed in parallel. The interventions are however divided into three types :

Intervention category	Implementation period
Short-term	2007 - 2010
Medium-term	2007 - 2013
Long-term	2007 - 2016