Guide for Sustainable Tourism Best Practices

Guide for Sustainable Tourism Best Practices

CONTACT US:

Rainforest Alliance
665 Broadway, Suite 500
New York, NY 10012 USA
Tel.:   +1 (212) 677-1900
Fax: +1 (212) 677-2187
E-mail: canopy@ra.org
Website: www.rainforest-alliance.org

In Costa Rica:
Apdo. 11029-1000, San José
Tel-Fax: +506/234-8916
www.rainforest-alliance.org

Credits

Prepared by:
　　Sustainable Tourism Division
　　Rainforest Alliance

Technical Compiling:
　　Alejandrina Acuña

Technical Review:
　　Ronald Sanabría
　　Milagro Espinoza

Official Translator:
　　Luis Delgadillo

Philologist:
　　Sonya Kozicki-Jones

Art and Layout:
　　Diseño Editorial S.A.
　　www.kikeytetey.com

Financed by:
　　Inter-American Development Bank
　　Ford Foundation

Content

Preface

This second edition of the Guide includes an overview of the various criteria currently used by different tourism sustainability certification programs operating in the Americas, thus covering new issues and aspects that have emerged since the edition published in September 2003.

The information has been reorganized around three main subjects: the environment, and both sociocultural and economic issues. Each chapter's theoretical and technical information has been expanded.

The Guide has been produced with support from InterAmerican Development Bank Multilateral Investment Fund.

Introduction

The Guide for Sustainable Tourism Best Practices is meant to be a facilitating tool for community businesses and for small and medium entrepreneurs to adopt specific actions that allow them take the needed steps to carry out and manage sustainable development.

Sustainable tourism has been defined by the World Tourism Organization as "satisfying current tourist and host community needs, while protecting and improving future opportunities. It is seen as a guide in managing all resources, in such a way that economic, social, and aesthetic needs may be met, while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems."[1]

Making a reality of sustainable tourism entails adopting "best practices," namely, corrective or improved measures implemented in every area of tourist business management and operation. These actions are aimed at ensuring that the least possible impact is caused, that tourist product quality and image are improved, that business development becomes more efficient, and therefore, social and economic development does as well.

1. Environmental

1. Environmental

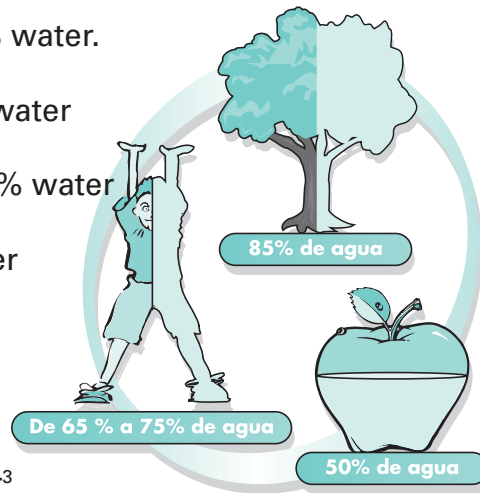## 1.1   Water

1.1.1   CONCEPTS

Water "is the most abundant component on the surface of earth and, in a more or less pure form, makes up rain, fountains, rivers, and seas; it is a constituent part of all living organisms, and appears in natural compounds."[2] For instance, note the percentages of water content for the following items:

◗   A growing tree = 50% water.

◗   A woody tree = 75% water

◗   An aquatic plant = 95% water

◗   Tomatoes = 95% water

◗   Apples = 85% water

◗   Melons = 98% water

◗   Potatoes = 80% water[3]

Water is the most abundant substance on earth and the ideal medium for life. Every ocean, river, and lake has its own specially adapted flora and fauna. That is why most marine organisms cannot live in fresh water, just as fresh water beings would be
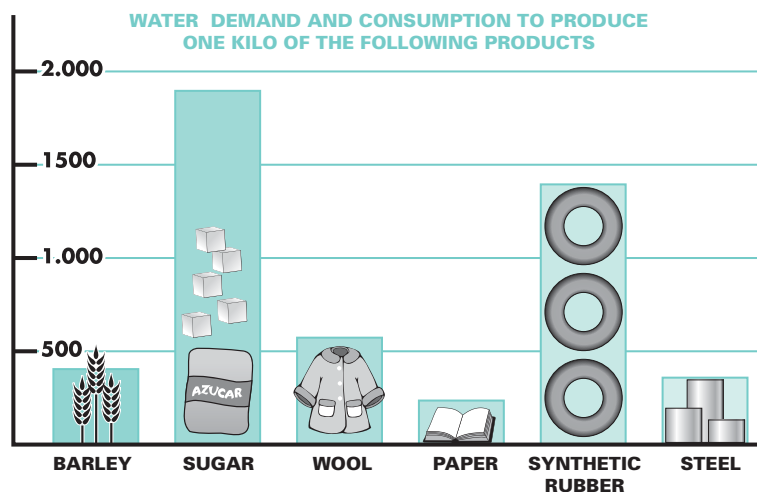
unable to live in a marine environment. On our planet, the sea is the water resource holding the most varied life forms, from such simple unicellular organisms as protozoa, to giant whales.[4]

Tapping water resources for different activities, such as energy generation, agriculture, human consumption, and industry, among others, puts pressure on water availability and quality. Throughout this century, global water demand has increased seven-fold, whereas global population has tripled. Currently, the future of water reserves depends on the use we make of this fragile and limited resource. Water shortages could lead to conflicts among users, but may also foster cooperation, as shown today by water partition treaties and multiple agreements.[5]

1.1.2   IMPORTANCE

All living creatures need fresh water; without it, earth would be a lifeless planet. Water is found in rivers, lakes, lagoons, ground sources, and the atmosphere; however, compared to our world size, and considering how essential it is to life, we actually have very little fresh water available: less than 1% of our planet's total water is liquid fresh water.

Although we can live with as little as 5 liters of water a day or less, we usually need much more than that to stay healthy. It has been estimated that a person needs 50 liters or more every day to meet personal and household needs. In developed countries they use much more than this: a daily average of 400-500 liters of water per person[6].

WATER DEMAND AND CONSUMPTION TO PRODUCE ONE KILO OF THE FOLLOWING PRODUCTS

HOUSEHOLD WATER USE TABLE				
Use Categories	**WATER USE**		**WATER SAVINGS**	
	Consumption (liters)		**Suggestion**	**Savings (liters)**
Drinking	3	Daily need		
Toilet	20	Per flush	Volume control	5
Brushing teeth	4	2 minutes	Shut faucet while brushing	3
Washing hands	2	1 minute	Shut off faucet while soaping	1
Showering	200	5 minutes	Shower in 3 minutes	80
Laundry	120	1 load	Wash large loads	20
Car washing	400	15 minutes	Use a bucket	390
Garden watering	250	25 liters x 10 meters	Use low-water consumption plants	150
Source: Denver Water Department, Colorado River Conservation District				

Nowadays, each of us uses 20 times more water than our ancestors, and although this resource may seem abundant to us, it is expected to become seriously scarce in the future if current use trends continue. This is why we must be aware of how we use water and how much we use. We must be responsible for preventing water waste in our home, in our relatives' homes, at work, and everywhere we go. With just one drop of water leaking every second from a defective or improperly shut faucet, we would be wasting **30 liters of drinking water in one day**.[7]

Efficient water use is one of the easiest practices to implement, not only through facilities design features but also through management. Water-saving measures can be taken virtually in all areas of water consumption. The table below,[8] developed on the basis of home consumption data, illustrates:

Water-consuming areas and devices in tourist facilities include:

◗ Showers, toilets, and lavatories in public bathrooms, guest rooms, and staff accommodations. Obviously, if guest rooms feature a bathtub or a jacuzzi, water consumption will be much higher.

◗ Laundry rooms.

◗ Kitchens, including rooms for food preparation and cleaning.

◗ General services, such as swimming pools.

◗ Cleaning and maintaining facilities and landscaped areas.

1.1.3 BASIC PRINCIPLES

■ Finding out, recording, and monitoring water consumption.

■ Rationalizing and reducing water consumption.

■ Using mechanisms and systems for efficient water use.

■ Educating customers and employees on the importance of water, and how to conserve it and use it responsibly.

■ Developing a preventive maintenance program.

■ Monitoring wastewater and effluent quality.

■ Using environmentally-friendly water purification methods (controlled amounts of chlorine or, preferably, chlorine-free purification systems).

■ Keeping files on policies, objectives, goals, records, etc. relating to efficient water use.

1.1.4 PRACTICAL TIPS

■ A company's good water use performance relies on carrying out periodic checks and keeping records to learn exactly how much water is being consumed and what the critical water use areas actually are. Additionally, the company would thus be able to find out whether its policies and actions are effective.

■ Start by keeping track of your monthly water consumption and cost. One way of doing this is by keeping a log that records the basic information appearing on the utility bill, or if you have your own water source, with data collected on a monthly basis.

Example of such a record:				
Date	Service Station or Room		Observations or Actions	Worker in charge
Aug/04	Laundry room	285 m3	An 80-m3 increase over last month. Check for leaks	Charles Smith

■ If you have your own water source, always install a meter on the main pipeline and keep track of consumption.

■ If you can afford it, install meters in each operating area (kitchen, laundry room, guest rooms, etc.). In the

event that you cannot do this now, make it one of your future goals. In this way, you will know which areas are generating the highest expenses and take specific water saving measures, which will also make it easier to locate leaks and carry out maintenance tasks.

▌ Develop operating plans or guidelines for efficient water use, particularly in performing tasks related to cleaning, laundry, food preparation, swimming pool maintenance, landscaped areas, etc. Some examples are:

◗ Reuse laundry wastewater in facilities cleaning tasks, such as washing walls, etc.

◗ Do laundry only when you have full washing machine loads, and if possible, acquire low water- and energy-consumption washing machines.

◗ If you have landscaped areas requiring watering, leave these tasks for the afternoon or evening in order to prevent water being wasted through evaporation.

◗ Use sprinkler or drip irrigation systems for watering if at all possible.

◗ In sites where conditions allow it, collect and use rainwater.

▌ Consider using special devices to reduce water consumption in such key areas as bathrooms, showers, lavatories, etc.

◗ For instance, an inefficient shower or sprinkler can use up to 20-30 liters of water per minute, whereas an efficient one can provide good water supply with a strong jet spray using only 5 liters per minute.

◗ A central, direct hot water supply (one not using automatic electric shower heads) also results in heating energy savings.

▌ Other measures to reduce water consumption are the following:

◗ Set up a program to check and maintain pipelines and other fixtures. This program should be periodic (once or twice a month), and someone should be made responsible for its follow-up. There is no use in finding a leak if it is not repaired.

◗ Whenever possible, install aerators on faucets where no strong water flow is required (such as in lavatories).

◗ If possible, install low-water consumption toilets; some such devices even operate without water.

◗ A small leak in a toilet can mean over 4 thousand liters of wasted water in one year, whereas a large leak, which may even create a steady noise and be easily visible, will waste more than 96 thousand liters of water per year.

◗ In order to easily detect a toilet tank leak, put a few drops of food coloring in the water. If there is a leak in the tank, a stain will appear after some 15 minutes without flushing the toilet.

◗ Install wastewater treatment systems that purify water to an acceptable disposal condition level and, if possible, reuse treated wastewater.

◗ There are two kinds of wastewater: sewage from toilets –necessarily requiring treatment before its reuse or disposal– and so-called gray water, which has been used for laundry washing, kitchen chores, etc.

◗ If you can afford it right away, hire a company to perform periodic water quality tests (water in pipelines, ice, swimming pools, etc.). Otherwise, schedule this as one of your goals, and find out how samples should be taken.

◗ Educate your guests about how to save water: for instance, post discreet signs to remind them to shut off faucets when not in use, and ask them to accept less frequent towel and linen changes.

◗ Teach your staff how to communicate these environmental objectives to guests, and post written information in guest rooms.

◗ If you have a swimming pool, start by installing a system that supplies the lowest possible amount of chlorine needed to ensure water quality. Then, think about using chlorine-free technologies.
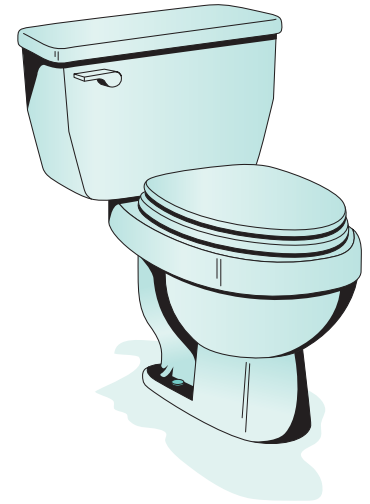
This Guide has been developed within the framework of the project known as **"International Accreditation and National System Consolidation for Sustainable Tourism Certification to Facilitate Small and Medium-Sized Enterprises' (SME's) Competitiveness and Market Access"**

The project is meant to increase competitiveness and market access for sustainable tourism SME's involved in internationally accreditable certification systems in the Americas.

The project's purpose consists of applying the best management and certification practices to SME's engaged in sustainable tourism, harmonizing and strengthening certification systems, and promoting a higher global awareness of these practices and systems. To this end, the project is carrying out technical assistance activities at the local, regional, and international levels.

At the local level, the project provides training modules for best practices management, certification, marketing, and follow-up and evaluation. Subsequently, the project will work with tourist operations that have received training in pilot countries (Guatemala, Belize, Costa Rica, and Ecuador), in order to support application of best practices for management and certification standards.

In order to make sure that these operations participate in credible and internationally recognized regional certification programs, strategies are being developed to increase the participation of SME and indigenous and community groups. This is being carried out through technical assistance to target pilot country entities that are implementing certification initiatives. Technical assistance will be provided to strengthen sustainable tourism certification programs, define harmonized baseline standards, as well as develop accreditation mechanisms and systems for follow-up and evaluation.

Additionally, progress is being made in developing an international cohesive marketing strategy for certification initiatives involved in a sustainble tourism certification network. This strategy will bring direct benefits to SME's, as well as to indigenous and community-based group operations that have applied the harmonized base standards, thus allowing them to gain better market access and become more competitive. Furthermore, it will also allow consumers to identify, acquire, and come into contact with the differentiated tourist products provided by these SME's and by indigenous and community-based group operations.

The project is being coordinated by Rainforest Alliance-Costa Rica with support from the following subexecuting agencies:

Asociación Ecuatoriana de Ecoturismo (ASEC) www.ecoturismo.org.ec,

Alianza Verde de Guatemala www.alianzaverde.org, and Programme for Belize www.pfbelize.org.
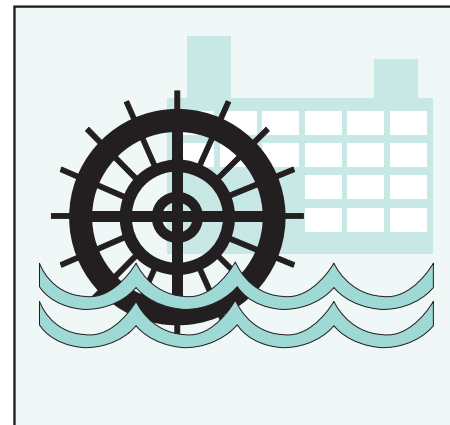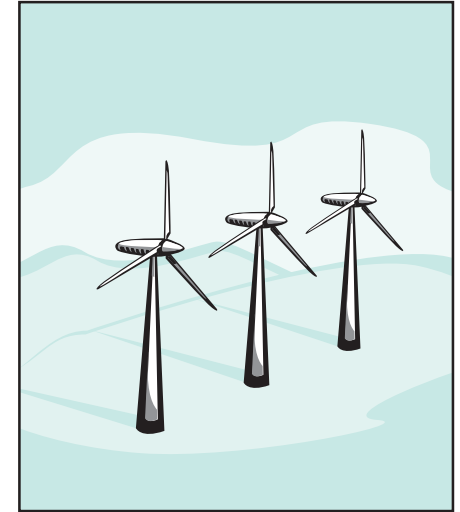
1.2 Energy

1.2.1 CONCEPTS

Renewable energy sources are characterized by their transformation and utilization processes, which may take up to hundreds of years without being consumed or depleted. These sources include hydro-power (water), solar, wind, and ocean current energies. Furthermore, depending on the way they are used, biomass and geothermal energies may also be classified as renewable.

Renewable energies are often split into conventional and nonconventional types. Of the conventional types, the most widely used is large-scale water power, such as that generated by dams. Wind, solar, geothermal, and ocean energies are considered to be nonconventional types.

Additionally, there is a wide range of biomass energy development processes that can be classified as nonconventional. This category often includes small-scale water power development. These are usually known as alternative energies.[9]

Wind Power

This is considered an indirect form of solar energy. Some 1-2% of the energy coming from the sun is converted into wind, due to air movements caused by uneven earth surface heating. Wind power has historically been harnessed, for instance, by windmills; but using it for power generation is more recent, with large-scale applications existing since the mid-seventies in response to the oil crisis and environmental impact caused by burning fossil fuels.[10]

Water Power

Like wind and solar energy, this is a "clean" and renewable energy resource that, if used properly, has a low environmental impact; it is used extensively in almost every country worldwide.[11]

Solar Energy

Solar power comes from directly tapping energy radiated by the sun in order to provide heat and electricity. In solar energy systems, the heat captured in solar collector panels may be used to meet various needs, such as household or industrial hot water, or for heating buildings and agricultural applications, among other things.
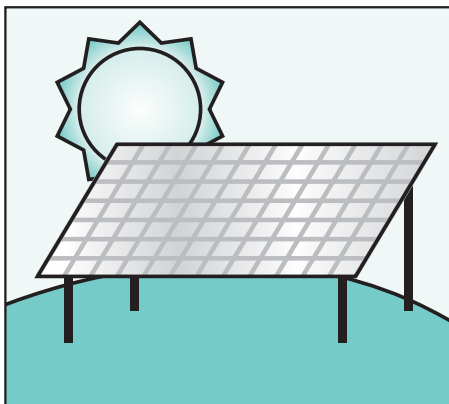
Photovoltaic panels –consisting of a series of solar cells– are used to generate electricity, and constitute a feasible solution for supplying power in areas where the available solar resource is abundant. Electricity generated by these systems can either be used directly or stored in batteries to be consumed at night.[12]
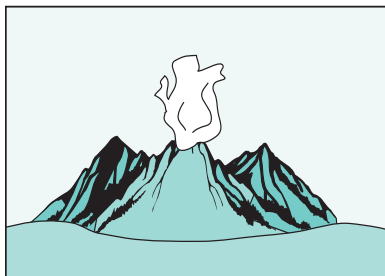
Geothermal Energy

This is the heat energy contained in the earth's interior and conveyed to the surface. It is a partially renewable and widely available resource. The series of techniques used in prospecting, assessing, and harnessing the earth's interior energy are known as geothermics.[13]

Biomass

Biomass is the amount of renewable organic matter coming from plants and animals, as well as their natural or artificial transformation. Biomass is then any kind of energy that can be obtained either from directly burning biomass, or from processing it to derive other types of fuel. Its uses in energy applications mainly include the production of gas, heat (thermal) energy, and electric power.[14]

1.2.2   IMPORTANCE[15]

Energy is one of the most important overhead items in a business; for instance, in the case of hotels, it is thought to be the second highest operating cost, only after salaries. This high consumption is usually associated with very demanding technologies used, particularly for providing comfort, such as with air conditioning.

The highest energy consumption takes place with lighting, heating, ventilation and air conditioning units, as well as in laundry rooms, kitchens, and general services areas, such as swimming pools.

Investments in more efficient energy uses and improved management practices may lead to significantly lower operating costs and energy bills, with relatively short investment payback periods. For example, an average 300-room hotel spends approximately $1.2 million a year on energy.

Through the use of renewable energy sources, local pollution is reduced, tourist destination quality is maintained, and visitor experience is enhanced.

Moreover, efficient energy use and conservation practices contribute to improving company reputation among customers and other sectors concerned with reducing global energy consumption and its impact on climate change.[16]

1.2.3 BASIC PRINCIPLES

- Finding out, recording, and monitoring energy consumption.

- Rationalizing and reducing energy consumption.

- Using mechanisms and systems for efficient energy use.

- Educating customers and employees on the importance of energy, and how to conserve it and use it responsibly.

- Developing a preventive maintenance program.

- Whenever feasible, favoring the use of renewable energies.

- Keeping files on policies, objectives, goals, records, etc. relating to efficient energy use.

1.2.4 PRACTICAL TIPS

- First, check your electric wiring conditions: defective wiring may create serious hazards and result in unnecessary waste of money and energy. Although this task should be carried out by a professional, such as an electrical engineer or an electrician, below are tips that could be useful.[17]

- Periodically check your business' electric wiring. This way you will be able to detect sloppy connections and defective switches in a timely fashion, prevent potential accidents from happening, and save on power consumption, appliance installation or repairs. It is very important that you first shut off the main switch or circuit breaker before making any repairs.

▊ Make sure there are no hot points or "grounded leaks"; in order to check this, turn all the lights off and unplug all appliances. If the power meter disk keeps on spinning, you need to check your wiring. Remember that a power leak is a money leak.
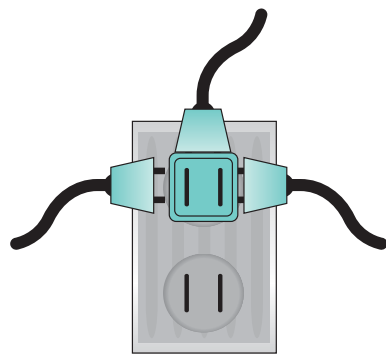
▊ Do not overload your electrical wiring with multiple outlet power strips or through the use of several appliances plugged into the same wall outlet. Furthermore, do not use extensions because they lead to wiring overload and overheating hazard: this also results in inefficient operation, potential blackouts, short circuits, and long-term damage.

▊ Connections or splices should be firm, and covered with electrician's tape. Do not use adhesive bandages, Scotch tape, or other materials.
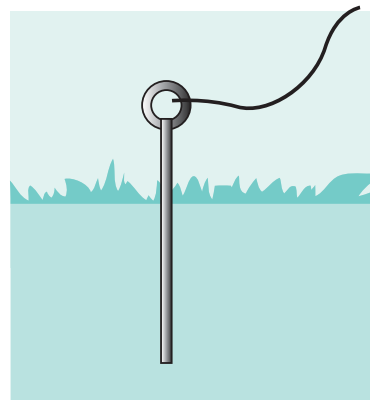
▊ Install a ground connection, which consists of a low-resistance conductor connected to the neutral wire of building power feeds through a 10-foot copper rod (Copperweld) sunk into the ground. This action protects electric wiring against any voltage surge that could result from lightning, contact between a high tension line and the company's feeder cables, etc.

▊ Use a main knife-blade type switch. Before putting a higher capacity fuse on this switch, ask a qualified technician or electrical engineer. Never place fuses on the neutral wire.

▊ You should have a circuit breaker box for a minimum of 6 circuits. Breakers should be distributed as follows:[18]
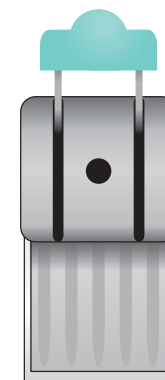
Switch	Breaker Capacity	Cable Quality
Lighting		
For up to 17 lightbulbs	20 A	12 T H N
For up to 13 lightbulbs	15 A	14 T H N
General wall outlets:		
For up to 17 outlets	20 A	12 T H N
For up to 13 outlets	15 A	15 T H N
Kitchen outlets	20 A	12 T H N
Electric range (120 volts)	40 A	06 T H N
Dual-circuit electric range (240 volts)	40 / 50 A	06 T H N
Automatic electric shower head:		
Type One	30 A	10 T H N
Type Two	40 A	08 T H N
Hot water tank (dual circuit)	20 A	10 T H N

◗ When installing ceiling-mounted fixtures and lamps, use either U-shape or eyelet terminals to make the connection. This is very important because circuit breakers and fuses do not react to sparks caused by loose cables.

◗ In case of short circuit, immediately unplug the appliance causing it, disconnect all the other electric devices, and turn all lamp switches OFF.

If your wiring has a circuit breaker or wafer-type switch, reestablish power by switching it OFF and then ON; if instead of a circuit breaker you have a fuse box, lower the main switch and replace the burnt-out fuse.

◗ The appliance causing the short circuit must be repaired by qualified people before being used again.

◗ For safety purposes, never use coins, wires, tinfoil, or aluminum foil instead of fuses.

◗ You must keep a record of the facilities energy consumption, preferably by service area (laundry, kitchen, guest rooms, etc.).

Power consumption may be measured in two ways: either by using the meter or reading the **electricity bill**. In the first case, two readings must be taken during the period for which consumption is being measured. The meter, usually installed near the main entrance, has four dials indicating, from left to right, thousands, hundreds, tens, and single units.
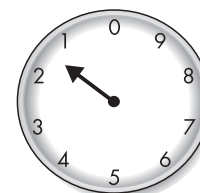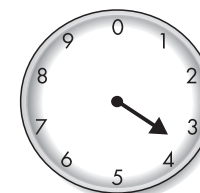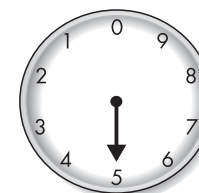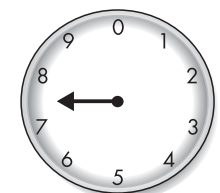
THOUSANDS   **HUNDREDS**   **TENS**   **SINGLE UNITS**

To read the meter, take the lower of the two numbers between which the hand is pointing. If the hand is on a number, you should check the next dial to your right to determine the proper figure. When this happens, the hand on the immediate dial can only be in one of two positions: between 9 and 0, or between 0 and 1. For instance, if the hand is pointing to number 3 and On the next dial to the right the hand is between 9 and 0, the reading will be 2 and 9. If the hand is on number 3, and on the dial to the right it is between 0 and 1, the reading will be 3 and 0. Consumption in kilowatts per hour (kWh) is the difference between readings at the beginning and end of the period. For instance, if your first reading was 5315 and your current reading is 5428 the period's consumption is 113 kWh.

If the **electricity bill** is used to guage consumption, you first have to define the number of days (usually two months) comprising the collection period. To estimate average daily consumption, the consumption figure appearing on the bill is divided by the number of days in the period. For example, if period consumption shown on the bill is 120 kWh, dividing this figure by 60 (days) results in a 2 kWh daily consumption.

Gas, on the other hand, can either be liqufied petroleum gas **(LPG)** or **natural gas**, and comes in three forms: **cylinders**, **fixed tanks**, or **gas pipeline** (natural gas). Similarly, there are three ways of measuring consumption:
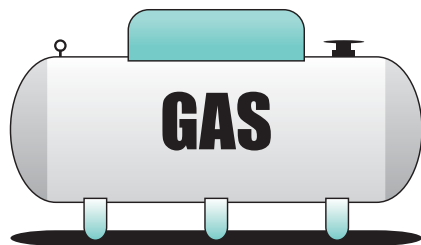
Cylinders:

First, **cylinder capacity** should be known. In order to determine consumption over a given period of time, you have to know approximately how long a gas cylinder lasts, from the moment it is installed until it runs out of fuel. To estimate consumption, you must divide the number of kilograms by the number of days the cylinder load lasted. For example, if a 30-kilogram cylinder took 15 days to run out of gas, average consumption was two kilograms per day.

Fixed Tank or Gas Pipeline

If gas comes from a gas pipeline or fixed tank supplying several companies or service stations, each enterprise should have its own gas **meter**. To know how much gas is being consumed, you should take meter readings for a particular period of time. Write down the meter reading and the reading date. After a couple or days or so –depending on the period of time you want to measure– you must repeat the procedure. The difference between the first and second readings will give you the **gas consumption for the period**. If this figure is divided by the number of days elapsed between the first and the second readings, you will get the average **gas consumption per day**.

If you have a fixed gas tank supplying only your company, measurement is taken from a flow meter when the tank truck is refilling your gas tank. The gas distributor should give you

a receipt showing the amount of gas transferred to your fixed tank, its cost, and the date. To calculate consumption, count the days between one delivery and the next, as well as the amount of gas; divide the resulting amount by the total number of days, and you will know how much gas you are consuming per day.
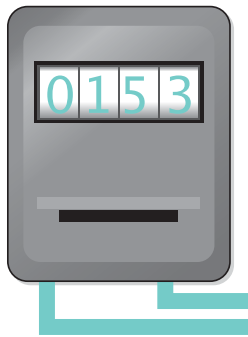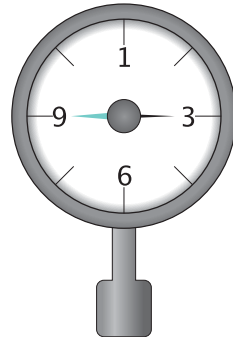
Gas meter   **Fixed gas thank meter**

▌ Develop and implement an energy-saving program involving both employees and customers; designate one person as responsible for the program, and establish an implementation timetable.

▌ Also establish operating plans for efficient energy use.

In order to do so, it is important that you first become aware of your company's main energy consumption sources, and how to save on many of them.

Lighting

Lighting accounts for one third of power consumption, and could be even higher for some companies, depending on the nature of their operations. It is possible, however, to save in this area even by taking measures with no cost whatsoever.[20]

▌ Encourage your customers and employees to turn off lights when not needed, as well as TV sets and computer voltage regulators, as well as everything else that is not being used at the time. Battery chargers for cellular phones, video cameras, communication and portable computer equipment (laptops, palm pilots, etc.) consume energy while plugged in, whether or not they are recharging these devices. The same is true for remote control devices, even when they are not on. (Every time you see a light signal on multiple outlet power strips, regulators, or any similar device, it means power is being consumed there.)

▌ Keep curtains and blinds open during the day; natural light is always better. However, in warm climates, close them in the daytime because leaving them open them lets natural light in, but also heat. At any rate, the cost of artificial lighting is lower than that of air conditioning the room.

▌ If your goal is to illuminate spaces, paint the walls in light colors. Favor colors with an index above 70% for

areas where the tasks performed are mostly visual. Similarly, consider light colors for floors, ceilings, doors, and furniture in general. This helps take better advantage of both natural and artificial light.

This table shows how much light is reflected from a wall, according to its color			
White	80%	Gold	53%
Ivory	77%	Medium Gray	44%
Yellow	74%	Orange	34%
Pink	70%	Brown	27%
Beige	68%	Red	20%
Light gray	64%	Chestnut	14%
Lemon yellow	62%	Dark Blue	8%

▮ Avoid turning lamps on during the day; carry out most of activities while taking advantage of sunlight. Make a list of all that can be done during the day, instead of putting tasks off for the evening. For instance, doing the laundry, ironing, and cleaning are all best done in the daytime with natural light (unless your country has a special program encouraging power consumption at off-peak hours through preferential rates).

▮ Depending on your budget, consider building indoor patios, skylights, and installing new windows.

▮ Lighting should be tailored to each type of environment. Both poor and bright lighting are harmful to the eyes.

▮ Replace incandescent and halogen light bulbs with energy-saving (compact fluorescent) lamps. These are more expensive, but they consume four times less energy and last up to ten times as long. Implement this measure in all areas where it is feasible, such as hallways, stairways, and parking areas. (They are not suitable for bathrooms, since this kind of bulb should not be turned on and off frequently.) It is worth noting that 85% of the electric power used by an incandescent light bulb dissipates in the form of heat, and only 15% becomes light.

▮ If compact fluorescent lamps cannot be installed in areas requiring little illumination (rooms, hallways, cornices), 25-watt (incandescent) light bulbs are recommended. In multiple light bulb lamps, you can remove one of every three light bulbs, or replace them with 25- or 40-watt light bulbs.
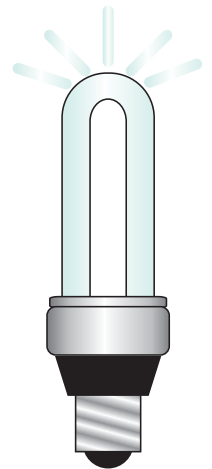
Comparison beteween incandescent light bulbs and compact fluorescent lamps		
	Light Bulb	Compact Fluorescent
Power	75W	20W
Light Intensity	1,200 lumens	1,200 lumens
Average Life	1,000 hours	10,000 hours
Power consumption with 5 hours of daily use	11.25 kWh/month	3 kWh/month

▌ Periodically clean light bulbs and lamps, since dust blocks the light they shed.

▌ Use a dimmer for lowering the lights as much as needed; you can also install "motion sensor switches" that turn lights on only when they detect people.

▌ Talk to a qualified technician about the feasibility of installing motion detection switches in hallways, stairways, and other areas, in terms of cost of installation, and/or practicality in each case.

▌ Try not to leave light bulbs stronger than 50 watts on during the night.

Appliances

Appliances consume different amounts of power depending on their energy efficiency, the amount of time they are used per day or per week, as well as on other conditions. For instance, both a toaster and an iron operate by turning electricity into heat, which uses a lot of power. A toaster, however, is used for only a few minutes, while an iron is used for a longer period of time, therefore consuming more energy.

Washing machines, vacuum cleaners, and blenders use different amounts of energy due to motor size, and hence their power consumption levels are different. The same can be said about a radio and a TV set: if they are both on for many hours, you will pay more for the energy consumed by the TV set than by the radio, since the former uses more power.

It is worth mentioning that lighting is one third of power consumption in many places, but if you have an air conditioning system in your company, the picture may be different.

Refrigeration systems are among the highest energy consumers. Below is a list of the appliances having the highest energy consumption under regular operating conditions in decreasing order. This list should be used only as a reference, since the relative order may vary according to appliance capacity in watts, and how long appliances are used per day, week, or month.[21]

How Much Power Appliances Consume Per Month[22]		
Appliance	**Time Used**	
Traditional Stove Burner, medium setting		
Small (1000 W)	1 hour a day	19.5 kWh
Medium (1500 W)	1 hour a day	29 kWh
Large (1800 W)	1 hour a day	35 kWh
Range Oven, medium setting		
Top shelf (1200 W)	1 hour a day	23 kWh
Bottom shelf (2100 W)	1 hour a day	41 kWh
Both (3300 W)	1 hour a day	65 kWh
Blender, medium setting (350 W)	5 min a day	2.5 kWh
Coffee Maker (1100 W)	Once a day	3-4 kWh
Microwave Oven w/ Toaster (1700 W)	10 min a day	9 kWh
Bread Toaster (700-1000 W)	Once a day	1-3 kWh
Rice Cooker		
10 cup capacity (600-800 W)	20 min a day	6-8 kWh
8 cup capacity (400-600 W)	20 min a day	5-6 kWh
7 cup capacity (625 W)	20 min a day	7 kWh
6 cup capacity (500-600 W)	20 min a day	5-6 kWh
5 cup capacity (450 W)	20 min a day	5 kWh
Washer, 12 lbs w/ Spin Drier (580 W)	4 hours a week	12 kWh
Iron (1100 W)	1.5 to 2.5 hr/week	7-12 kWh
Electric Showerhead, hot setting		
Lorenzetti (3000-4000 W)	30 min a day	40-60 kWh
Famo (4000 W)	30 min a day	60 kWh

▌ Always keep appliances clean, particularly those in the kitchen area. Remove food residues from microwave ovens, toasters, extractors, etc. Maintaining appliances in good condition makes them last longer, reduces power consumption and expense, and contributes to safety.

▌ Use all appliances following manufacturer's recommendations as to their handling, maintenance, and safety.

▌ Carefully check all appliances that emit sparks or whose electric cords overheat when plugged in; do not use them before solving the problem. This should be done by a qualified technician.

▌ Turn off all heat-generating appliances –irons, electric hair rollers or curlers, grills, electric cookers, heaters– before you finish using them to take advantage of accumulated heat.

▌ Unplug appliances by pulling out the plug, never by pull on the cord. It is important to keep both cord and plug in good condition.

▌ If possible, TV sets, VCR's, sound systems, and all other devices that are not being used should not be left on unnecessarily, because besides wasting energy, they will wear out faster and become useless.
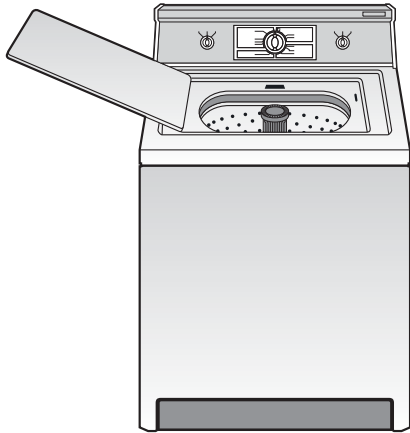
Washing Machines

▌ Only place the amount of laundry specified as the maximum allowable load into the machine. If you put in less than that you will be wasting water and power, and if you place more than the amount allowed, your laundry will be poorly washed and you may overload the motor.

▌ Always use the shortest possible cycle need for proper laundering.

▌ Try not to use hot water in the washing machine, unless laundry is extremely soiled. Additionally, make sure rinsing is done with cold water.

▌ Only use the smallest possible amount of detergent; too much detergent produces a lot of foam that places an unwarranted additional demand on the motor. It is best to use a controlled foam detergent.

Driers

These appliances consume a great deal of energy, whether gas or electricity, so:

▌ Only use the drier when strictly necessary.

▌ Take advantage of sunshine to dry your laundry, both eliminating bacteria and saving energy.
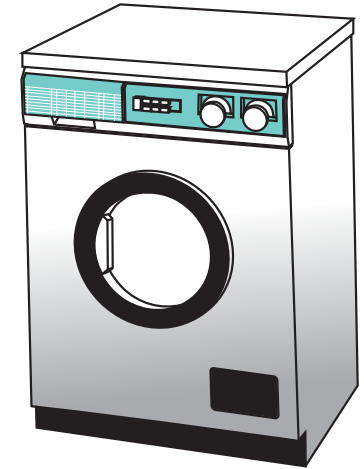
Dishwashers

The bulk of gas or electric power consumed by these appliances is used for heating water. Follow manufacturer's recommendations in the user's manual to set water temperature. In addition, take the following measures:

▌ Do not waste dishwasher water to remove food scraps on dishes. If food scraps have hardened, soak the dishes before loading them into the dishwasher.

▌ Make sure the dishwasher is full, but not overloaded. If you only have a few dirty dishes, do not use the "rinse hold" control, since rinsing will take longer and will consume 12-26 liters of hot water per cycle.

▐ Let the dishes air dry; if your dishwasher does not have an air drying setup, turn it off, and leave the door slightly ajar right after the final rinse for faster drying.

▐ If you are going to purchase a new dishwasher, read the label and choose the one using the least water and power.

Irons

Since an iron is one of the appliances that consuming the most energy, follow the recommendations below:

▐ Check the iron surface to make sure it is smooth and clean. This way heat will be transferred in a more uniform manner.

▐ Sprinkle clothing lightly with water without wetting it too much.

▐ Iron the largest possible amount of clothing in each work session. The power required by the iron to heat up will be wasted when ironing only a few garments.

▐ Iron garments requiring less heat first, and then, as the iron

becomes hotter, continue with those needing more heat.

▐ Try to do your ironing during the day, so you can save on lighting.

▐ Do not leave the iron on when not in use.

▐ Make sure the iron cord and plug are in good condition.

TV Sets

▐ Turn the lights down low where TV sets arwe installed to prevent reflections on the screen, while also saving on power consumption. Ask your guests to use the sleep timer. so that the TV set will turn off automatically if they fall asleep.

▐ If your TV set uses a voltage regulator, ask your guests to turn it off when they are not watching television.
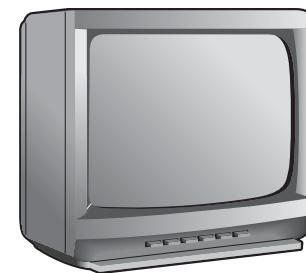
Computers

▌ Do not leave computers on when not in use, since all components (CPU, monitor, printer, etc.) will be consuming power. If you will not be using your computer for some time, at least turn off the monitor, which would be the same as turning off a 75-watt light bulb.

Vacuum Cleaners

▌ Keep vacuum cleaners and suction hoses in good general condition.

▌ Use nozzles that are suitable for the surfaces being vacuummed.

▌ Clean filters after you finish using the vacuum cleaner.[23]

Refrigerators[24]

▌ Before plugging in your refrigerator for the first time, leave it unused for a minimum of 10 hours or for the time recommended by the manufacturer. This

will allow the fridge compressor motor oil to settle before starting the refrigeration cycle.

▌ Install the refrigerator in a place where there is enough room for air to flow between the back of the fridge and the wall (5 to 10 cm approximately), and be careful not to place objects that could block airflow; otherwise, the appliance will overwork and consume more power. Do not install the refrigerator in enclosures or in cabinets. The radiator grill in the back must always be ventilated.

▌ Do not use the back of the fridge to dry towels, clothes, or shoes. This will increase power consumption.

▌ Install refrigerators away from heat-generating appliances, such as electric, gas, or firewood stoves, electric or microwave ovens, and from windows where direct sunlight gets through, since their proximity will cause the refrigerator to overwork.

▌ Make sure the refrigerator is leveled. If the fridge base or the floor is uneven, the door gasket will not seal it tightly and warm air will enter the unit.
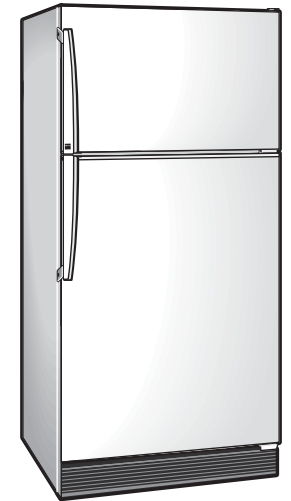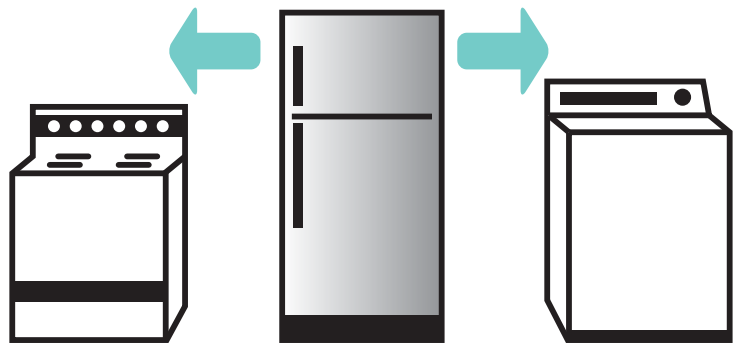
▮ Check the refrigerator door gasket to ensure that it is in good condition. For this purpose, take a piece of paper and trap it by closing the fridge door. If it holds without sliding down, the gasket is OK; if the paper falls down or can be removed without any friction, either the door gasket seals are not in proper condition or the door is misaligned. Repeat this test at several points along the gasket, approximately 30 centimeters apart.

▮ Make sure the door is properly closed, and do not leave it half open. A refrigerator operates most efficiently when its door is opened as seldom as possible. Thus, decide what you need before opening it, and close it immediately to prevent warm air from coming in and cold air from escaping. Do not open the fridge unnecessarily, or keep it open for more than 10 seconds.

▮ Keep liquids in covered containers in order to prevent moisture due to evaporation, since this will accumulate in the freezer in the form of frost.

▮ Food packaged in thick paper containers should be taken out and placed in thin plastic bags. Vegetables with a high moisture content and peeled fruits should also be kept in thin bags. It is best to clean them and not keep them in the fridge too long.

▮ Food should be kept covered to make it last longer and to reduce moisture accumulation inside the refrigerator.

▮ Use the right temperature to preserve food. Fridge cooling capacity is regulated by a temperature control. Use the lower cooling settings, and increase them on warmer days. The thermostat should be set between 2 and 3 in temperate climates, and between 3 and 4 in warm climates. A very high setting places a higher demand on the compressor, and hence entails higher energy consumption.

▮ Do not refrigerate products that can either be kept at room temperature or that will be consumed immediately.

▮ Keep the freezer as full as possible, since frozen food helps conserve the cold. If at a particular time you do not have enough food to put in the freezer, fill some

containers with water, cover them with lids, and put them in the freezer.

▮ Regularly defrost your freezer, if it comes with manual defrost. In manual or semi-automatic defrost fridges, make sure the frost forming in the freezer does not exceed a thickness of half a centimeter. Defrost before it reaches this point.

▮ Periodically clean the back of the unit (particularly the condenser). A dirty condenser back grill can increase appliance operating costs. Grills on the back or lower front of the unit should be checked and cleaned at least twice a year. Keep these grills thoroughly ventilated and free from objects that block airflow.

▮ If you are purchasing a new refrigerator, compare prices, capacity, and energy consumption. Do not forget to read the yellow label; this will help you choose your refrigerator, since it both shows whether the appliance meets energy-efficiency standards, and gives estimated annual energy consumption. When deciding on the purchase, take into account that refrigerators with automatic defrost systems consume 30% more electricity.

▮ A refrigerator should have the capacity that exactly meets your needs. When choosing a refrigerator, select the ideal size, since the greater the size, the higher the energy consumption.
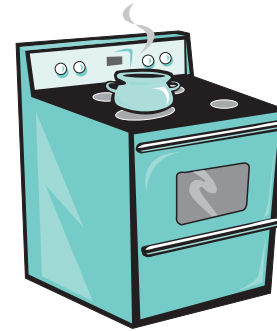
Electric Stoves and Ranges[25]

▮ Pots or pans should match the burner size, because larger pans extend cooking time. On the other hand, using pots of a smaller diameter than the heating surface will lead to energy loss in the form of heat dissipation, and will damage stove burners.

▮ All cooking gear, including pots, coffee pots, frying pans, and others, should be made of suitable materials that transfer heat quickly, such as enamel and stainless steel, and have perfectly flat bottoms, so the contact with the heating surface is complete.

▮ Dry pots before placing them on the heating unit in order to prevent burners from cracking due to sudden cooling.

▮ If your range top has sealed burners or disks, turn them off a few minutes before you finish cooking; this way you will take advantage of residual heat.

▮ Foods containing large amounts of liquids, such as soups, stews, and vegetables, can continue to be cooked at minimum temperatures after it boils, if the pot is of high quality and is kept covered with a lid.

▌ Use a lid-covered coffee pot, preferably with a warning whistle. Once water comes to a full boil, turn the heat source off immediately.

▌ If you drink coffee several times daily, brew a large quantity just once in the morning and then store it in a thermos bottle. This way you will have hot coffee throughout the day.

▌ Use the microwave oven to heat small portions of food.

▌ When you use the oven, keep the following recommendations in mind:

◗ Preheat it only when you are advised to do so, and for the time needed to reach the required temperature.

◗ Bake several food items in the oven at the same time.

◗ Be careful not to open the oven door unnecessarily. If you must, do so only for the shortest possible time.

◗ Do not use the oven to bake very small quantities, or just to toast a little bread. In these cases, it is best to use a small toaster oven.

◗ Take advantage of the oven's residual heat: turn it off a few minutes before taking the food out.

Gas Stoves and Ranges

▌ Always keep the "pilots" off.

▌ Line all surfaces around the burners with aluminum foil to reflect heat upwards.

▌ Make sure burner combustion is taking place with the proper amount of air. A yellow or orange flame is a sign of inefficient combustion; therefore, you must regulate burner air inflow until the flames turn blue.

▌ Use pots and frying pans that cover the burner completely, so the flame will heat their entire bottom surface.

▌ Put lids on your pots to trap steam, since food will cook faster. Covered pots not only prevent splashes on the range top, but also take better advantage of heat and make cooking faster.

▌ When water or any other liquid food begins to boil, lower the burner heat intensity at least to half. Boiling
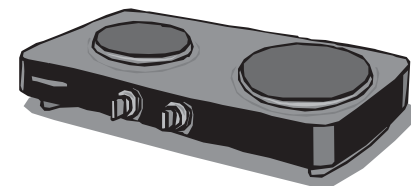
at a faster rate will not cook food quicker but will instead consume the water contained in food and you will waste fuel.

▌ Use little water when cooking with a double-boiler, so that it will heat quickly and gas consumption will be lowered.

▌ Whenever possible, use a pressure cooker. Food cooks faster in one and you save gas.

▌ Turn off the oven a few minutes before food is ready to take out; the oven will retain the temperature needed to finish cooking the food.

▌ Find out the exact baking time for each dish, and open the oven only when indispensable to prevent heat from escaping. At any rate, you better watch the food through the oven window, since every time you open the oven door, the temperature drops by approximately 25 degrees Celsius, which means food will take longer to cook and more fuel will be consumed.

▌ For most food items, such as those cooked in casseroles and pot roasts, preheating the oven is unnecessary and only wastes energy and money.

Pressure Cookers

A pressure cooker has many advantages over traditional cooking; the first and foremost is that cooking time is reduced by half, which means you need less energy. In addition, there are nutritional benefits in using less liquid, since water-soluble vitamins and minerals –usually lost in common cooking methods– are retained, and natural vegetable color and flavor are better preserved. For all these reasons, the following recommendations should be implemented:
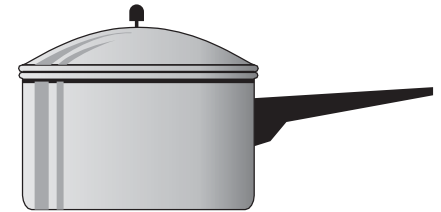
▌ Depending on pressure cooker size, the average maximum usable capacity is three quarters full. Thus, when cooking vegetables and food that increase their volume when cooked, fill the pressure cooker up to half of its capacity at the most.

▌ Before closing the pressure cooker lid, make sure that steam vents, such as the pressure regulator and the safety valve, are not clogged, and check that the lid gasket is properly i place. Upon closing the lid, make sure the pressure cooker is tightly sealed.

▌ Be careful not to touch hot pressure cooker surfaces; hold the pot only by the handles.

▮ Do not open the pressure cooker until it has become cool and inner pressure has gone down; do not cool it suddenly, either.

▮ After the pressure cooker is cool enough to handle, carefully detach the lid's rubber gasket and wash it with soap and water in order to prevent accumulation of food residues.

▮ Wash each pressure cooker part thoroughly with hot water and detergent. The inner part of the pressure regulator must be washed with water, a sponge or plastic fiber, and soap, and should be placed upside down and left to dry.

▮ To remove food residues from the steam vent valve orifice or tube and thus prevent clogging, use a cotton-wrapped toothpick, needle, or long pin.

▮ Before storing the pressure cooker, throughly dry all the pieces and replace the lid gasket. Purchasing specifically manufactured orignal spare parts for your pressure cooker brand, model, and size is advised in order to prevent any malfunctioning. Keep in mind that this is a very useful appliance because it allows you to cook food in less time and save energy. A damaged or incorrectly assembled or installed part, however, can result in defective operation and even cause a serious accident.

Saving on Water Heaters[26]

▮ Installing the water heater as near as possible to the place where hot water will be used is important. Otherwise, during the water heater's entire useful life –which can be many years!– hot water will take longer to reach the area where it will be used, will lose heat along the way, and you will be paying more than you should on your utility bills.

▮ To reduce unnecessary hazards and expenses, make sure there are no power or water leaks. Remember that a lot of accidents happen because of gas leaks. If you smell a strong gas odor, close the stopcock valve, open doors and windows to ventilate the area, and call a technician or the fire department, if necessary. Never light a match, a cigarette, or turn on a light bulb in the area of a gas leak.

▮ If you have an automatic heater, keep it at the minimum setting (lukewarm or warm).

▮ Install water-saving shower heads.

▮ When you are not using the heater at night, shut the gas off or set the thermostat at the minimum temperature. Shutting the gas off is best during the low season.

▋ If your heater is of the "storage" type, every six months drain or "purge" the water from the inner reservoir tank to remove any dirt and residues that may be preventing the heat from being properly transferred to water.

▋ If you are going to purchase a new heater, do not forget to read the yellow label. This will help you choose a more efficient unit, and therefore save on gas consumption.

▋ While most water heaters last ten to fifteen years, it would be wise to get a new one if your heater has been in service for over seven years. Take your time and carefully choose the heater that best meets your needs.

Saving on Air Conditioning Units[27]

Air conditioning units or systems are high energy consumers. In warm climates, however, they become a necessity, so you need to be aware of the following tips:
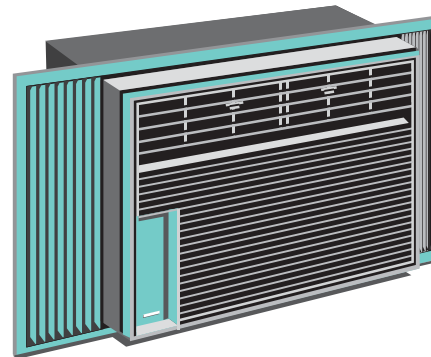
▋ Ask your guests to keep doors and windows closed in their rooms while the air conditioning unit is on, and to unplug it or turn it off when leaving the room.

▋ Check the unit periodically to see whether it needs refrigerant gas. Preferably, have a technician do the checking and refilling, if necessary.

▋ Carry out thorough cleaning of the unit: remove dust and mildew, and paint the unit to prevent rusting.

▋ Make sure the motor, wiring, and thermostat are working properly.

▋ Clean the air filter every 15 days. Dirty filters and dusty motor casings result in motor overload and reduce usefulness.

▋ Provide maintenance to the equipment every year. Air conditioning units without maintenance for two or more years have been found to consume twice the power.

▋ If you are going to purchase a new unit, make sure it has the required capacity. While deciding on your purchase, read the power consumption information on the prospective unit's label.

▋ Reduce cracks as much as possible.

▐ Thermal insulation can save you up to 50% of the energy used in heating or air conditioning. To this end, you can do the following:

◗ Fill and seal all cracks to make sure the air conditioning unit is perfectly insulated. Change broken glass panes, and fill any holes where air can leak through. This will help you even in cold weather.

◗ Make sure all ducts are properly insulated if you have a central air conditioning system. Insulate the wall; this will usually require 2/3 of the thickness used for the roof.

Evaporation Coolers

This equipment is recommended for low-humidity warm environments instead of air conditioning or refrigeration, since it costs less and consumes less energy. If you already have one of these units or are thinking of getting one, follow this advice:

▐ Clean it and paint it as needed, in order to prevent rusting.

▐ If necessary, give periodic maintenance to the motor, belts, pulleys, and water pumps.

▐ Install equipment in shady areas.

▐ Make sure there are no objects blocking airflow.

▐ The system's fiberglass or glass wool insulation liiner should be replaced periodically.

Fans

These are the climatization devices with the lowest energy consumption. Implement the following recommendations:

▐ Keep fans in good condition.

▐ Do not leave fans on unnecessarily.

▐ Clean the blades periodically.

▐ Check overhead fan installation. Improper installation results in the fan "wobbling," which can be hazardous and lead to higher power consumption.
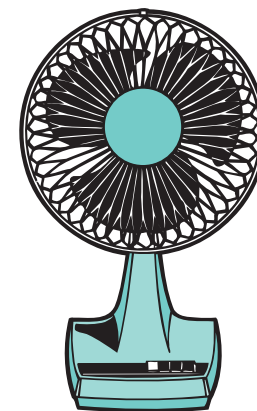
Other Practical Tips

▊ Install energy control instruments, such as meters, real-time power use monitoring systems, timers, photovoltaic cells, etc.

▊ Set up an adequate inspection and maintenance system for wiring, heating, etc.

▊ Make sure insulation of pipes and hot water tanks fits tightly to prevent heat losses.

▊ Use alternative energy (solar, wind, geothermal, water, etc.) systems whenever possible.

▊ Install efficient lighting devices, such as fluorescent lamps and others, particularly in heavily used areas.

▊ When deciding on facilities' design and decoration, you should think about taking advantage of natural light. When use of artificial light is unavoidable, implement energy-saving fixtures and technology.

▊ Try using skylights or other means to insure maximum use of natural light, such as large windows, light-enhancing architectural designs, and light-colored walls.

▊ Remember that large windows and air conditioning do not make a good combination, since windows will cause the room to become warmer. In this case it is best to use efficient fans, and to open up doors and windows. Of course, you should provide some protection against insects, like screens, if required.

▊ If you need heating, try an architectural design that captures daytime heat and slows down heat loss at night.

▊ Use shade-producing plants and trees, and create microclimates to help maintain temperatures at pleasant levels.

▊ Also use trees and hedges to prevent the wind from blowing directly against the facilities.
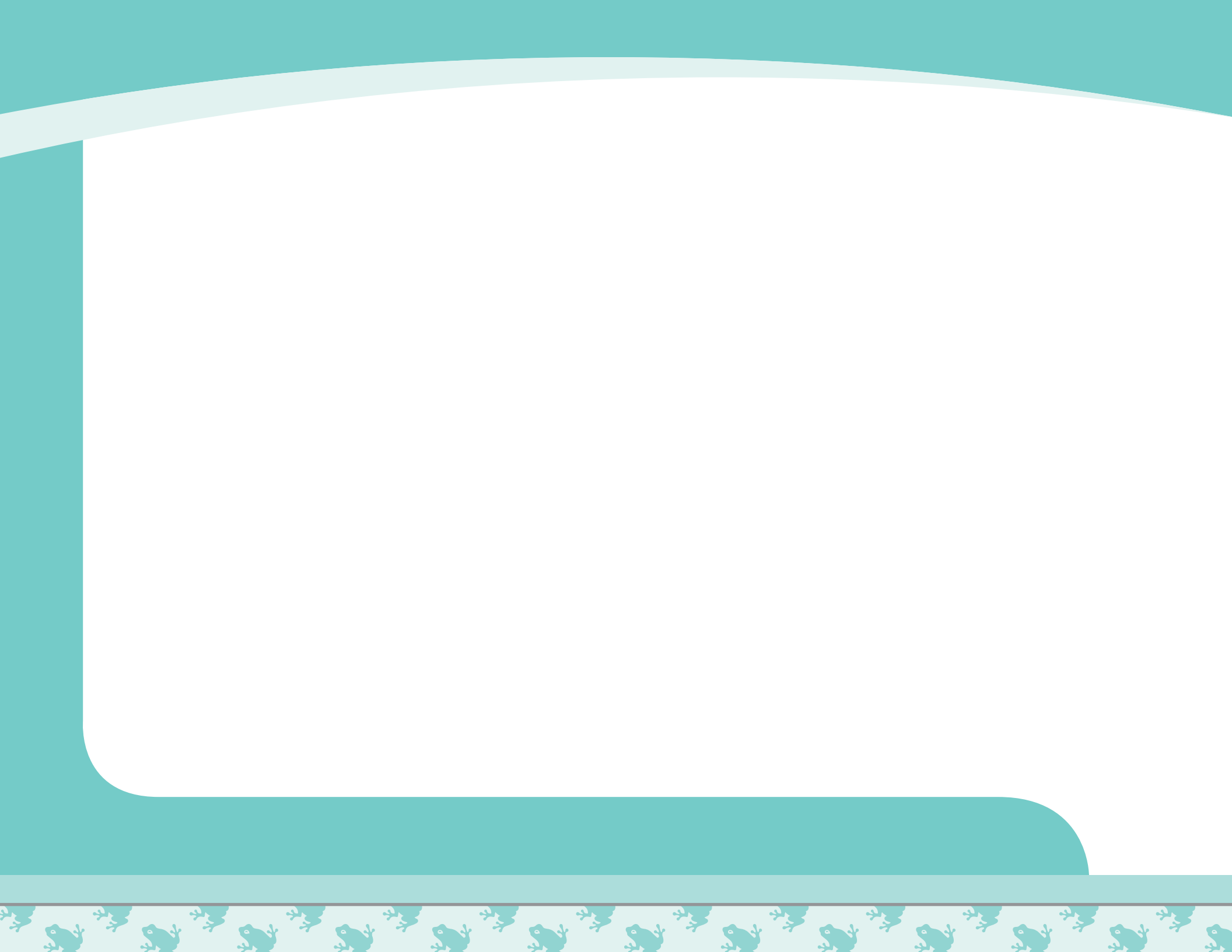
1.3 Flora and Fauna

1.3.1 CONCEPTS

Flora and Fauna[28]

Flora and fauna are the living components of nature, which, together with nonliving components such as water, air, etc., comprise the natural environment.

There is a very close interrelationship between flora and fauna, based on natural laws governing the structure and functions of living being associations. Food relationships determine the so-called food chains, in which herbivores (animals that feed on plants and other vegetal organisms) are the basic food for other groups of animals which, in turn, are consumed by still others as food.

As a consequence of the above, a decline in population, or disappearance of one of these links in the food chain –from either natural or man-made causes– jeopardizes the entire system.

Flora and fauna are renewable natural resources of great importance to humankind. A large number of foods and drugs come from plants, as do raw materials for textile, lumber, and other industries.

Wildlife[29]

Currently, the original "wildlife" concept (meaning wild animals) has been expanded to also include plants and ecosystems (even landscapes), and encompasses both flora and fauna in a given region.

Flora in a region is made up of all uncultivated growing plants; while weeds could be included in this concept, it is best to leave them out.

Fauna is the collection of animals that have not been domesticated or bred by humans, or that have subsequently become wild after accidentally escaping or having been released through wild animal reintroduction programs.

Wildlife Conservation[30]

This refers to the body of regulations concerning wild animals and plants meant to insure their continuity as a natural resource. The term "conservation" refers to natural resource use and management by current and future generations. This concept has implications for the aesthetic, sports-related, economic, and ethical use of landscapes, minerals, animals (including game), plants, soil, and water.

The term "wildlife conservation" has been used to include an increasingly larger group of animals –mammals, birds,

fish, reptiles, amphibians, arthropods (i.e., lobsters), and mollusks (such as oysters)– and also includes plants. The list tends to be dominated by certain groups of aesthetically and/or economically important animals, but it is growing in proportion to the extent that values are expanding, interest in natural science is increasing, and the often subtle, albeit always important, relationships among plants and animals continue to be discovered.

Animal conservation problems are highly varied depending on the species (for instance, whether or not the species is widely used for commercial or recreational purposes, orwhether or not it is free to cross international borders) and the different nations' social and economic conditions. In many countries animals are extensively persued by sports hunters on both private and public lands; therefore, a major wildlife conservation factor in these regions consists of controlling hunting permits and supervising hunters. Cross-border migrating game birds and mammals require an international effort for their conservation. Marine mammals and fish also are in need of international agreements and legislation, since they live in borderless waters and are captured by commercial fishermen from many countries. Marine fish, mostly harvested for commercial purposes, are protected by international agreements. However, fresh water fishermen, mostly recreational fishermen (except in some large fresh water bodies, such as the Great Lakes in North America) get their fishing permits and are controlled locally.

Biodiversity[31]

Life on earth exhibits a seemingly endless diversity. Living beings have conquered such different environs such as oceans and the air; they have settled in warm and humid tropical belts, as well as in cold and arid polar areas. In order to face the challenges presented by locomotion, food, or reproduction, they have displayed an overwhelming variety of solutions. Life's diversity, the result of 4 billion years of evolution, is earth's greatest treasure.

A close analysis of biodiversity reveals that it appears at various levels, thesecorresponding to the different scales at which the phenomenon of life is found.
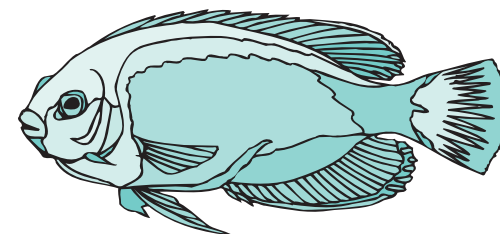
■ **Species level**. The vast array of species inhabiting the earth constitutes the most dramatic manifestation of biological diversity. Animal and plant encyclopaedias contain an astounding assortment. And these are only a small part of the huge list of species described by scientists, numbering close to one million. In turn,

they seem to be just a small portion of the existing total, since it is estimated that millions of life forms remain to be described.

▌ Genetic level. Most known species have individuals that, to a certain extent, are different. These differences are, in part, a reflection of the diversity of each species' genetic code.

▌ Ecological level. Living beings develop characteristic relationships with other living creatures and with the physical environment they live in. Life has found a great variety of solutions within this new level of analysis. Just think of the tundra, the taiga, temperate forests, prairies, coral reefs, savannahs, or jungles, which, in turn, have many local variants typical of each climate.

Forests[32]

According to United Nations Food and Agriculture Organization (FAO) estimates, current forest cover is 25% of the total dry land area on the planet (approximately some 3.4 billion hectares of forest). Over half of the world's total tree-covered area is found in developing countries, which have a 0.65% annual rate of forest loss. Moreover, forests are fully expanding in wealthier countries, whether from commercial reforestation or from abandonment and subsequent natural reforestation of old farmlands. A cursory analysis of these data would seem to indicate that, by and large, wealthier countries do a better job of forest conservation than poorer nations. More detailed reflection, however, reveals that this is not precisely the case.

Nevertheless, poverty is also a heavy user of trees. In many rural tropical areas, firewood continues to be the main source of fuel. And the age-old subsistence agriculture strategy known as "slash and burn" still persists, despite the existence of enough knowledge and technology to develop more profitable agriculture on these soils, without having to be almost constantly looking for new fertile land.

What Is a Forest?

There have been many definitions of what a forest should or should not be. A forest is not characterized by the presence of tall trees, but by their density, that is, the extent of tree species coverage in relation to the total area. Depending on density, plant formation could range from a more open (savannah type) to a more closed (forest type) physiognomy.

When human beings make changes in an ecosystem entailing local, regional, or global dispersion or extinction of fruit-eating animals, they are not only causing a negative impact on these animal populations. They are also breaking or simplifying mutualistic relations affecting natural seed dispersion mechanisms, therefore having an indirect effect on the populations of the plant species involved.

Endangered Species[33]

In general terms, an endangered species is an organism facing the risk of disappearing from the face of the earth if its situation does not improve. When members of a species are not seen in natural environments for more than fifty years, the species is said to be extinct. Species that could shortly become endangered are known as threatened species, whereas rare species are those having small populations that could also become endangered.

Many countries have passed laws and regulations to protect endangered species and the habitats where they live. Most of these legal provisions establish at least two risk categories: immediate risk and threatened. For instance, the California condor (in the United States) is an endangered species at "immediate risk of extinction," that is, unlikely to survive without direct human intervention. Threatened species, such as the gray wolf (also in the United States) are abundant in some parts of their habitat range, although their total numbers are declining and they are at risk of becoming extinct in the future.

The main causes of species becoming extinct or endangered are habitat destruction, commercial exploitation (such as plant collection, hunting, and selling of animal parts), damage caused by exotic plants and animals which have been introduced in an area, and environmental pollution. Of all these causes, direct habitat destruction is endangering the largest number of species.

Many organisms have already been wiped out. The only certainty is we must act quickly. Once a species has become extinct, it is gone forever.
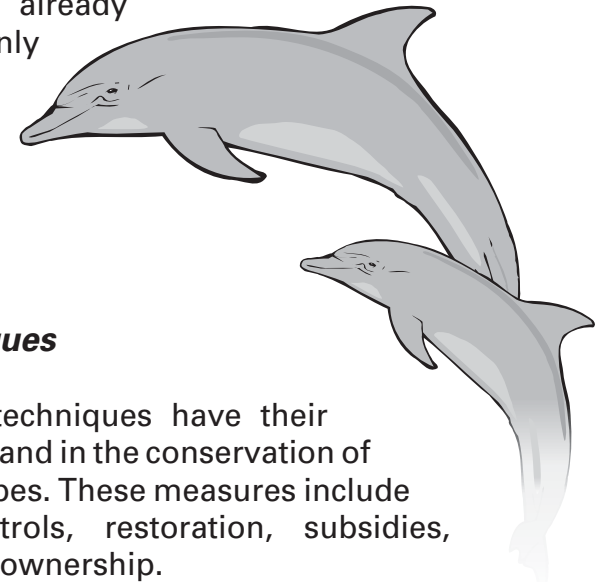
Conservation Techniques

Wildlife conservation techniques have their counterparts in forestry and in the conservation of soil, water, and landscapes. These measures include prohibitions and controls, restoration, subsidies, sanctuaries, and public ownership.

The oldest forms of prohibitions and controls are those regulating hunting and fishing. While many of the earliest regulations were failed efforts which had aimed only at increasing game species populations, other controls played a major role in protecting wildlife. Particularly useful were those limits set on hunting certain species during their breeding season.

Among the most important modern legal mechanisms in safeguarding wildlife is international laws and agreements to protect threatened and endangered species. Provisions which dictate environmental pollution controls are equally significant; progress made in air and water quality improves survival prospects of both wildlife and humans. Repairing pollutant-damaged habitats, however, is a slow process, and pollution law enforcement is often hindered by litigation and weak compliance.

Artificial methods to revert resource decline include repopulation and habitat restoration programs. For many years, game animal reserves and fish farms have been developed to supply sportsmen with species of interest. More recently, programs have been targeted at strengthening endangered species wild populations with captive-bred individuals. Such efforts not only rely on successful captive reproduction of the endangered species, but also on released individuals' ability to make the transition to life in the wild. An even more ambitious effort is the high-cost degraded habitat restoration, which has yielded dramatic results, for instance in wetland restoration.

1.3.2   IMPORTANCE[34]

Over time, in their struggle to have dominate nature, humans learned to use animals and plants to survive as they provided food, clothing, and fire that people needed to survivie and stay warm. But as human communities grew, their food needs also increased, and hence their use of flora and fauna expanded to levels way beyond nature's regenerative capacity.

In the last 2,000 years, the world has lost over 100 mammal species and subspecies to extinction. Approximately two thirds of these losses have taken place since the mid-nineteenth century, and most of them since the turn of the twentieth century.

The main factor in world wildlife decline has been modern human society, whether directly through excessive commercial hunting or, with even more disastrous results, indirectly from natural environment encroachment or destruction. Two indirect causes have been the provision of firearms to people who previously had no access to them, as well as the introduction of more aggressive exotic, non-native mammals in certain areas (such as in Australia and on many islands).

Agricultural development involves expanding farmland areas to the detriment of natural areas, thus resulting in large numbers of plant species disappearing. Wildlife inhabiting these natural areas will be increasingly threatened and have to find other areas to meet their vital needs.

Industrial development with its polluting waste have a similar impact on natural environments, and therefore on the living systems they sustain.

Comparatively, in the last few years a relatively small number of species seem to have disappeared on account of evolutionary senility, disease, or climate change. People interested in wildlife conservation acknowledge there is an urgent need for much more than just protecting individual animals. Wildlife conservation should start by preserving their habitats, that is, the areas where they live, rest, and breed.

Of course, this involves much more than just preserving animal population, and includes soil and ground cover conservation. But the huge global growth of human populations and their expanding economic needs –needs that promote industry and agriculture expansion and intensification– have encroached on the natural habitats still remaining in the world. This invasion is associated with the introduction of new types of crops, the draining of wetlands, a general decrease in ground water levels, river and lake pollution, forest destruction, and indiscriminate use of insecticides and herbicides. In many parts of the world there has been a vast destruction of both forests and large areas of natural vegetation.

Natural habitat destruction is one of the main causes of biodiversity loss in the world. Tropical forests, undoubtedly the main storage warehouses of planet biodiversity, are disappearing at a very fast rate. According to United Nations Food and Agriculture Organization (FAO) data, tropical forest area declined at an average of 15.4 million hectares per year in 1980-1990.

1.3.3 BASIC PRINCIPLES

■ Endangered species, or products thereof, or products made from them or deriving from unsustainable practices, should not be consumed, sold, trafficked, or displayed under any circumstances.

■ Measures should be taken to prevent commercial noise and lighting from disturbing wildlife.

■ Artificial feeding of wild animals should be avoided, except if it is done by seeding and planting host or food plants.

■ Wild animals should not be kept in captivity, except in the case of wildlife breeding farms, species rescue, or species reintroduction, in compliance with the law and following best practices.

■ In sensitive areas, measures should be taken to prevent introduction of alien pests and species.

When exotic plants or animals are raised or kept on the company's premises, relevant measures should be taken to prevent their spreading into the wild.

1.3.4   PRACTICAL TIPS

▌ No wildlife species marketing should take place, particularly if it is prohibited by law or if the species is endangered. Tell your guests how important it is not to buy these species or products thereof, such as turtle shells, coral, animal skins, sea shells, precious woods, etc.

▌ On the other hand, encourage the purchase of sustainably-made handicrafts or food products, favoring those produced under certification and, if possible, by local businesses.

▌ Also encourage your guests to visit well-managed conservation areas, plant and wildlife rescue centers, properly registered local wildlife breeding farms, and other sites with similar practices.

▌ Keep information available about the most important local species in the region. If possible, establish a small library with naturalist guidebooks, national park information, etc., and make these available to your guests.

▌ If there are lists of native species typical of your area, include them in your library. Otherwise, find a way to develop these lists, perhaps through volunteer students or professionals willing to collaborate.

▌ Find out about mechanisms through which your company and visitors could help support conservationist organizations working in the area.

▌ Do not use high-intensity light bulbs for outdoor illumination. Install discreet insect-repelling lights, if possible.

▌ If your facilities have large glass windows, place silhouettes and stickers on them to prevent flying birds from crashing into the glass and being injured.

▌ Try establishing natural barriers such as hedges to regulate the amount of noise and light issuing from your facilities, particularly if your building is within or near a highly sensitive protected area, such as egg-laying beaches and nesting sites.

▌ Require your guides to educate visitors in how to behave properly while observing flora and fauna. If you do not personally provide the service, make sure your tour guides take all the necessary steps to ensure a responsible and sustainable operation.

▌ In decorating your facilities or your surrounding outdoor areas, do not use easily propagated exotic plants, such as those reproducing through wind-borne seeds. Gather enough information before deciding what type of plants to use, since what initially is a decoration element may become a truly hard-to-control pest or that will eliminate other native plants.

▌ If your operation is close to a highly sensitive area, be extra careful with all the above measures, and ask area managers or trained people such as biologists and ecologists about the actions you should take to minimize the risk of causing a negative impact on local plants and wildlife.

▌ As much as possible, take advantage of natural environmental conditions to create spaces to educate guests at your facilities, for instance, by creating showcase orchards or gardens.

▌ If there are examples of sustainable agriculture or forestry management within the area, use them as part of the tour to provide environmental education.

▌ If possible, get involved in creating and maintaining biological corridors; this way you will be able to increase the likelihood of visitors enjoying the local fauna in a responsible manner.

▌ Do not under any circumstances feed local wildlife, because this practice fosters reliance on humans, alters their natural diet, and may encourage disease transmission.

▌ Get informed about the main flora and fauna conservation laws in your area, and make these known to your guests and staff.

▌ In the case of areas where hunting or fishing is allowed, always respect the closed season and its regulations.

▌ Make a commitment to ensure your customers also abide by these regulations.

▌ It is wrong to keep wild animals in captivity, unless it is for rehabilitation, reproduction, or reintroduction purposes. Should this be the case, get the corresponding permits. Spaces where these animals are kept should have the proper conditions and be a suitable size for each species, and food should be as similar to their natural diet as possible. Always consult a veterinarian for advice.
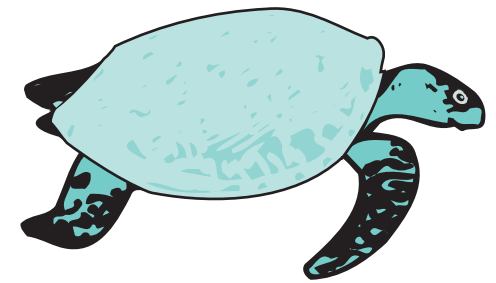
Rainforest Alliance has gathered and developed a variety of technical information and tools for sustainable tourism, which are available to the general public on our webpage.

These include:

■ English and Spanish versions of the Best Practices Guide

■ URL's of pages with useful and relevant information on best practices, sustainable tourism certification, and green (sustainable or environmentally-friendly) product suppliers

■ Current information on the Sustainable Tourism Certification Network of the Americas

■ Links to executing organizations in Guatemala, Belize, and Ecuador, as well as network members

■ Educational materials

Up-to-date information on each of Rainforest Alliance's Divisions: Forestry (SmartWood and the Forest Stewardship Council), Agriculture (Rainforest Alliance Certified and the Sustainable Agriculture Network), Tourism, Education, etc.

Visit our webpage: www.rainforest-alliance.org

1.4 Natural Areas and Conservation

1.4.1 CONCEPTS[35]

Protected Natural Spaces

Protected natural spaces are administratively delineated tracts of land that are established to favor nature conservation.

In many cases, the idea is to preserve a unique enclave or a portion of privileged nature, while in others the purpose is also to fine-tune some human activities to natural conditions.

The protected natural space concept has evolved over the years. Earlier protected areas were meant to preserve an idyllic nature in its primeval state. All through the previous century, such problems as species disappearance, loss of enclaves or landscapes, ecological process destruction, or culture extinction resulted in the definition of natural spaces with endless objectives.

Better understanding of nature and the functions performed by living beings and phenomena, as well as their potential, has changed the perception of life and environment quality concept. Currently, protected natural spaces are thought of as examples of sound environmental practices, where a balance between the different activities is sought.

One of the major outcomes of the 1992 Earth Summit in Rio de Janeiro was the Convention on Biological Diversity, which was ratified by a large number of countries. This agreement restates nature conservation objectives by establishing universal guiding principles.

Protected natural spaces which follow an advanced management model are currently striving to maintain species diversity, and in their wild and domestic varieties and genotypes, thus insuring functional ecosystems.

The role of protected natural spaces in nature conservation is very broad. At times, they act as preventive instruments in land use planning by precluding urban sprawl over the territory, or by investing so as to maintain landscape and culture uniqueness. In other cases they promote economic activities that benefit the area. They often focus their efforts on public communications and providing of recreational and tourist services. More often than not, they also concentrate on monitoring and controlling activities that are harmful to certain species.

International Nature Conservation Categories

At the International Union for the Conservation of Nature (IUCN) 1994 General Assembly, the following categories were established:

▌ **Strict Nature Reserve:** a protected space managed mostly for scientific reserach or nature protection purposes.

▌ **National Park:** a protected space managed mainly for ecosystem conservation and recreation.

▌ **Natural Monument:** a protected space maintained primarily to conserve specific natural features.

▌ **Managed Nature Reserve:** a protected space meant largely for conservation purposes, with interventions at the management level.

▌ **Protected Landscapes and Seascapes:** a protected space mostly managed to conserve and safeguard land or marine landscapes, and for recreation.

▌ **Resource Reserve:** a protected space mainly kept for sustainable use of natural resources.

Various international institutions designate some protected areas that meet certain special conditions or characteristics.

For instance, UNESCO confers the **Biosphere Reserve** status. Each Reserve preserves ecosystem models that are typical of each natural region in the world. Integrating nature conservation with human activities figures largely in Biosphere Reserves.
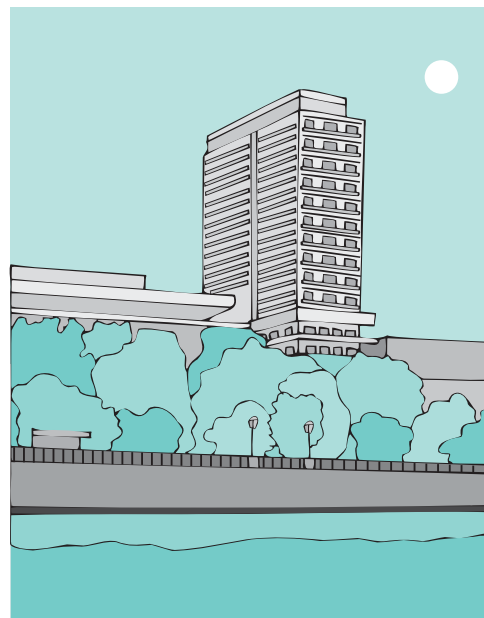
In addition, UNESCO grants the status of World Natural Heritage Site to places seen as being representative of biological evolution or containing the natural habitats of threatened species.

Furthermore, pursuant to international agreements or laws, signatory countries are committed to preserving natural areas, as per the conditions provided for in these laws or conventions. The **Ramsar Convention** on internationally important wetlands is worth mentioning, particularly as a water bird habitat.

1.4.2 IMPORTANCE

Economic growth in any pattern of development depends entirely on natural resources and their dynamics. Resources are extracted from the natural environment (atmosphere, soil, water, land, wildlife, flora, landscape, minerals, etc.). Human beings need them for their survival and well-being.

Latin America's economic development has entailed environmental transformations having economic, social, and political consequences. In particular, the last few decades have witnessed an escalation of natural resource overexploitation processes, as a result of industrialization, increased consumption and production patterns, accelerated urbanization, use of environmentally harmful technologies, expanded pollution, and a greater demand for space deriving from population growth. Environmental deterioration is not an isolated problem, and is not a direct consequence of development, but rather depends on the type of development being carried out.[36]

In the most developed modern cities, inhabitants often feel they have been "delivered" from our age-old reliance on wildlife. But this is just a mirage: actually, every day we unwittingly use hundreds of products that are derived from wild plants and animals. Some examples illustrate the point:

▐ **Food:** The bread we eat every day. Wheat and corn production is maintained through frequent crossings between commercial strains and their wild relatives.

▐ **Medication:** When a physician prescribes a drug, there is a 50% chance that this medication comes from a wild living being.

▐ **Models:** Wild species not only provide us with raw materials, but also with models that inspire researchers in designing synthetic drugs or industrial products.

For example, scientists would have had a hard time designing synthetic rubber if the molecular structure of natural rubber would not have been available for them to copy.

Paradoxically, life itself maintains the conditions needed for its own continuity. Living beings are involved in the major earth cycles (carbon cycle, nitrogen cycle), which are so essential to living beings. The very composition of earth's atmosphere is regulated by life.

Moreover, ethical arguments for conserving biodiversity could be summarized in these two questions: Do we have the right to steal this magnificent heritage of biodiversity from generations following ours? Do we have the right to eliminate living beings that share this "common home" that humans call planet Earth?

Biodiversity is not only a source of material benefits, but also of spiritual well-being. To many, biodiversity is a synonym of beauty and inspiration, and their contemplation or study is an extremely gratifying activity.[37]

Protected areas perform numerous functions in safeguarding and conserving the environment and biodiversity. Virtually every tourism enterprise's offering is enhanced by having nearby natural attractions that are suitably managed. Likewise, supporting conservation may reduce the risk of future environmental problems, and thus preserve tourist destination quality.

1.4.3   BASIC PRINCIPLES

▪ Getting involved in or supporting conservation and management of a natural area, whether privately or state-owned, within your area ofd influence zone.

▪ Encouraging and getting involved in programs to clean, maintain, or otherwise improve natural areas, beaches, etc.

▪ To the extent possible, adequately managing your own protected area (natural reserve, etc.).

1.4.4   PRACTICAL TIPS

▮ Ask officials of nearby protected areas for information on location, main attractions, available services (trails, signs, food, and information), visiting hours, public and private transportation facilities, access routes, activities allowed, codes of conduct, etc.

▮ Furthermore, request brochures, maps, and other information published by those protecting the protected area.

▮ Make this information available to your customers through handouts, pamphlets, murals, photographs, etc.

▮ Encourage your customers to visit nearby protected areas.

▮ Instruct hotel staff on how to provide this information to guests.

▮ If you do not have your own protected area, identify a protected area, whether public or private, with which you could establish cooperation relationships and collaborate.

▮ Jointly define how and when you will be able to help with support. Make this a continuous effort, and document your participation.

▮ If you own your private protected wilderness area, you must manage it properly. To this end, follow the practical tips offered below.

◗ Hire a team of professionals to develop a management plan. If this is not within your immediate economic possibilities, you can do it yourself adequately, provided you at least comply with the following:

◗ Zoning: determine what areas can be used for tourism, protection, research, and other purposes. Take into account ecosystem fragility, access, and current attractions. As far as possible, cluster your facilities in areas that have already had human intervention, in order to prevent further deforestation.

◗ When you build trails, inventory their main attractions and choose sites that do not threaten resources or tourist safety.

◗ Remember people have different physical conditions, endurance, age, and interests, so you should try building trails that can be enjoyed by a wide range of visitors, including seniors and people with special requirements. The most appropriate trails are those forming a loop, so tourists do not have to return by doubling back on the same trail they started out on. By joining several trails, you will offer different walking distances, so tourist may choose hiking sections, time required, and attractions to be visited.

◗ Trails should be interpreted. Environmental interpretation (EI) means "translating nature language into human language" (CATIE, Module C, 1980 –c1-2).

It is an excellent tool for making the area's natural and cultural resources known. Interpretation can be:

A) Guided:
Conducted by a person who has practical knowledge of the area's resources, group management, and preferably the language spoken by most of your visitors.

B) Self-guided:
Information provided to tourists through handouts, recordings, signs, or others. You should define the trail's main natural and cultural traits, and develop a brief outline of each. If you post signs, they should not interfere with the environment, and must not be nailed on trees. Make sure you have enough environmental interpretation printed material available for all visitors, and that information is factual and in the language that most visitors will understand.

◗ Define group size: Generally speaking, small groups (6-10 persons) make for better communication, higher visitor experience quality, and lower impact. In case of increased demand, prepare a visit plan according to your facilities capacity (the carrying capacity). In these cases, the use of guides is highly recommended.

◗ Develop a visitor code of conduct for the area and make sure is made known to your customers. This

code may include, among other things: not taking any resources out, walking quietly, respecting established hours and routes, not littering, etc.

◗ Make an effort to prevent your area from becoming an island. Connect it with other nearby areas through biological corridors (riverbanks, living fences, naturally regenerating areas, and forest patches). Talk to your neighbors about this possibility, and ask government agencies about potential support and incentives.

◗ Invest efforts and resources in protecting the area by policing it, posting signs, communicating with communities, preventing fires, and integrating your activities with other initiatives. Define research needs (ask yourself: What would be useful to be researched?), make your facilities and services available to researchers, graduate students, etc. Request and disseminate research findings.

◗ Additionally, establish an adequate trail and facility monitoring and maintenance program.

1.5 Landscaped Areas and Gardens

1.5.1 CONCEPTS

Natural spaces, open spaces, or landscaped areas are all terms typically used as synonyms, and yet their meaning is not the same. A natural space is the origin of open spaces and landscaped areas. It is boundless and infinite, and up until the late nineteenth century it was thought that the outdoors did not require any planning or care, since it was nature itself, the "countryside."

Urban green areas perform an environmental function of the utmost ecological importance; they are viewed as city lungs that purify air through vegetation, allowing replenishment of aquifers, and acting as a link between city dwellers and nature. These spaces are greenbelt or small-scale metropolitan forests.[38]

1.5.2 IMPORTANCE[39]

Microclimate Creation

Trees influence climate in the entire metropolitan area on a number of scales, ranging from an individual tree to an entire urban forest. By transpiring water, altering wind speed, shading areas, and modifying heat storage and exchange between urban surfaces, trees affect local climate, and consequently the use of energy in buildings, as well as human thermal comfort and air quality. Often, the influence of one or more trees on climate will tend to be beneficial, while other effects may offset these benefits.

Trees affect wind currents, altering their direction and speed. Dense treetops have a significant impact on wind, which almost disappears within small diameter treetops aligned in the same direction, but isolated tree influence is more immediate.

Trees also have a dramatic influence on solar radiation received, since they can reduce it by some 90% or more. Some radiation absorbed by tree cover results in water evaporating and transpiring from the leaves, thus lowering their temperature and that of vegetation and the surrounding air. Despite the large amounts of energy used in evapotranspiration on sunny days, wind movements quickly scatter the cooled air, thus reducing the overall effect.

While trees produce cooler air temperatures in the summer, their presence under certain conditions in an area may increase air temperature relative to other areas mostly covered with grass. In areas with scattered trees, solr radiation is able to reach

down and heat ground surfaces. Thus, the combined effects of trees on radiation, wind, and transpiration cooling will have an impact on air temperatures and the climate.

Lower air temperatures can improve air quality because many pollutant emissions decline with decreasing air temperatures. On top of cooling air through transpiration, the physical mass of trees and thermal radiation properties can also influence other local weather conditions and the microclimate, such as wind speed, relative humidity, turbulence, and boundary thermal layer altitude. These changes can also alter pollutant concentration in urban areas.

Energy Conservation and Carbon Dioxide
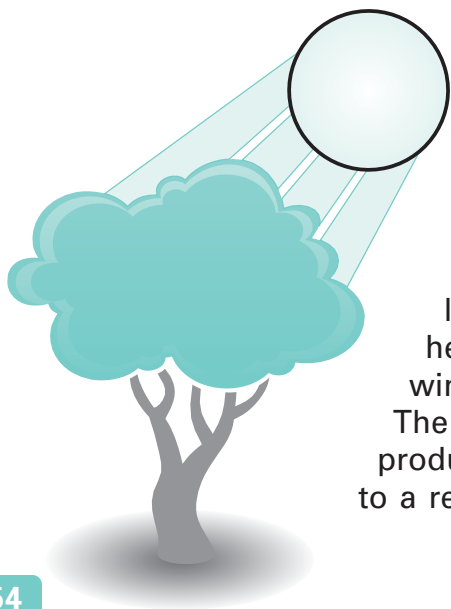
By providing air cooling shade in the summer and blocking winds in the winter, trees can decrease the amount of energy needed to heat and cool buildings. However, depending on their location, they can also increase heat requirements during the winter in tree-shaded buildings. The energy conservation effects produced by trees vary according to a region's climate and the layout or arrangement of trees around buildings. Energy-saving tree arrangements provide shade primarily on east and west walls and roofs, and wherever they protect against predominant winter winds. Energy use in a tree-shaded house may be 20 or 25% lower than in a similar home surrounded only by open spaces.

Influencing the amount of energy used in buildings will also lead to changed emissions of air pollutants and carbon dioxide (CO_2), a greenhouse effect gas. In addition to altering these emissions, trees can also reduce atmospheric CO_2 by directly storing carbon (from CO_2) in their biomass as they grow. Large trees with a diameter above 77 cm store approximately 3 metric tons of carbon, 1,000 times more than smaller trees which less than 7 cm in diameter. Healthy trees continuously capture and store additional carbon year and year; strong, tall trees store almost 90 times more carbon per year than smaller trees (93 kg C/year versus 1 kg C/year).

Although trees remove carbon from the atmosphere, the connections between tree management and CO_2 levels are complex. Many tree maintenance activities require the use of fossil fuels that release CO_2 into the atmosphere. Once a tree dies, its carbon is released back into the atmosphere through decay.

Trees which are improperly arranged around buildings may actually increase energy requirements and, hence, CO_2 emissions. Thus, in assessing overall tree influence on atmospheric CO_2 levels, various factors need to be taken into consideration, such

as the use of fossil fuels in managing vegetation, the carbon cycle involving the trees themselves, and CO2 emissions from power plants.

Air Quality

Trees influence air quality by changing the microclimate by altering energy use in buildings and, consequently, power plant emissions, removing air pollutants, and by releasing volatile organic compounds that may contribute to ozone formation. The cumulative effect of these four factors determines overall urban tree impact on reducing air pollution.

Air pollutant removal. Trees remove gas pollutants from air mainly through leaf stomas, although some gases are removed by the plant's surface. Once inside leaves, gases are diffused around intercellular spaces and can be absorbed by membranes of water to form acids or react in the internal surfaces of leaves. Trees also remove pollution by intercepting air-borne particles. Some particles may be absorbed within the tree, although most are retained on the plant surface.

Volatile Organic Compound Emission

Some trees release volatile organic compounds (VOCs) into the atmosphere. These are natural chemicals that may yield essential oils, resins, and other plant products, and are used by plants in attracting pollinators or repelling predators.

Hydrology

In blocking, retaining, or decreasing the amount of rainfall reaching the ground, urban trees (together with soil) may play a major role in hydrological urban processes. They can reduce storm runoff speed and volume, flood damage, rainwater treatment costs, and water quality problems.

By reducing runoff, trees act as retaining or detaining structures that are essential to many communities, since they reduce costs as a result of decreasing storm water volume to be handled during peak (highest) runoff periods.

In order to maximize these hydrological benefits, tree cover should be increased wherever it is relatively scarce and where vast areas of impermeable ground are to be found, since runoff funnels into storm water sewage pipes, pools and other structures having a limited capacity to handle storm water peaks.

There are also vegetation-related hydrological costs, particularly in arid environments where water is increasingly in short supply. In these desert regions, increased water use for irrigation has the potential of altering local water balance, as well as several ecosystem functions which are linked to the water cycle.

Furthermore, annual water costs to sustain vegetation may be twice as high as the energy savings from tree shade with high water-consumption species, such as mulberry trees. In Tucson, Arizona, however, 16% of the annual tree irrigation requirements have been offset by water savings at power plants, these savings being due to tree-produced energy conservation.

Noise Reduction

Field tests have shown that properly designed tree and bush arrangements may significantly reduce noise. Trees and branches dampen loud sounds mostly by dispersing them, the noise is then absorbed by the ground. For best reduction results, trees and bushes should be planted near the noise source, instead of the noise receiving area. Wide (30 m) belts of tall and densely planted trees and bushes, together with soft ground surfaces, can reduce sounds perceived by 50% or more. For narrow planting spaces (less than 3-m wide), a 3-5 decibel noise reduction can be attained with a dense vegetation belt consisting of a roadside bush hedge along a row of trees. In these circumstances, dampening arrangements are typically more effective in hiding objects from sight than in reducing noise.

Vegetation can also mask noise by generating its own sounds, such as wind-stirred tree leaves or birds singing in trees. These sounds can make people less aware of annoying noises because persons are able to filter out undesirable sounds, while focusing on nicer ones and listening selectively. Human perception of sound is also important. Since vegetation is visually blocking the noise source, it can also reduce the perceived noise level that individuals actually hear.

Ultimately, vegetation's effectiveness in controlling noise is also determined by the sound itself, the planting arrangement configuration, and climate conditions.

Ecological Benefits

Many additional benefits are associated with urban vegetation, and they also contribute to long-term urban ecosystem operation and the well-being of inhabitants. These include enhanced wildlife habitat and biodiversity. While wildlife habitat is often seen as beneficial, under certain circumstances it can give rise to wildlife-related problems and costs, such as plant and structure damage, animal droppings, and transmission of diseases.

Additionally, habitat creation and enhancement increases biodiversity and complements many other beneficial urban forest functions. As a consequence of expanded environmental awareness and interest in the quality of life, the significance of ecological benefits is likely to grow with time.

1.5.3 BASIC PRINCIPLES

■ Using native plants to decorate landscaped areas, gardens, etc.

■ Avoiding the use of agrochemicals in maintaining landscaped areas, gardens, etc.

1.5.4 PRACTICAL TIPS

▌ Identify your area's main typical plant species. To this end, you should get in touch with a professional or with local people. Use these plants in landscaping your premises.

▌ For technical assistance and information on your area's flora, whenever possible, contact a professional such as an agronomist, biologist, or forestry engineer,

▌ You can use this information in determining which plants you are going to have in your garden, labeling trail signs, and preparing relevant information (common and scientific names, traditional uses, range, etc.).

▌ If you use ornamental plants that do not come from the area, be careful to prevent their spreading to other places. The most important trees should be labeled to show their common and scientific names.

▌ Remember that signs should not be nailed directly on trees and should be visible.

▌ Either purchase or make your own natural fertilizers and repellents.

▌ If you wish to make your own fertilizer, you can build a composter. This is a simple ventilated wooden framework that rests directly on the ground. It must have a cover to prevent fly proliferation and breeding.

Additional information on composting (in English) may be found on the following pages:
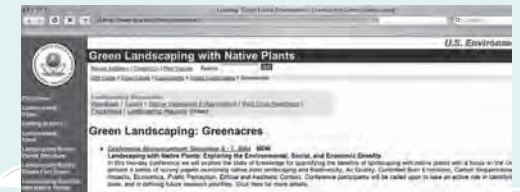
U.S. EPA Office of Solid Waste
www.epa.gov/epaoswer/nonhw/green/index.htm

www.epa.gov/epaoswer/nonhw/compost/index,htm

Cornell Composting, the Cornell Waste Management Institute
www.cfe.cornell.edu/compost/Composting_Homepage.html

Green Landscaping U.S. EPA: www.epa.gov/glnpo/greenacres

Also visit our electronic site at the Rainforest Alliance webpage for complementary and up-to-date information.

1.6 Solid Waste

1.6.1 BASIC CONCEPTS

Rejecting

This means not purschasing any product that, on account of its origin or shape, is harmful to the environment.

Reducing

The basic principle of every waste management program and any serious commitment to the environment consists of reducing overconsumption of products, particularly those generating hard-to-recycle waste, such as polyethylene packaging for single-use food items.

Make sure to purchase durable, high quality items, and try not to buy disposable products.

Reusing

Through this principle, waste generation can be avoided or decreased. Packaging and products that have fulfilled their purpose are often discarded. Reusing such items consists of finding a new function for them, wondering what they can be used for. There are countless possibilities, such as using them as flower vases, or for organizing and classifying things such as buttons, nails, pins, etc.

Repairing

When a product stops working due to any failure, it can be repaired and then reused, thus precluding the possibility of its becoming discarded junk.

Recycling

This means taking a product that has already fulfilled its purpose and lost its usefulness, and viewing it as raw material for new goods which may have either the same or a different function.

1.6.2 IMPORTANCE[40]

- **Why Recycling?**

It reduces the use of energy and resources such as water, electricity, transportation, and petroleum by-products.

It decreases the pollution caused by power plants and carbon dioxide (CO_2) emissions from manufacturing processes.

It reduces household waste, thus additional garbage is not being dumped in landfills.

A good waste management system can result in converting some 80% of all waste into something useful, either through recycling or reuse. In the average garbage bin of a conventional hotel, you can find:

33%	paper and cardboard
20%	food residues
19%	dust and ashes
10%	glass
8%	metal (aluminum)
8%	sundry waste
7%	plastic
4%	textiles

An adequate waste disposal system may produce a 40-60% decrease in waste volume.

▐ Recycling 100 kilograms of paper saves the lives of 7 trees.

▐ Recycling a ton of paper saves 20,000 liters of water.

▐ Producing new steel costs four times more than recycling it.

▐ Recycling aluminum results in saving 91% of the power required in manufacturing primary use aluminum, and also prevents air pollution.

▐ Recycling glass saves a third of the energy needed to make new glass.

Rechargeable Batteries

Technological breakthroughs such as rechargeable batteries offer more cost-efficient alternatives for saving energy and cutting down on expenses. Because of their chemical components, conventional batteries are heavy polluters of soil and water. Additionally, it must be kept in mind that a rechargeable battery replaces approximately 100 disposable batteries.
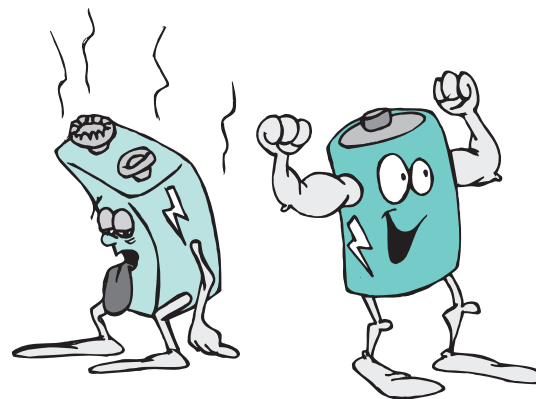
1.6.3   BASIC PRINCIPLES

■ Having a program to minimize purchases of waste-generating goods.

■ Avoiding the purchase of non-reusable packages and utensils.

■ Identifying and implementing specific actions to sort waste for its reuse, recycling, and proper disposal.

■ Implementing specific actions to reuse paper, containers, etc.

▌ Ensuring adequate disposal of waste produced by the business, including discarded construction materials and rubble.

▌ Adopting a compost-making practice, if feasible.

▌ Supporting and getting involved in existing recycling programs.

1.6.4   PRACTICAL TIPS

Reduction:

▌ Periodically check how much you have bought of a particular product in recent months to determine whether its consumption has increased.

▌ Motivate your staff to find creative ways of reducing the amount of waste generated by your company.

▌ Think about purchasing goods in large bulk quantities, instead of single-use packages.

▌ Do not use disposable containers or allow them to be sold on your premises.

▌ Do not use disposable plates, cups, and tableware.

▌ Provide rooms with soap, shampoo, and toilet paper dispensers.

▌ Store goods adequately to prevent product loss and waste.

▌ Ask yourself why a purchased product is being consumed and, if possible, do without this item.

▌ Take the very best advantage of all available resources.

Rejection:

▌ Do not use lead-based paint or aerosol products containing chlorofluorocarbons (CFC's).

▌ Eliminate the use of hazardous or ecologically toxic compounds. Replace them with biodegradable cleaners and detergents.

▌ Acquire solar energy-powered devices, such as calculators and clocks.

▌ Look for these and other environmental symbols on the products you acquire, And write to manufacturers, supermarkets, and suppliers requesting products or materials that can be recycled in your area.

Recyclable material: this means the materials used in manufacturing the product can be recycled.

Recycled material: this shows the product was made from previously used material.

This is a product that has not been tested on animals.

Organic product: This refers to food items that are produced without toxic agrochemicals or chemical preservatives.

Reuse:

▌ Develop and implement a reuse program. For instance, take advantage of organic waste to produce fertilizer, print paper on both sides, reuse printed paper for making notes or for other minor uses, and only purchase products sold in returnable packages.

▌ Enter into product repackaging agreements with suppliers.

▌ Use fabric instead of paper napkins, keeping in mind the large number of trees required to manufacture paper.

▌ Reuse empty packages for storing things.

▌ Reuse old garments for cleaning tasks.

Recycling:

▌ Use biodegradable toilet paper, cosmetics, detergents, etc.

▌ To the extent possible, use recycled products, such as stationery and office paper, as well as paper for decorations, etc.

Disposal:

- Keep records of the types and amount of waste your company generates, according to operating area.

- Make your staff and guests aware of how important it is to adequately manage waste.

- Encourage customers not to use disposable plastic items, much less dump such products in protected areas.

- Try sorting waste at the source, for instance, in guests rooms and the kitchen.

- Provide labeled bins with lids to sort and deposit recyclable waste such as aluminum, plastics, glass, paper, and organic materials.

- Make sure waste bin locations are easily spotted by visitors and staff.

- Create an adequate place for storing waste before its final disposal.

- Check product packages and ask yourself where and how they will end up once they have been used.

- Talk with garbage collectors to make sure waste is being disposed of properly after it leaves your premises. If this is not the case, become an advocate to promote the establishment of a waste treatment plant or a landfill. Talk to community leaders, officials, and waste management people in your region.

- Be careful not to burn tires or garbage out in the open, and much less so in streets or in other inhabited spaces.

Valuable and extensive information
on the subject can be found in
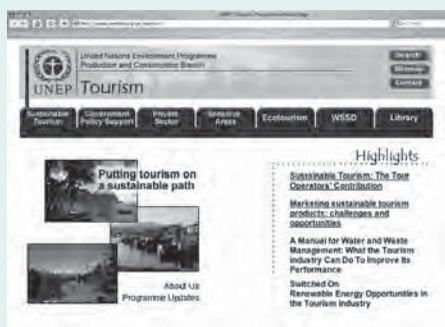
A Manual for Water and Waste Management: What the
Tourism Industry Can Do to Improve Its Performance

http://www.uneptie.org/pc/tourism/

2003
Pages: 50
Language: English
ISBN: 92-807-2343-X
Price: USD 15.00

**Which are the
Subexecuting Agencies
in the Best Practices Project?**
Program for Belize
Asociación Alianza Verde,
Guatemala

In early 1999, Asociación Alianza Verde® prepared a proposal to implement the Best Practices and Tourist Quality Certification Code in the Mayan Biosphere Reserve. In July of the same year, Alianza Verde®, with economic support from Proarca/Capas and the Conservation International Foundation, started a program to implement this proposal, which was called Green DealTM Sustainable Tourism Certification. The Green DealTM Sustainable Tourism Certification provides an independent and objective auditing system for all local tourist operations, based on minimum required guidelines for following responsible tourist practices. These guidelines have been developed by consensus with representatives of the different local tourism sectors (conservationists, private businesspeople, community businesspeople, and government representatives).

The Green DealTM Sustainable Tourism Certification Program is viewed as a tool in helping businesses to improve their use of natural resources and market penetration, as well as to lower their consumption and costs for energy, water, and goods. Similarly, Green DealTM will allow tourists coming to Guatemala to choose the best in the market before they arrive. This is a voluntary tourist certification program; therefore, any tourist operation would in principle be eligible.

For more information,
visit the Green Deal webpage:
http://www.greendeal.org/

ASOCIACION
Alianza Verde

1.7 Pollution

1.7.1 CONCEPTS[41]

Pollution is the presence of harmful and bothersome substances deposited in air, water, and soil by human activity in such quantity and quality they may interfere with the health and well-being of people, animals, and plants, or prevent full enjoyment of life.
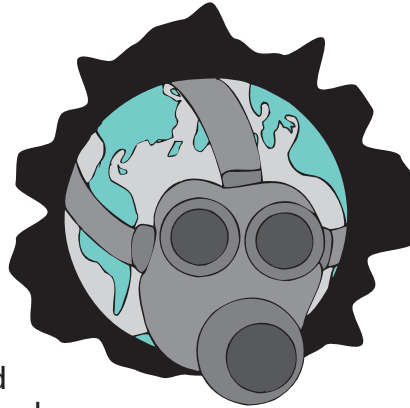
The sources of pollution can be highly varied substances in solid, liquid, and gas forms, as well as noise, heat, and odors.

Major Pollution Sources

Major pollution sources include the following:

▌ Industrial emissions, in the form of smoke or dust, which are released into the atmosphere and pollute air.

▌ Industrial waste or runoff, the main source of water pollution.

▌ Household wastewater coming from domestic activities.

▌ Chemical runoff from farming operations: pesticides, fertilizers, animal waste, etc.

▌ Solid waste from industry and households.

▌ Gas emissions from automobile transportation.

▌ Hydrocarbons dispersed in river and ocean watercourses, caused by water transportation.

Other Pollution Sources

• **Noise**. With the development of industrial and urban civilization, noise (loud, inarticulate and confusing sounds of varying intensity) has become a very important polluting elements with an unfavorable impact on the environment, and in some cases, it is hazardous to people's health.

Noise is a common element in areas where there are high, concentrated urban populations leading to heavy automobile traffic, and also in air and railroad terminals, heavily industrialized zones, etc.

Human ailments caused by excessive noise can be physiological or psychophysiological, and these are increasingly affecting industrial workers in particular. The physiological effects of

noise include stress, fatigue, and acoustic trauma, and hearing loss.

Other long-term effects are pulse and blood pressure alterations, and even psychic disorders.

Noise levels are measured in units called **decibels (dB)**; some countries have developed regulations to set permissable noise limits.

Noise intensity ranges from 0 to 160 decibels; a noise level that is harmful to human hearing is around 90 decibels.

The dB intensity for some common noises that surpass the limit that has been found harmful to human hearing are shown below:

Noise Sources	
Decibels	
Factory manufacturing	100
Average party with amplified music	110
Power lawn mower	110
Motorcycles	120
Street with heavy traffic	130
Pneumatic jackhammer	130
Jet plane upon takeoff at 25 meters of altitude	140
Sirens	150
High caliber rifle being fired	160

These examples give an idea of how everyday noises reach levels higher than the allowable threshold for human hearing. This is why we should avoid unnecessary noises since all these will have a joint long-term impact on our hearing and nervous systems.

- **Heat**. Poorly located ovens, industrial activity, transportation, forest fires, and virtually every combustion process causes environmental problems due to the generation of increased temperatures.

It is worth mentioning that city temperatures are 3-4o C above those found in the countryside. This phenomenon, known as the "heat island", is mostly the result of carbon dioxide generated from the combustion types mentioned above, which accumulate in the lower atmosphere layers closest to the ground. These layers receive solar radiation reflected by buildings, streets, etc., and send it back to the ground; this phenomenon is repeated over and over.

One way of mitigating heat in cities is by planting trees on streets to create green areas, which also tend to decrease urban noise levels.

In short, pollution-related phenomena are as varied as their effects on people's health and well-being, something that must be kept in mind while planning development of any kind.

1.7.2   IMPORTANCE

Pollution in every form is always a delicate issue in a sustainable tourism business, since it casues human health problems, affects the environment, creates foul odors, and projects a negative image of the enterprise.

Each company should have the proper systems and mechanisms in place to prevent or reduce the release of harmful emissions and waste, including wastewater, as well as noise and visual contamination.

1.7.3   BASIC PRINCIPLES

■ Managing both sewage and soapy wastewater in such a way they will not create pollution or affect public health.

■ Taking measures to minimize pollutant gas and aerosol emissions, loud noises, and strong odors.

■ Reusing effluents or wastewater in cases and situations whenever possible (for irrigation, cleaning, etc.) after proper treatment.

■ Implementing measures to adequately channel, use, and dispose of rainwater.

■ Using biodegradable cosmetic and cleaning products that do not cause eutrophication, that is, oxygen deficiency due to accumulated phosphates.

■ Refraining from polluting the soil with oil derivatives or other non-biodegradable toxic compounds.

1.7.4   PRACTICAL TIPS

Wastewater:

▌ Keep records on wastewater composition and quality. (To this end, you need to contract lab services.)

▌ Use wastewater treatment systems.

　◗ Applying any of the available methods or systems depends on waste characteristics, facilities space, and associated costs.

　◗ One of the most widely used methods is the septic tank. While it can operate very well, it does not allow water recovery and subsequent reuse.

▌ Make sure your wastewater is not released directly into local waters (rivers, lakes, and reservoirs, among others).

▌ If your facilities are connected to a sewage system,

make sure the sewage water's final disposal does not produce environmental changes.

▌ Reduce production of refuse and wastewater.

▌ Remember surface water is linked to ground water. Any surface pollution may contaminate ground water, and viceversa --- tainted underground water sources can also pollute water on the surface.

Rainwater Management:

▌ Channel rainwater according to site topography.

▌ Be careful not to clear or eliminate plant cover.

▌ Avoid building straight canals with steep slopes or large-area inclines that increase water speed and produce erosion.

▌ Prevent channeled water (from roofs, roof gutters, street gutters, etc.) from falling directly and heavily on surfaces that are subject to erosion.

▌ Take advantage of rainwater: build storage tanks, use it for laundering, gardening, cleaning public areas, toilets, and other applications.

Water Treatment:

Most countries have legislation in place to protect people's health and the national environment against pollution. Hence:

▌ Determine there are any water pollution sources near the hotel.

▌ Identify the impact caused by this pollution.

▌ Look for legislation related to environmental health issues, as well as management of forests, protected areas, gas emissions, sound pollution, and visual contamination.

▌ Find out the procedures for filing complaints with the corresponding authority.

▌ Get support from non-governmental organizations working on these issues.

▌ Get advice from a specialized lawyer.

Hazardous Sites:

▌ Post clear and accurate warning signs at contaminated or polluting sites, regardless of whether they are within or outside your property boundries.

▌ Do not create alarm. Explain the hazard of staying near the site in an easily understood and precise manner.

In planning and operating the business, the following negative impacts should be anticipated and mitigated:

◗ Disproportionate increase in sound pollution.

◗ Air quality deterioration.

◗ Toxic materials brought in and poorly disposed of during construction.

◗ Release of toxic materials, such as oils and fuel residues, particularly as a consequence of using motor-powered marine craft.

◗ Increased or accelerated erosion processes.

◗ Increased sedimentation and/or compactation processes.

◗ Waterway diversion or disturbance.

**Which are the
Subexecuting Agencies
in the Best Practices Project?**
Program for Belize

Program for Belize is a Belizan non-profit organization established in 1998 to promote Belizes cultural heritage conservation, as well as the responsible use of natural resources. The Bravo River is the main project where Program for Belize aims to persuade people to leave forests and their environmental services unaltered. This is being done through practical applications of principles focused on linking tropical forest conservation with the development of sustainable land uses. On the Bravo River, Program for Belize implements various programs, namely: ecotourism, sustainable logging, carbon storage, agroforestry, and non-timber harvesting, such as rubber and palm products.

**For more information, visit the Program for Belize webpage:
http://www.pfbelize.org/**
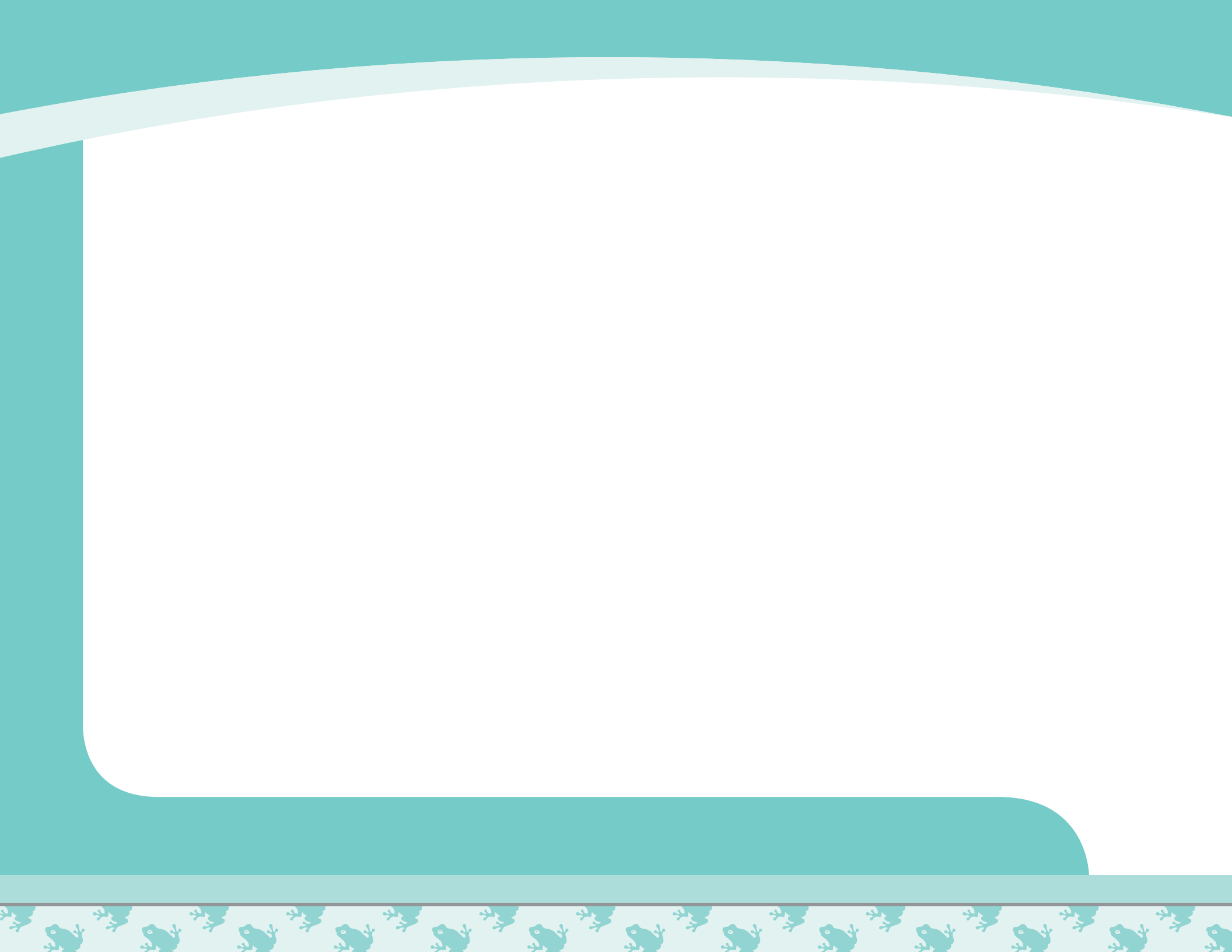
1.8 Environmental Education

1.8.1 CONCEPTS [42]

Generally speaking, it can be said that Environmental Education (EE) is aimed at training people to manage their environment. EE also attempts to develop as well as individual and collective capabilities, both value-based and affective, in order to establish a new relationship between humankind and the environment.

One approach to understanding EE's scope is through its **objectives**, including:

Social behavior which has internalized the inescapable relationship of interdependency between humans and the environment, since every environmental change affects human development.

Developing the knowledge needed for understanding, from a systemic perspective, how the environment works.

Encouraging a sense of responsibility with respect to for and and fostering involvement in environmental management, planning, decision-making, implementation, monitoring, and follow-up.

Environmental education is, above all, education for action. It acts by expanding our knowledge and awareness of human activity impacts on the environment, albeit with the final goal of improving our ability to help in problem solving.

▌ Environmental education facilitates an understanding of the complex interactions between societies and the environment using a comprehensive and interdisciplinary approach. And this is done through a better knowledge of ecological, economic, social, and cultural processes, namely, by critically analyzing social and environmental problems and their relation to human management models and actions.

▌ Environmental education fosters a commitment to help bring about social, cultural, and economic change by developing a wide range of values, attitudes, and abilities to form judgments, assume responsibilities, and play a constructive role.

▌ Environmental education develops competencies for action through training not only for individual but also for collective action, particularly in planning and decision-making, the search for alternatives, and environment-enhancing processes. These objectives can be reached by encouraging educational and enriching experiences, by creating spaces for reflection and debate, by involving people in actual and concrete actions, and by fostering value clarification, negotiated decision-making, and conflict resolution processes.

What are the environmental education components?

Environmental education has four distinct levels:

The first level is comprised of fundamentals related to ecology, and includes basic ecology, geology, meteorology, physical geography, botany, biology, chemistry, physics, etc. The idea is to provide information about earth's life support systems, which are like the rules of the game. Unfortunately, much human behavior and decisions made regarding development seem to violate many of those rules.

The second level includes conceptual awareness-raising on how individual and group actions may influence the relationship between quality of human life and environmental circumstances. That is to say, it is not enough to understand the planet's life support systems (the rules), but one should also understand how human actions impact the system and how knowledge of them may help in guiding human behavior.

The third component is problem research and evaluation, which means learning to examine and assess environmental problems. For instance, is it better for the environment to use fabric diapers versus disposable ones? Is it better to put your shopping items in paper or plastic bags? Is it environmentally responsible to recover energy from discarded resources? Answers to such questions are seldom simple. Most of the time, specific circumstances and conditions complicate the answers to those questions, and they can only be understood after carefully considering a great deal of information.

The final EE component is the capacity for taking action. This component highlights the skills needed to get productively involved in the solution of current environmental problems – and the prevention of future ones.

EE is meant to provide individuals with the knowledge needed to understand environmental problems, and with the opportunities to develop skills required in researching and assessing available information about such problems. Also provided by EE are opportunities to develop the capabilities needed to become active and involved in solving current problems and preventing others in the future, and perhaps most importantly, opportunities to develop the abilities to teach others to do the same.

1.8.2 IMPORTANCE[43]

Environmental problems are not new since the human species has always interacted with and changed the environment;. However, what makes the current situation particularly disturbing is the acceleration of such changes, their massive and widespread nature, and the universality of their consequences.

Environmental problems are no longer isolated and independent from one another, but have become interrelated elements of something different from the sum of all their components.

Thus, we are now not only talking about simple environmental problems, but also facing a genuine environmental crisis that has become extremely serious in view of its global nature.

But we cannot just see this crisis as a conflict in which some particular views of the world and life have turned out to be unsuitable or inadequate. If we recognize that innovative solutions are generally only considered and developed only in crisis situations, our obvious challenge is to take advantage of our predicament and creatively "reinvent" the way we understand the world and relate to it.

But these solutions cannot be just technological. The environmental challenge defies contemporary society's values, which are at the root of the environmental crisis, being the bases for human decision-making. In facing this challenge, environmental education plays the important role of promoting "innovative learning" through anticipation and participation. We are thus able not only to understand phenomena, but also to get involved in whatever we wish to understand.

Environmental Education arises as a response to the environmental crisis. Starting in the sixties, when the established growth model was challenged and its impact on the environment was denounced, numerous diagnoses of the environmental crisis have been carried out. Human beings are gradually beginning to have a new view of their environment, and a new perception of the humankind-society-environment relationship is gaining ground.

Many reports and manifestoes emerging over these years affirm the need for taking educational measures to curb the planet's increasing deterioration, among other things. These proposals have been quickly acknowledged by institutions. Thus, in the international arena, the United Nations Organization, basically through UNESCO and UNEP, is the main promoter of environmental education studies and programs.

EE is about finding ways to go forward with development, while ensuring that the planet's life support systems are protected, preserved, and conserved. This is the idea behind the concept of sustainable development concept. It seems odd that people have to be taught how to correctly develop, but there are reasons to believe many people still do not understand the impact that human actions have had and continue to have on the environment.

EE is a valuable and indispensable tool in educating current and future generations about global environmental problems and how to face them. It should include, among other things, the following basic issues:

- Global climate change
- Depletion of the ozone layer
- Biodiversity loss
- Ocean pollution
- Water shortage and misuse
- Farm and forest soil loss and degradation
- Desertification
- Lack of housing and basic sanitation

Environmental Education versus Environmental Interpretation

People usually behave according to the environmental circumstances that they find themselves in. Thus, for instance, a History II student will act differently when visiting an archaeological site with the course professor than when doing the same with family or friends during the weekend. The difference is that, in the former case, the audience is a class that must follow a specific visit model basically targeted at training, while in the latter people wander around on their own initiative, managing their own time, and their objectives are more recreational in nature rather than being strictly educational.

Consequently, the different Environmental Education programs are aimed at two types of learners: the captive audience (coming from the various educational system levels) and the occasional visitor or general public. This is a basic distinction, since both of the objectives and activities to be carried out can vary dramatically, depending on the type of learner or visitor.

This distinction between audience types leads us to develop two different models: environmental education aimed at people from the educational system, and environmental education tailored to the general public.

Environmental Education Methodological Resources and Teaching Strategies

Talks and Lectures

▌ These are most two widely used resources in formal education.

▌ By themselves, they convey abstract information in the absence of the relevant object, element, or process, only realizing their full importance when combined with other resources.

▌ By definition, they allow for little or no audience participation.

▌ The target audience must be taken into account, in order to use the appropriate type and level of language.
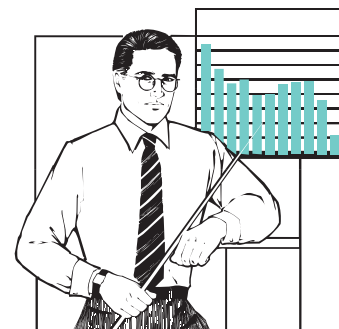
Debates and Discussions

▌ These involve analyzing arguments and putting forward points of view, personal reflections and positions, as well as synthesizing conclusions and making decisions.

▌ By definition, these are participatory resources.

▌ They may be quite relevant as motivational elements at the beginning of an activity or program, or at the end, as a way of synthesizing.

Audiovisual Aids

▌ Some of the most widely used materials are sounds, films and videos, and slide presentations.

▌ These resources are very useful in the following cases:

◗ as an alternative to other activities that are difficult to carry out because of circumstances that are beyond control (weather, budgets, etc.).

◗ as a complement or introduction to other activities.

◗ when group size becomes overly large.

◗ when issues to be dealt with are not found on site or locally.

Using Instruments

▌ There is a large number of simple or precision devices that can be used for taking samples and gathering data in order to develop learning activities, or just as activity support elements.

▌ Many of these instruments enable people to capture environmental information that cannot be perceived by the unaided senses.

▌ In particular, optical materials (magnifying glasses, binoculars, telescopes, etc.) are very useful for carrying out environmental observation and perception-heightening activities.

▌ An effort must be made to explain how to properly handle and maintain the instruments.

Tours and Visits

▌ These activities can take place in a wide and diverse range of urban and natural spaces. Also included in this heading are visits to certain facilities, such as marketplaces, zoos, botanical gardens, production centers, etc.

▌ Natural area visits are very appealing, because of the opportunities for adventure and exploration provided to learners.

▌ These resources are particularly relevant when they take place in the environment where visitors carry out their day-to-day life.

Artistic Expression Activities

▌ These include all sorts of artistic manifestations, such as drawing, painting, ceramics and clay modeling, sculpture, theater, photography, filmmaking, etc.

▌ They can be quite valid from both a receptive perspective – that of an onlooker enjoying them – and from a creative stance – as the maker of an artistic work.

Expositions and Shows

▌ These are teaching tools that use a wide variety of communication elements and media.

▌ Visiting some expositions and shows can be very interesting, in light of the vast educational and interpretative opportunities they provide for understanding the arts, social customs, nature, zoology, botany, ethnography, archaelogy, etc.

▌ They offer great educational potential when used by learners in synthesis-type activities.

Itineraries

▌ These are predetermined routes through sites having particular characteristics that will be simply shown to or also interpreted for to the audience. They involve a planned sequence of stops; a portion of the theme to be covered is developed at each one.

▌ They can be followed in both natural and urban environments.

▌ The most usual ways of following itineraries are through guides or interpreters, by using brochures or documentary guides, and on-site posters. However, the most effective itineraries are guided.

Role Playing and Body Language

▌ Specific concepts, values, or behaviors can be demonstrated through roleplay to depict particular environmental situations.

▌ Attending shows that make use of these resources can be a valuable experience when the subject is of particular interest, since they may lead to debate and consensual agreements.

As pointed out above, there are no specific EE methods. Rather, the various techniques applied to other kinds of training or

teaching are used. By and large, applied methods should blend a large number of teaching resources and techniques in search of variety and effectiveness. Some of the most widely used strategies are:

Motivational Techniques

▌ Developing activities in direct contact with the means, objects, or processes.

▌ Encouraging involvement through specific dynamics, games, use of the five senses, notetaking, data collection, and sampling, etc.

▌ Making constant reference to learners' everyday experiences.

▌ Using a wide variety of different resources.

▌ Using humor, and creating a relaxed atmosphere.

Sensitizing Techniques

▌ Using all the sensory powers of individuals, since this is the only way they can perceive the environment.

▌ Having an influence on developing the different sensory organs.

▌ Touching an individual's soul to increase sensitivity to environmental problems. This has a great deal to do with conscience, i.e., relating one's feelings to everything that is felt and believed, that is, human values.

▌ Affectivity should be developed by EE, and emotional issues dealt with, since dedication and long-lasting commitment to the environment stem from one's feelings.

Environmental Observation and Knowledge-Gathering Techniques

▌ A series of tools designed to develop cognitive rapport with the environment by means of respectful, participatory, direct, and pleasant methods.

▌ These techniques are often based on learner's self-discovery and direct contact with the immediate environment.

▌ Transferring particular knowledge and concepts is an intrinsic task in every teaching activity. While there are as many concepts as there are ideas to be disclosed, some models successfully applied to EE can be established to develop them, such as games.
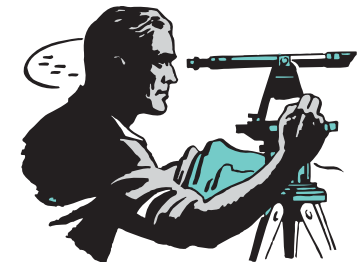
Environmental Games

▍ Creating game situations is important because they promote environmental value appreciation, understanding and commitment.

▍ In creating a game atmosphere, various teaching techniques and resources are applied (use of the senses, use of concepts, etc.). The game should establish analogies to actual environmental events or situations.

Interpretation Techniques

Just as with Environmental Education, it can be said that interpretation does not have its own techniques. In fact, it is preferable to talk about styles coming from different communication-related disciplines.

▍ Undoubtedly, the first issue to be considered is encouraging participation through questions, performance of activities, or the use of particular instruments. This issue is even more important, if appropriate, in "non-natural" sites where visitors have traditionally been mere spectators.

▍ Interpretation is provocation. It should make visitors feel somewhat unsettled, and thus force them to ponder issues by highlighting those problems that may have previously seemed negligible to the general public. It should be complemented, nonetheless, with information to prevent doubts or conflicts. This provocation should also stem from a deep understanding of the learners.

▍ All messsages delivered to the public should be simple, significant (easily processable), and relevant to each learner, as well as believable and provable.

▍ The main communication strategy should be the use of a theme (the message's core idea) for the audience to remember.

▍ Ideas presented to the public should be very carefully sequenced in order to maintain expectations and interest throughout the communication process.

▍ Interpretation should be supported by graphic means outlining contents and making them more accesible to the public, with the resulting savings of space and time.

▍ In some circumstances, it is worth considering the creation of the right ambiance, in order to both restore a site's original conditions and recreate historical facts.

▍ It is also useful to consider using humor, although always in suitable amounts.

▍ Some authors attach much importance to the use of mystery: a part of the visual information remains hidden and can only be accessed by changing the viewpoint or through certain handling.

▍ We all like to feel welcomed when we arrive at an unknown place. This is why establishing personal contact with visitors is fundamental.

▍ As a premise, visitor experience should be enhanced through sensory perception activities to establish affective relations between the public and the site being interpreted, and to show them how important and interesting it is to use their senses.

▍ Meeting learner demand for knowledge and affection is extremely important, and is done by building self-esteem and trust at all times.

▍ Background information should be provided at the beginning and at the end to facilitate assimilation, while also trying to involve the public in said process. Additionally, it is important to provide information in small doses.

▍ Broadly speaking, presentations should be made in a positive tone and with a clear purpose in mind: to encourage the public to become involved in environmental conservation activities.

1.8.3   BASIC PRINCIPLES

■ Fostering responsible visitor behavior.

■ Providing guests with information about nearby protected areas, and promoting them as sites to visit.

■ Performing specific environmental education and other actions targeted at nearby communities, visitors, and staff.

■ Providing visitors with information about protected area regulations.

■ Informing visitors and motivating them to help with water and energy conservation and rational use, as well as responsible waste management.

■ Posting signs to guide and educate both guests and employees.

1.8.4   PRACTICAL TIPS

▍ Both environmental education and environmental interpretation must meet the following requirements:[44]

◗ Universality: Their theme is the overall natural and social environment.

◗ Environmental issues: The objects of study revolve around environmental problems threatening modern society.

◗ Participation: This is one way of educating for involvement, promoting people's responsible participation in environmental problem-solving.

◗ Social Issues: Raising awareness about unfairness and social inequalities, and the need for interventions to address them.

◗ Systemic approach: Allowing us to gradually come closer to understanding environmental problems in all their complexity.

◗ Trust: This means placing great confidence in individuals as the builders of their own knowledge and as responsible participants in events affecting their environment.

◗ Research: A way for individuals to become the masters of their own learning, using their background knowledge, and working in small teams on actual and accessible problems that may be subject to some form of intervention.

◗ Action Orientation: Training individuals to get involved in environmental problem management and solutions.

• ***Tailoring the message to learner characteristics***[45]

The facilitator should try to tailor communication messages and techniques used in activities to such aspects as learner age, origin, cultural level, and interests. Applying the same activity like a set recipe to any person, situation, and condition is sure to guarantee the failure.

A facilitator or interpreter reaches a good performance level when able to introduce small modifications in the way of acting and developing the guided activity, in order to fit each visitor group's specific requirements. To this end, the following observations should be kept in mind:

▌ Group Size

The bigger the group, the harder it will be to control it and to hold everybody's attention.

To a large extent, a big group can hinder the performance of dynamic activities. In a group with more than 20-25 persons, a great effort will be needed to prevent some people in the group from getting lost.

Smaller groups allow a more personalized communication process in which one can interact directly with each participant, asking about their personal expectations, opinions, or experiences.

Age

The age of group members will have a great influence on the dynamics the facilitator will include in the activity. Thus, the youngest ones will be very prone to active proposals involving some physical effort, while seniors will require slower, calmer dynamics. It is worth remembering that school children often regard an excursion or field trip as a holiday to be enjoyed, which is why they may initially reject any activity reminding them of the classroom. In these situations, activities should have a strong focus on play, and even a physical exercise component.

Group Heterogeneity

Having a homogeneous group made up of 20 people of the same age and origin is not the same as having another 20-person group that includes 12-year-old children, along with their parents and grandparents, who are all living in a nearby rural town, with a group of urban 17-year-old friends and another group of foreign friends who are traveling together. The more diverse and heterogeneous the group is, the harder it will be trying to adapt the message to the different requirements of each visitor. In these situations, the facilitator should strive and try to convey varied messages adapted to each audience at different times of the tour. Success will depend on the facilitator's ability to do so.

Familiarity

It is important to take into account that some visitors living in neighboring towns or visiting the park often may be quite acquainted with the environment where the activity is taking place. These people are likely to get bored in this situation if they hear the typical message addressed to first-timer visitors. New experiences should be created in these cases, or perhaps the knowledge and experiences that these local group members have had could even be made part of the tour.

Involving all these people in interpreting the environment during a tour may often produce different ways of looking at and analyzing the world. These can also be learning experiences for the guide or facilitator.

Knowledge Level

As stated above, not all visitors have the same level of knowledge or capacity to understand the contents covered during a field itinerary or tour. Most of the time, the guide should address environmental interpretation themes in a simple and easy-to-understand manner. Assuming that message recipients are not biologists or specialized technicians is key, and thus the starting scenario should be based on the premise that visitors have little knowledge of the area.

▌ **Interest and Motivation**

The motivation and interests of people who may require the services of a guide will be widely varied. In some cases, there will be persons who are strongly motivated to get specific and in-depth park information. But the general pattern is that visitors mainly wish to have a good time without making much effort. Therefore, most visitors in natural protected areas do not want to be educated; on the contrary, they simply want to have a nice recreational experience. In these circumstances, the guide must take on the initial challenge of arousing visitors' interest to get them more actively involved in the tour and even become to new ideas, attitudes, or behaviors.

▌ **Customization**

People like to be treated as individuals, instead of being seen as just members of a group of persons. Thus, the guide is advised to ask the names of every participant at the beginning and to use them when talking to each person during the tour. It may be difficult at first, but guides must develop this skill if they are to have warmer, more effective communication with visitors.
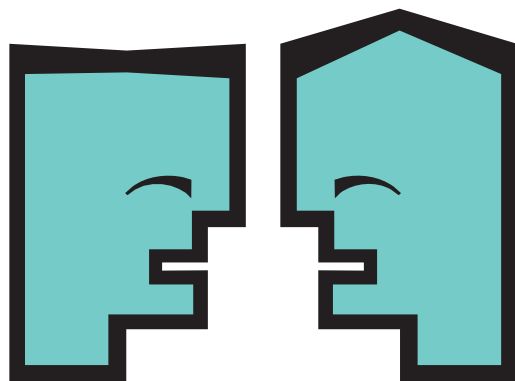
During the tour it is also important to refer to issues in people's daily lives, or even to invite them to share their personal experiences, as mentioned above.

Before implementing an interpretation plan or program, the following questions must be answered:[46]

▌ What is the need for environmental interpretation in an area, and what warrants this action? Keep in mind that ecotourism development in a protected wilderness area always involves the need for interpreting the resource).

▌ Are there trained staff members who can develop and manage an interpretation program, as well as build a multidisciplinary team?

▌ Who will take on the responsibility for carrying out the work?

▌ Is there an administrative policy that is related to the intention of providing interpretation in that area?

▌ Is there a budget with funds to cover planning, implementation, and future service operation?

Note general characteristics that interpretation should have, as follows: [47]

▌ Being perceived as pleasant by visitors

▌ Being relevant, that is occurring at the right place and time

▌ Being organized and clear

▌ Having a theme.

Some of the following interpretation media should be used:[48]

▌ Non-Staff-Assisted Media:

◗ Fixed signs for direction, information, or interpretation.

◗ Printed information, such as books, brochures, guides, maps, posters, etc.

◗ Coverage in mass media, such as on radio and TV programs, and in the press.

◗ Self-guided trails with brochures, signs, panels, or sounds recorded on tape or other devices (for instance, computers).

◗ Automatic audiovisual aids: films, slide shows, listening posts or booths, transportable recorded tapes, interactive media, and all audiovisual presentations not requiring staff assistance.

◗ Exhibitions: objects or collections of things, usually displayed in order to illustrate or partially explain a theme.

◗ Shows: three-dimensional presentations combining exhibitions with graphic media; as a unit, they may cover an entire theme.

▌ Staff-Assisted Media:

◗ Guided tours: Conducted by a guide or interpreter, these follow a predetermined route.

◗ Motor vehicle tours: transport by land or water, organized according to a set itinerary and route.

◗ Non-motor vehicle tours: groups of bikers or horseriders, visitors in canoes, row boats, etc.

◗ Staff-assisted audiovisuals: presentations where an interpreter may be present to explain or answer questions, or those presentations made by the facilitator or guide using audiovisual aids

(talks with short films, slides, overhead projector, flipchart, sound amplifier, etc.).

▌ Special-staff-assisted activities.

　◗ Demonstrations developed by outside professionals or experts specializing in particular themes or skills (for instance, craftspeople, artists, etc.).

　◗ Activity development: the public performs activities, such as horseback riding, climbing, photography, diving, etc.

　◗ Conferences: an outside expert is brought to make comments, share experiences, or translate knowledge into language that can be understood by the general public.

　◗ Animation: this can be passive (the interpreter "stages" a generally folkloric day-to-day activity) or active (interpretive programs with participation by visitors, where they apply their knowledge, whether prior or acquired during their visit to the area).

　◗ Incidental services: these typically include three kinds of services: information counter, reception or front desk, and spontaneous staff assistance.

Trail Design

Stages in developing interpretive trails are the following:

▌ Choosing the right area to locate the trail (this can be done based on local staff experience and corresponding spot checks, or through maps and aerial photographs, also with their respective spot checks; ideally, both these resources should be used in combination).

▌ Taking stock of area resources

▌ Selecting potential topics and themes to be developed.

▌ Determining audiences (persons likely to walk along the trails).

▌ Defining the interpretive means to be developed (handouts, signs, etc.).

▌ Determining trail length, and screening interpretive features.

▌ Choosing interpretive features that cover enough of the theme.

▌ Designing, laying out, and building the interpretive trail.

2. Sociocultural

2.1 Cultural Activities

2.1.1 CONCEPTS[49]

Culture is a distinctive trait of the human species. It is the way human groups learn how to organize their behavior and their thoughts in relation to the physical environment that they live in.

Behavior is one of culture's main elements, and refers to the way individuals relate to each other.

Another element is the cognitive factor, which consists of the ways in which the different human groups conceive and represent the world.

Finally, culture has a material component; this is made up of physical artifacts produced by human societies.

Learning the Culture

Most elements constituting a culture are the result of a learning process in which behaviors change in response to experiences developed within a particular physical environment.

While the ability to learn can be found in most living organisms, none of them possess the vast learning capacity of human beings, whose survival depends largely on it.

Most living organisms rely on their instincts, whereas humans depend on their culture for survival.

People must learn how to survive in the most diverse physical and social environments, where biological factors may play an unimportant role.

From this point of view, culture consists of survival strategies shared by a human group and passed on from generation to generation.

Ideas and behaviors shaping a culture are transferred through a complex system of symbols, a process in which language is critically important.

In contrast with other living beings, which are mainly capable of communicating through rudimentary mechanisms, human beings have developed a complex communication system that sets the species apart, and which would be impossible to imagine if culture as we know it did not exist.

Culture results from an interaction among members of various social groups. Humans learn behaviors and ways of thinking from their parents and other members of the society where they live, enabling them to participate in social life according to patterns shared by the entire group.

Culture is a collective effort, and is socially shared. Members of a given society have the similar cultural perceptions and ways of behaving. In this sense, the concept of society refers to specific behaviors that members of a particular human group have in common.

Human beings develop common cultural attributes through experiences shared with the other members of their society. Without society, the rise of a culture would be impossible, since there would be no interaction for people to share knowledge, values, and beliefs.

Moreover, human societies rely so much on culture that conceiving one without the other is impossible. In the absence of culture, people would find it virtually impossible to understand the behaviors of their fellow humans. Furthermore, human societies have attained their characteristic complexity and levels of flexibility through their cultural dimension.

Human interaction does not arise from a particular interest in creating culture. The main reason for the appearance of human groups and their organizational forms is the creation of material conditions that make life possible. In its most elementary dimension, culture is about getting food and shelter needed to ensure biological existence. Beyond basic survival. there is a wish for creating or producing artifacts to raise life above its most rudimentary levels.

Most human societies pay a lot of attention to production, whether it is bow- and arrow-making in hunter-gatherers, plow manufacturing by agricultural peoples, or the production and maintenance of the most diverse elements in industrial societies.

To a large extent, a particular society's production strategy and capacity can be said to reflect both its social organization level as well as the systems of beliefs and values which are held by individuals in that society.

One of the main characteristics of human social evolution is the constant increase in productive capacity.

Broadly speaking, in only a few centuries human society went from a situation where it largely relied on gathering wild food to a stage which has been characterized by highly organized and complex agricultural systems closely linked to industrial production.

This transformation is directly related to population growth and increased social scale.

Human societies evolved from small bands of people with scant capacity for production to societies having worldwide productive capacity, and comprised of millions of individuals.

Nevertheless, thinking human societies are only concerned with increasing material production would be wrong. Indeed, this is not an absolute value, and should not be taken as an evolutionary imperative: increasing productive capacity is not inevitable and, moreover, is not necessarily beneficial in social terms.

At any rate, production is a fundamental dimension of human life, and the need for increasing productive capacity is universal, and is a major issue in human social evolution.

2.1.2   IMPORTANCE

Every sustainable business should necessarily take its social environment into account and become an integral part of it, respecting and supporting neighboring community development processes. Particularly important is the support provided to community development organizations.

2.1.3   BASIC PRINCIPLES

■ Supporting and promoting the cultural, sports-related, and recreational activities of the neighboring communities.

■ Promoting visits to local businesses and communities, upon their request.

2.1.4   PRACTICAL TIPS

▌ Tell your neighbors and community organizations about your willingness to provide information to your guests, so they can contribute to community projects or social activities. Install a bulletin board where notices, posters, and fliers about such efforts and events can be posted.

▌ Also include cultural information in your promotional materials.

▌ To the extent possible, help neighbors design their promotional material.

▌ Share this information with your staff so they can promote community projects and activities.

▌ Remember that your company should "blend into" the environment; do not place signs that compete with the landscape or block views.

▌ Promote resources and efforts in support of conservation and research initiatives involving the region's values and culture.

2.2 Contribution to Local Development

2.2.1 CONCEPTS

One way of understanding local reality is by using the community as your point of reference. The community contains elements shared by group members, i.e., ideas generalized from individual experiences. From the sociological point of view, this is an institution, since every person's consciousness has institutionalized a set of elements shaping visions of themselves, the world, and what to do about it. Hence, these collectively taken factors are not personal attributes. An individual cannot get rid of them at will; these issues are beyond the parts and operate on a holistic level.

DEVELOPMENT
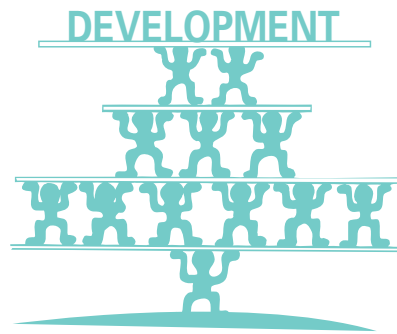
If a gatherer community needs to cross a torrential river to get food, all individuals are aware of the same problem: children, women, men, young people, seniors. All of them get together to bridge the river with a tree, and thus contribute to accomplish a common task. No one fails to help because everyone feels it is their problem and responsibility. This action, for instance, is engraved in an ethnic group history in such a way that related elements, i.e., techniques, behaviors, emotions, meanings, etc., become part of a socially inherited reality. The outcome is a community which has unique characteristics.

Identity is a fundamental part of community history. Identification with something, namely, a collective self-definition as a group, emerges. Some characteristics are built on a context of experiences and stories.

When we use the word local, we are referring to a reasonably sized living space or area with an identity that sets it apart from other spaces and territories where people go about their day-to-day lives –where they dwell, relate to each other, work, behave, and share norms, values, customs, and symbolic representations.

Additionally, the idea of being local is associated with the concept of "integrated development" or "grassroots development." These concepts somehow define the type of proposed development, attaching importance to people's organizational experiences and actions, which define development goals. This is why history and culture are fundamentally important.

2.2.2 IMPORTANCE

This issue deals mainly with how a business contributes to local economy by providing jobs for people in the area, consuming local products, among other measures.

One way the company can have a direct impact on local socioeconomic development is by encouraging the hiring of local

people, respecting labor legislation, and providing incentives. Purchasing products from local farmers and producers creates direct benefits.

In addition, both actions have an indirect impact on development, with the result of more money moving in the area, since inhabitants spend part of their salaries on local purchases. This is thus a major contribution to regional economic sustainability.

Furthermore, company operations should not jeopardize basic local community resources such as drinking water; rather, they should rather support initiatives to improve local health conditions and standards.

2.2.3   BASIC PRINCIPLES

■   Favoring the training and hiring of local people.

■   Supporting or getting involved in neighboring community development initiatives.

■   Using the services of local micro, small, or medium businesses, particularly those having a sustainable nature.

■   Promoting the manufacture and purchase of local handicrafts and other products.

2.2.4   PRACTICAL TIPS

▮   Talk to your employees, and appoint a committee in charge of establishing staff promotion and other incentive policies.

▮   Whenever possible, plan these incentives in such a way that they benefit a worker's entire family. For instance, reward outstanding performers with a free weekend stay at the hotel for them and their families, as true guests, or enter into exchange agreements with other hotels.

▮   Find out about legal provisions concerning hiring staff. Give your employees the rights and duties conferred on them by the law.

▮   Get information on and join comittees or programs concerned withchildren's advocacy, the fight against commercial sexual exploitation, drugs, etc. Remember that your business is in or near a community, and social problems in that community sooner or later will also affect your guests.

▮   Make an effort to hire local suppliers of goods and services, and develop lasting relationships with them. For instance, display locally-made products in your souvenir shop, and also use them for decoration.

▌ Ask your customers about local supplier quality and how supplier services can be improved or enhanced. Provide your suppliers with this information for them to implement continuous improvement.

▌ Encourage or promote organic production of fruits, vegetables, meats, and other consumer products. To this end, use them in your own company, and encourage your collegues to do the same, thus increasing local demand.

▌ To the extent possible, help them design their promotional materials.

▌ Share this information with your staff so they can promote community projects and activities.

▌ Encourage the sales of locally-produced products and handicrafts, provided they are allowed by law. Such goods may be made of as coconut, certified tropical woods, corn husks and other natural fibers, etc.

▌ Encourage your staff to support local health initiatives and to fight undesirable activities such as sexual exploitation, drug dealing and abuse, etc.

2.3 Preservation and Protection of Historical-Cultural Heritage

2.3.1 CONCEPTS[50]

Archaeological Heritage:

This includes structures and artefacts of all kinds from any era likely to be studied through archaelogical methods, regardless of their being found above ground, buried, or underwater, as well as geological and paleontological elements related to human history, origins, background, and development.

Archaeological heritage can also be viewed as a source of collective memory and a historical-scientific study tool. In this view, all vestiges, goods, and other traces of past human existence are considered to be archaelogical heritage elements, provided that: i) their conservation and study make it possible to reconstruct the development of human history and human relationships with the environment; and ii) the main sources of information are excavations or discoveries, as well as other research methods applicable to humankind and its environment.

Heritage is said to encompass assemblages of pieces, works, or objects which are collected, gathered, and preserved by museums or collectors for their potential value, as well as architectural sites and their elements.

Architectural Heritage:

▌ Monuments: all buildings and structures of outstanding value because of their historical, archaelogical, artistic, scientific, social, or technical interest, including facilities with decorative elements that have become an integral part of them.

▌ Complexes: homogeneous groups of urban or rural constructions remarkable for their historical, archaelogical, artistic, scientific, social, or technical interest, and sufficiently coherent to form noteworthy and invaluble topographical sites.

Living Heritage:

This comprises the full array of creations issuing from a cultural community, based on tradition and expressed by groups or individuals. They notably respond to community expectations concerning their cultural and social expression. Norms and values are transmitted orally by imitation or otherwise, and

their manifestations include language, literature, music, dance, games, mythology, rites, customs, artisanry, architecture, and other arts.

Cultural and Natural Heritage:

According to the UN Convention Concerning the Protection of the World's Cultural and Natural Heritage, the following are included:

> *"monuments: architectural works, monumental sculptural and painted works, elements or structures of an archaelogical nature, inscriptions, cave dwellings and combinations of features, all of which are of outstanding universal value from the point of view of history, art or science;*
>
> *groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;*
>
> *sites: manmade works or the combined works of nature and mankind, and areas including archaelogical sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.*

natural features: consisting of physical or biological formations, or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science and conservation; natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty."

2.3.2   IMPORTANCE[51]

Enriching and enhancing the value of cultural heritage, or putting it to social use, is achieved by placing it under objective and environmentally controlled conditions that highlight its characteristics and make the best use of it, without detracting from its nature. Such enhancement seeks to increase public interest in heritage, while taking into account associated economic benefits. The idea is to make productive use of an untapped cultural assets and wealth that, far from losing relevance, is enhanced in the shift from being the exclusive domain of a small minority of academics to being widely known and enjoyed by the majority of the general population.

The aim is to encourage the development of social awareness in favor of cultural heritage conservation and advocacy, and to

promote community access to and the public use and enjoyment of the outward manifestations of heritage, while contributing to economic development. This is meant to ensure heritage sustainability through use, as a consequence of its enhanced value and the optimal investment of human and institutional resources.

Heritage enhancement is based on a dissemination effort focused on knowing, understanding, and interpreting the unique elements of various aspects of heritage (values, wealth, diversity, and characteristics) making them more accessible to communities and even putting them to controlled socioeconomic use.

Responsible tourism companies should be an integral part of their socioeconomic environments, and foster their development by supporting and disseminating truthful information on cultural heritage values and elements.

2.3.3　BASIC PRINCIPLES

▪ Adopting and implementing specific policies to protect the historical and cultural heritage of visited sites.

▪ Refraining from selling, dealing in, or exhibiting archaelogical artifacts, unless the corresponding permits have been issued.

2.3.4　PRACTICAL TIPS

▌ Start by getting to know more about your environment by browsing through local libraries and on the Internet, and by contacting those people who have lived longest in the community; they can tell you about local history and customs.

▌ Make sure to display this information, either as part of the decor at your facilities (for instance, showing properly captioned old photographs) or through promotional materials, provided the community deems it appropriate.

▌ If there is an older person in the community with story-telling skills, invite him or her to give occasional talks.

▌ Always be sure to respect and cite information sources and provide only reliable information, and have clear and legible copies of printed materials.

▌ Try contacting universities and organizations working for cultural preservation, and ask them for advice.

Bartering is usually a good way of getting help without necessarily spending money. For instance, if there is a researcher working in the area, you could give him or her free room and board.

▌ Contact local cultural heritage preservation organizations or talk to your neighbors about the possibility of creating one, if there are none.

▌ Seek help from educational organizations or institutions to channel technical assistance to existing or potential organizations.

▌ Make your facilities or other resources available to support the work of local organizations involved in culture preservation and promotion.

▌ The contribution of a sustainable tourism business to cultural development becomes more evident and necessary where indigenous cultures or vestiges of them are found in the surrounding areas. In this case, follow these practical tips:

◗ Above all, respect the rights, values, and customs of indigenous cultures, as well as the self-determination principle.

◗ Just as with your private property, indigenous lands are inalienable, and you must request permission to visit them.

◗ Become an ally of indigenous cultures in order to safeguard their heritage. Ask your staff and guests not to take part in the illegal marketing and purchase of cultural goods.

◗ A major responsibility of a sustainable tourism business is to promote and disseminate cultural values, particularly indigenous values, but you should first talk with the community about the best ways of doing so.

◗ Find and channel assistance from organizations which specialize in the subject, since poor use of sociocultural resources may lead to their being lost or spoiled.

◗ When cultural heritage is an important part of the attractions you are promoting, make sure its guardians (whether organizations or communities) also enjoy the benefits from tourist activities. Consistently observe the principle of fair compensation and equity.

2.4 Respect for Local Cultures and Communities
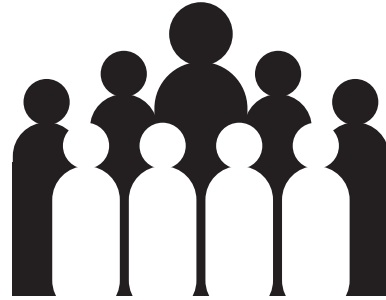
2.4.1 CONCEPTS[52]

Local communities vary in size, composition, structure, and organization. Some are defined by administrative boundaries, while others emerge from a shared culture and history. They always reflect in some way the neighborhoods where people live. In broad terms, a local community includes the territorial jurisdiction of local government but is not limited to it. Schools, businesses, cultural organizations, religious groups, and sports-related associations all make essential contributions to local community social capital and functional health.

From a sustainable development perspective, government programs are implemented at the local community level. This is also the level where individuals can typically become more involved and exert more influence.

Indigenous or aboriginal communities are those that were dwelling on their land before colonizers came from abroad and – through conquest, occupation, settling, or other means– became the dominant group which now segregates or discriminates against original inhabitants. Every time neighboring conquering peoples have expanded their territories, or when colonizers have come from far-away lands, indigenous cultures and livelihoods have been endangered. While these threats have evolved over the years, they have not disappeared, and thus autochthonous peoples are among the most disadvantaged groups in the world.

2.4.2 IMPORTANCE

As has been noted, responsible tourism companies should become an integral part of their socioeconomic environments, and foster their cultural development by supporting and distributing reliable information on community values and projects. Similarly, the commitment of a business is strengthened by disseminating such sustainability efforts.

2.4.3 BASIC PRINCIPLES

■ Business operations must not hinder the provision of basic services to neighboring communities.

■ Specific actions meed top be undertaken in order to promote an understanding of and respect for indigenous cultures and customs.

2.4.4 PRACTICAL TIPS

▍ Let your neighbors and community organizations know about your willingness to provide information to your customers, so they can get involved in and contribute to community projects or activities. Include a bulletin board on the premises of your facilities where they can post culturally-related notices.

▍ Include cultural information in your promotional materials

▍ Promote the sale of all local sustainable souvenirs and handicrafts which are allowed by law.

▍ Ask the community which cultural activities they are willing to share with tourists.

▍ Above all, respect their decisions and do not try to impose tourist presence where it is not welcome.

▍ Remember that communities (particularly rural ones) must be trained to welcome and manage tourism. This is a way of preventing the many negative impacts often associated with tourism, such as commercial sexual exploitation of both children and adults, drug addiction, the loss of values and customs, an increased crime rate, real estate speculation and excessive land costs, etc.

▍ If the community is willing to participate in tourism development, take advantage of your position and influence as a businessperson to procure technical resources, to provide or facilitate training, and to promote such activities.

**Which are the Subexecuting Agencies
in the Best Practices Project?**

ASEC, Ecuador

The Ecuadoran Ecotourism Association (ASEC is its Spanish acronym) is a non-profit organization which mainly focuses on supporting sustainable tourism development in the country and its members, in order for ecotourism to take place responsibly and under the most stringent standards for operators and visitors. Compliance with these norms should ensure the tourist industry's sustainable development, while keeping local cultures unaltered and protecting the environment within a framework of social equity and justice.

The ASEC was founded in 1991 by a group of businesspeople, conservationists, and college professors with a clear vision of ecotourism development in Ecuador and the world.

ASEC's mission is promoting harmony among tourism, conservation, and society. One of ASEC's main objectives consists of developing useful tools to support member development and tourism's sustainable development. For the time being, ASEC has 77 members, including:

- Private operators
- Community operators
- Local and indigenous communities
- Universities
- Hotel and tourism technical institutes
- Ecotourism student associations
- Local governments and the Ministry of Tourism
- NGO s
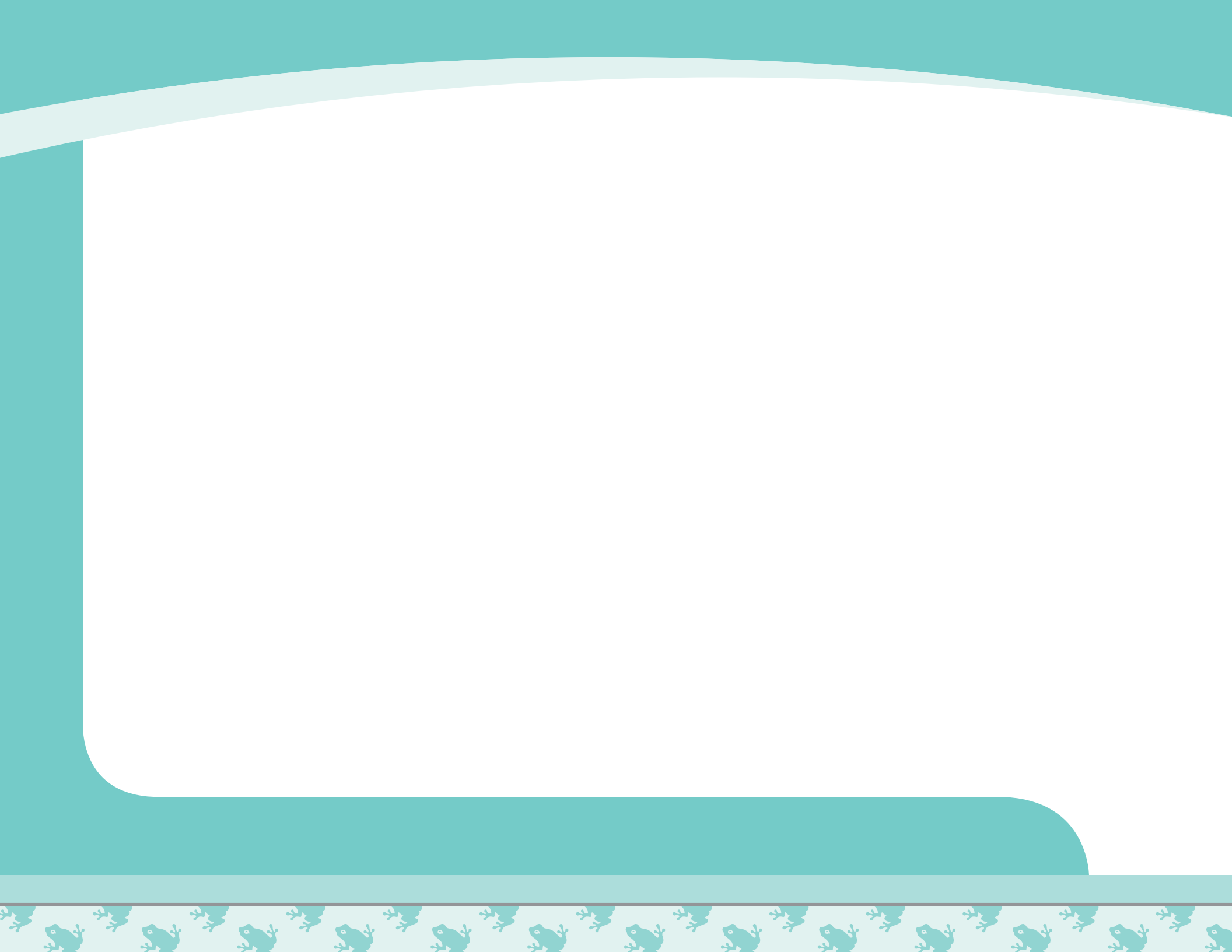- Individuals connected with the activity
- Hotels and inns

**For more information, visit ASEC's website,
http://www.ecoturismo.org.ec/**

Asociación Ecuatoriana de Ecoturismo ASEC

3. Economic

3.1 Policies and Planning

3.1.1 CONCEPTS

Action Plans:[53]

These documents are properly structured and included as part of a company's strategic planning with the purpose of "crystallizing" preestablished strategic objectives, as well as providing them with quantitative and verifiable features throughout the project.

Specific tasks designed to help attain higher objectives are typically arranged in said plans within a defined framework of time and delegated responsibilities.

All action plans have a "customized" structure for each task, i.e., every administrator develops his/her own action plan to meet his/her needs and goals, depending on objectives and available resources.

Despite the above, we can still define a framework with general guidelines to develop an effective action plan:

    a. Executive Presentation of the Plan
       (Executive Summary)
    b. Defining Plan Objectives

    c. Defining Main Action lines
    d. Establishing General Reporting Relationships
    e. Activity Timetable
    f. Responsibilities and Support
    g. Supervision
    h. Strategic Decisions
    i. Dissemination
    j. Updates

a. Executive Presentation of the Plan

This is an executive summary submitted to a decision maker with the purpose of placing project top executives in the overall context and providing them with a management and performance measuring tool.
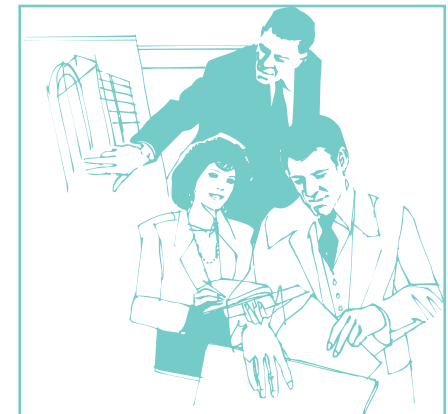
b. Defining Plan Objectives

These objectives are not the same as business strategic objectives, but should be related in some clear way to the higher objectives and contribute to reach them.

c.   Defining Main Action Lines

Here is where the action plan's major areas, fields, or subjects are more specifically outlined, that is to say, where we concretely define which area(s) will be influenced by the plan's implementation.

Each line's definition will be quite different for every business, since a company focuses on specific service areas within its environment.

d.   Establishing General Reporting Relationships

An action plan is required to specifically deal with the reporting relationships or hierarchical levels involved in complying with such a plan, in order to assign responsibilities to attain the proposed goals.

An action plan failing to define main actors will not get commitment from anyone, and therefore, a) seriously lowers the probabilities of success, and b) cannot be used as a tool in measuring management performance.

e.   Activity Timetable

Every action plan contains a detailed timetable of activities listing the main tasks and assignments, as well as their deadlines.

A timetable should be as detailed as possible, but it must be presented in an orderly fashion following the deductive method of information and learning assimilation, i.e., going from higher objectives down to main activities, and then to specific activities, responsibilities, supervision, and definition of measurable performance indicators.

f.   Responsibilities and Support

An action plan is not complete if it only defines who will be responsible for implementing proposed activities. It should also clearly establish the resources needed to support compliance with the plan, and how these resources will be secured.

Resources can be material, economic, human, legal etc.

g.   Supervision

A more appropriate term here would be "follow-up." An action plan should not only show measurable performance indicators, but also designate the person responsible for carrying out the follow-up tasks.

This has far-reaching importance in project implementation, since it guides decision makers or main players –committed to strategic planning– in making timely decisions to fine-tune the plan or reshuffle positions when it is still "timely" to do so, without sacrificing long-range objectives and resources and harming the company's or institution's economic capacity.

h.   Strategic Decisions

Decisions should be made in a "timely" fashion, as mentioned above, but this does not mean they should be taken without support to protect and back up the decision makers and others involved in the process.

That is to say, an optimal plan should define the entities to be consulted by decision makers before fine-tuning or adjusting plans. In other words, it is highly advisable for the business to establish such bodies as committees, assemblies, or any other deliberative body to provide decision makers with legal support.

i.   Dissemination

The plan should define dissemination arrangements or strategies in making the plan known to all involved through a schedule of visits addressed to plan implementers.

j.   Updates

The plan should also articulate the way in which updates will be carried out as a result of any kind of adjustments emerging during plan implementation.

Environmental Management:

This is a continuous process of technical, administrative, and political actions meant to optimize and balance environmental protection, public use, and economic development in such a way that environmental equity leads to the highest possible standard of living, all within the complex economic and social relationships conditioning said objective (Ortega y Rodríguez, 1994).

Management implies, then, reaching a consensus, while securing and coordinating resources to attain particular objectives. Moreover, it means organizing public and private actions in order to bring about comprehensive and participatory solutions to environmental problems.

Environmental management should be an integral part of administration, based on proactive instead of reactive measures, and have policies and programs with built-in objectives for the conservation of environmental quality.[54]

This aspect acknowledges a company's efforts to include environmental issues within its policies, plans, and programs. That is, it values a business that has environmental responsibility explicitly built in as part of management. All planning levels, from the mission statement to basic record-keeping, are taken into account here.

3.1.2   IMPORTANCE

Every human activity performed in a natural environment causes impact. The challenge faced by a sustainable tourism business is to identify them and try to minimize them, or even better, to eliminate them altogether.

The development of policies, plans, and programs shows that the realm of environmental issues is taken seriously by the company, while record-keeping insures action ongoing follow-up.

3.1.3   BASIC PRINCIPLES

■ Pursuing a sustainability policy that encompasses environmental, sociocultural, and service quality aspects.

■ Making company sustainability policy known to guests, employees, and owners.

■ Complying with laws, norms, regulations, etc. that protect animals and plants, air quality, etc.

■ Complying with laws, norms, regulations, etc. that protect the historical and cultural heritage, etc.

3.1.4   PRACTICAL TIPS

▌ The first step in planning any activity is to analyze your current situation: Where am I, and where do I want to go? Start by gathering all the information you can.

▌ Become aware of where you are, and how and why you got there. Is your business truly what you had expected, or are there things that you wish to improve? Where do you want to go what is your dream or ideal? Why do you want to go there? The answer to the first question will give you your company's vision; the answer to the second question is your mission, that is, your company's reason for operating. Mission and Vision are two starting points. Talk to your staff, partners, and contributors. Remember that the company is not just you, even if it belongs to you; you will need help from others to make it successful. Besides, if you involve other people from the very beginning, they will identify with your goals and purposes, instead of viewing them as just one more "obligation" to be fulfilled.

▌ Once you know where you are and where you want to go, you need to define the following steps: How will I get there? All of this should be consistent with goals and objectives, which include steps to follow and strategies. Other aspects to consider include who the persons in charge are, and what the timetable and budget costs will be. These are the basic elements in any planning process.

▌ There may be variations in type or complexity, or even in the sequence or issues to be included, but if you find answers to these basic questions you will stay on the right track.

▌ Every best practice application process requires the existence of written policies, plans or programs, and records. Your sustainability policy should at least include waste management, water, and energy saving programs, as well as community support and resource conservation. In developing these programs you should start by gaining an in-depth knowledge of how each and every area of your business operates. Talk with your floor staff and with the heads of every section, and carefully note how your company is currently operating.

▌ Putting your sustainability policy in writing is extremely important.

▌ Keep as many records as possible: receipts and purchase invoices sorted by date and operating area, control slips, customer surveys, etc. Gather all the information possible, but above, all sort and summarize it to then be able to analyze what this information reveals.

▌ If you already have written records, analyze them to arrive at conclusions.

▌ Meet periodically with your staff, and identify the areas where you can start saving and how.

▌ Set attainable goals starting with simple things that you can really achieve. Progressively increase the requirement level, and you will get short-, medium-, and long-term goals.

▌ Establish goal deadlines and monitor current compliance. There is no use in setting deadlines means are lacking to ensure that they are being met.

▌ Appoint a lead person responsible for your sustainability policy, and delegate the authority needed to carry out his/her responsibilities.

▌ Also appoint people responsible for each operating area.

▌ Periodically monitor achievements, and find out what obstacles or limitations have been encountered.

▌ Remember that plans and programs are just guides that can be revised if there are good reasons for doing so.

▌ Reward goal and objective achievements, as well as employee initiative, creativity, and commitment.

▌ Be sure ALL staff members know and understand everything from the company mission to specific plans. Make this a required subject in your new employee orientation processes. If you do not have a new employee orientation process, design one accordingly.

▌ Periodically check all your policies, plans, programs, and records. Even your mission and vision should be checked from time to time. Remember that both your company and its environment evolve and change, and sometimes adjustments are needed.

▌ Commission one or more persons to periodically review, process, and analyze all the information they gather. Information piled up in a file cabinet drawer is totally useless if it is not analyzed. The idea is not to pointlessly accumulate papers, but to take the pulse of your day-to-day operations. To illustrate, changes

in water consumption records could indicate there might be a serious leak somewhere.

▌ Develop an action plan for each area. After analyzing the data, you must take corrective, maintenance, or improvement actions.

Some Policy Examples

▌ Visitor satisfaction is promoted through overall quality and customer service policies, which should be stated in writing and known by the staff.

▌ Facilities and equipment maintenance tasks follow a comprehensive plan, making the best use of available resources (staff, goods, etc.). Preventive maintenance should be seen not only as an investment but also as a way of assuring customer service quality.

▌ Procurement and handling of products required for operations (cleaning materials, food, paper supplies, fuels, etc.) will follow a defined policy which precludes the purchase of hazardous, harmful, non-reusable, non-recyclable, or other similar products.

▌ A single written policy should regulate all commercial relationships and dealings.

▋ You can develop several smaller plans (energy and water saving, etc.) or just one comprehensive plan or program covering all your company's sustainability policies, as well as your business relations with neighboring communities and protected areas.
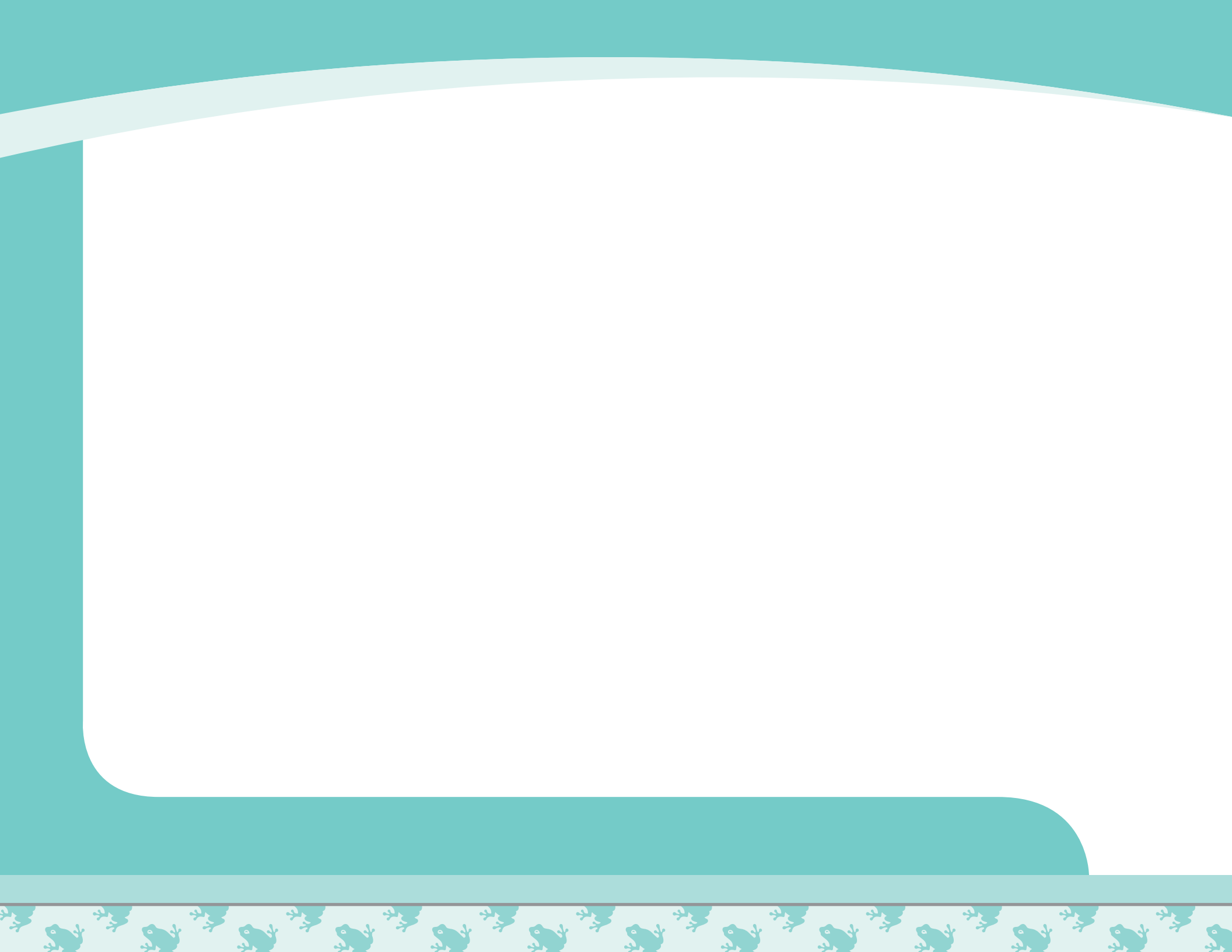
Points that Every Plan and/or Program Should Consider

▋ Objectives, goals, and activities for the year: What are you going to do?.

▋ Tools and materials needed to carry out the work plan with suggested priorities: What do you need to implement your plans?

▋ Staff required, with suggested training levels and responsibilities assigned: Who will be in charge of each activity?

▋ A budget summarizing all the costs of each activity cost

▋ Assistance required from other programs or departments

▋ A timetable showing a schedule of all activities and the workload distribution throughout the year

▋ Establishing a new employee orientation process, and including in their initial training everything dealing with company sustainability policies.

▋ Holding periodic meetings with all your staff, for instance, once a month, including sustainability plan progress and limitations on the agenda, and checking compliance with policies.

▋ Instructing your staff to make an everyday practice of implementing company sustainability policies, and taking pride in explaining to guests what they do and why they do it. Staff commitment is the best way of making their performance known among customers.

▋ Distributing printed material in guest rooms, hallways, the restaurant or dining area, etc. telling guests about your actions.

▋ Placing a bulletin board in a prominent spot, and displaying up-to-date information on how to contribute to conservation, your company's specific achievements, etc.

▋ Identifying action areas, and putting a monitoring plan on file.

▋ Putting all actions to abate or eliminate impact in writing; to do so, follow these recommendations:

◗ Identify environmental impacts on vegetation, animals, soil, and people's health. which are caused by building and facilities construction, hotel operations, and tours or other activities.

◗ Design forms to keep a periodic and detailed record of impact (this is known as "monitoring").

◗ Designate people responsible for monitoring impacts.

◗ Establish the frequency with which entries should be recorded.

◗ Process and analyze gathered data.

◗ Based on this information, set short-, medium-, and long-term goals.

◗ Control proposed goal achievement.

▋ Design record forms that are easy to use and interpret.

▋ If possible, create spreadsheets to keep records up to date, and in order to process information more easily.

▋ Use charts to facilitate data interpretation.

▋ Keep long-term records of your data to determine performance in each area, and measure progress with real figures.

▋ Quantify your progress.

▋ Print forms on on the blank side of used sheets of paper; this way you will reduce paper consumption and tree destruction.

▋ Find out if there are environmentalist organizations near your hotel, and what they do.

▋ Determine which organizations you could work with, and contact them to offer your help.

▋ Jointly define specific actions to be taken with them.

▋ If there are no nearby organizations, talk to your neighbors about the possibility of creating one.

▋ Identify major environmental issues in the community, and actively work to address them.

▋ Ask your operating personnel and area heads what they think about further possibilities for the sustainability program.

▋ Involve your staff for them to assume ownership of concepts and transmit them properly.

▐ All your employees should know both the business and your sustainability policy. Develop an orientation program for the entire staff. This program will deal with the company's mission and philosophy, the types of guests who visit, jobs and functions, policies, programs, and activities involved.

▐ Reward the employee who performs best in the sustainability program (i.e., the one who implements it most creatively).

▐ If your company has several different positions, train your staff to follow the sustainability policy while carrying out the tasks for each job.

▐ If there is an employee association or the like, propose that they manage recyclable waste so they can keep the profits. You can also make this offer to local development associations or other similar groups.

▐ Schedule periodic meetings to assess, report on progress, and discuss new ideas for the sustainability program.

3.2 Administration and Planning

3.2.1 CONCEPTS

An economic business or organization is a unit that produces goods and services through a combination of labor, capital, and other resources.[55]

Any company's general operating purpose is to "create economic value," and that is the ultimate overall goal of every management decision. Poor decisions destroy value, and this is even more noticeable in smaller organizations with less cummulative capacity to withstand economic losses. Good value-creating businesses are the result of suitable decisions on the efficient and effective use of resources and capacities.

Management decisions may be classified according to two categories: planning decisions, and management control decisions. Currently, planning and control functions are closely related, due to the cyclical nature of environmental dynamic processes and organizational adaptive process. Management control decisions are midway between planning decisions and operations control decisions.

Strategy development requires creativity and innovation, and is the result of analyzing environmental threats and opportunities. Therefore, strategy development should be tailored to the unique conditions in each case.

Management control decisions are contained in a shorter range and more specific action plan, in which concrete problems must be solved in a briefer response time. A corrective action plan to solve a problem requires specifying indicators and goals, in addition to measuring, analyzing, and diagnosing the problem's cause, and then choosing an adequate corrective action from a set of alternatives.

A Management Control System is aimed at making sure people in the organization implement the strategies defined by executives, aligning specific objectives of each individual with organizational objectives. Every person's goals for each indicator are negotiated with his/her superior (goals are not predetermined).

Strategic Planning is the process whereby an organization faces opportunities and threats from the environment by making use of its capacities and resources to create sustainable competitive advantages. The main components in this process are:

◗ Vision
◗ Mission
◗ Philosophy
◗ Strategies
◗ Objectives
◗ Goals
◗ Policies
◗ Programs
◗ Procedures
◗ Rules
◗ Budgets
◗ Business units
◗ Business unit integration (both horizontal and vertical to gain synergy)
◗ Portfolio management (resources for each business)

3.2.2 IMPORTANCE

A key element to succeed in programs and projects concerning ecotourism in protected wildlands is their ability to help generate income and financial self-sufficiency in the area.

3.2.3 BASIC PRINCIPLES

■ Establishing programs and mechanisms to foster participatory processes in company management and operation.

■ Having clearly established mechanisms and procedures in place for reservations, accounting, marketing, and administration.

■ Favoring permanent contracts, rather than temporary labor.
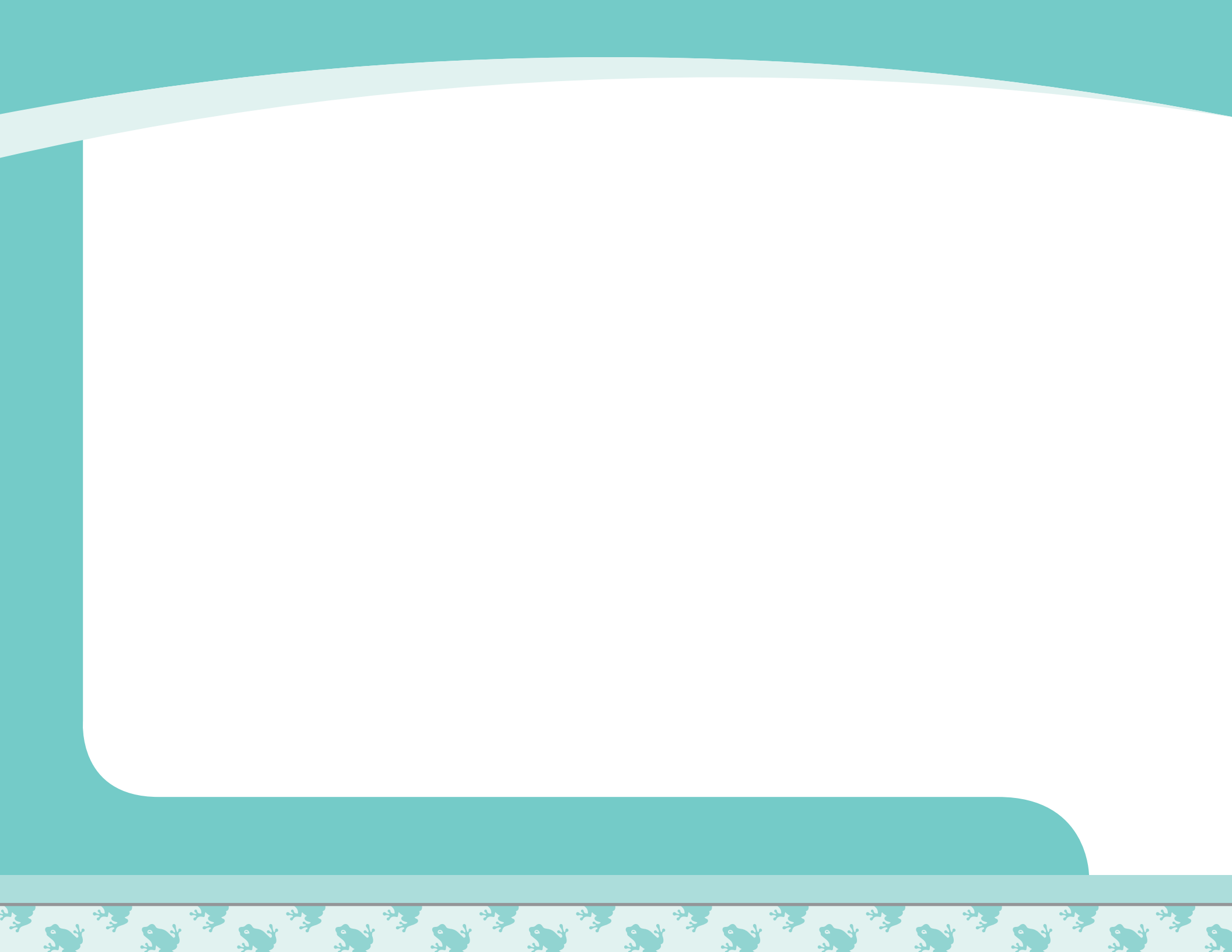
■ Paying workers a fair wage.

3.2.4 PRACTICAL TIPS

▌ Have a flexible and effective administrative structure to face service demands from operations.

▌ Have assigned and trained staff in charge of the following ecotourism operating areas:

◗ Accounting and financial issues: asset management which includes exchange rates and procedures foreign currencies, checks, etc.; cash management (bank deposits, petty cash management, hotel safe, etc.); trade relations management (payments to suppliers, collection of franchise fees, trust management, endowment funds, etc.); other services (credit card payments, revenue cross checks, handling donations, etc).

◗ Marketing (promotion and advertising): management of trade relations with tour operators, new product and service development, ecotourist demand monitoring and control, market information system management, promotional tasks for the area, special event management, and public relations, etc.

◗ Human resource management: staff recruitment and hiring, schedules and working shift management, job duties, holidays and vacation time, performance control, incentives, etc.

3.3 Laws and Regulations

3.3.1 CONCEPTS

Law[56]

A body of norms or rules established by the public authority, with the constitution being the fundamental law. As a norm or rule, a law is made up of two parts: the specific statute, i.e., what has to be done, and the legal consequence or penalty of not doing what should be done.

Characteristics of the Law:

▌ It governs human conduct in the society where people live.

▌ It is binding and applies to all inhabitants in a country.

▌ All inhabitants are required to abide by the law, and they may not claim ignorance of the law to justify their noncompliance.

▌ The law does not refer to any particular person, but to all inhabitants found in the regulated situations.

Regulations[57]

An orderly collection of rules or stipulations given by the invested authority to enforce a law or to govern a corporation, agency, or service.

General rules of law, overridden by the corresponding law, and issued by an administrative authority.

3.3.2 IMPORTANCE

Respect for current laws and regulations on labor, environment, safety and other issues is a fundamental pillar of every sustainable tourist business. For instance, hiring illegal aliens or contracting persons to work in subhuman conditions is entirely unacceptable.

3.3.3 BASIC PRINCIPLES

▌ Labor legislation (both domestic and international) and social guarantees must be observed.

▌ Laws, norms, regulations, etc. for the protection of animals, plants, air quality, etc. must be observed.

▌ Laws, norms, regulations, etc. for the protection of historical and cultural heritage must be observed.

3.3.4 PRACTICAL TIPS

▮ If at all possible, get advice on which laws and regulations affect your company; for example, seek this counseling at the ministries of labor, health, economy, etc.

▮ Also get information on the main laws, regulations, or conventions governing quality of life, wildlife protection, historical and cultural heritage preservation, etc.

▮ In addition, ask officials from nearby protected areas about their regulations concerning facilities use, closed seasons, etc.

▮ Brief your staff and customers on the main legal issues or regulations they should observe.

▮ If possible, schedule talks to be given by professionals about pertinent legal matters. These presentations will be for your employees.

▮ Comply with the legislation currently in force in your area. Failure to comply with laws and regulations may result in serious consequences for you and your employees; in some cases, such non-compliance may lead to business shutdown, fines, or even imprisonement.

3.4 Quality

3.4.1 CONCEPTS[58]

Service Companies

A service company bent on satisfying customers is based on service standards which customer satisfaction can be measured against, after ascertaining customer needs and expectations.

Carrying out a supply and demand analysis is the first step to be taken, by answering the following questions:

- What kind of clients do we want to satisfy?
- Which need do we want to satisfy for them?
- How do we design a service delivery system to satisfy them?

Good quality has two positive impacts on company finance: higher income from satisfied customers and lower costs from having a better organized system.

Differentiating between customer expectations and perceptions is important. The former are customer wishes, needs, or requirements, and can be divided in two types: basic and secondary. Basic expectations are predetermined by the kind of product or service provided. Secondary expectations concern products and services complementing the basic service. In the case of a restaurant –regardless of the type of food served– patrons might require a varied menu, prompt service, adequate food temperature, good presentation, etc.

Basic expectations are conditioned by the company itself, which defines the type of business it will operate. Secondary expectations vary according to customer profile: age, gender, educational background, income level, experience, etc.

On the other hand, perception is customers' "image" of the business, based on previous experiences they have had with similar service providers.

Figure No. 1
The Quality Assurance

Quality Design

Quality Improvement   **Quality Control**
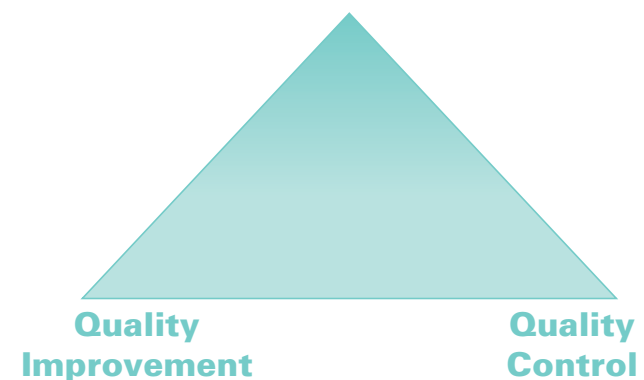
A service business needs to develop human resource policies and practices in order to hire committed and responsible people who will share company interests at all levels. Employee training and development is an area you must invest in, and is a means to achieve more competitive and professional performance. On top of educating and motivating employees, training sessions usually provide a context in which employees become committed to the company and to their own customer service expectations and perceptions.

Good quality requires:

■ A customer-focused perspective to help define quality and to set objectives and standards in programs.

■ A series of administrative principles requiring participatory, collaborative, and informed decision making, and which focuses on systems and processes to support and empower staff.

■ Methodology for developing, maintaining, and advancing good quality services by encompassing the three points of the quality assurance triangle: design, control, and improvement.

The "Product" in Service Companies

This refers to a package of goods and services delivered in a particular environment that may be perceived differently by buyer and seller. It is made up of 4 elements or characteristics:

1. Support facilities: Facilities where the service is provided (buildings, equipment, workshops, grounds, etc.).

2. Enabling goods: Materials purchased or consumed by customers (beverages, food, medication, etc.).

3. Explicit services: Easily identifiable services experienced through the senses in capturing their essential traits (food taste and aroma, pleasant view, ambient music, etc.).

4. Implicit services: These are services of a psychological nature which consumers might vaguely experience (the status of being alumni of a particular university, the feeling of well-being after eating at a good restaurant, etc.).

These four characteristics are experienced by customers, either as a whole or independently, and influence their assessment and perception of quality and service. Priotitizing or separating these elements in a quality system design is not possible. The first three are easily identifiable, but implicit services could be the ones that have the most weight in a customer's rating of the company.

Therefore, the input-process and output-interaction relationship is what characterizes service company operations. Consequently, care must be taken with supplier relations to make sure their products and/or services are in line with the company's system; in particular, such issues as product intangibility, perishability, and variability merit special attention, as well as the simultaneous nature of service "production" and consumption.

Services are perishable; you cannot create a service inventory as you do with merchandise. Customers demand service at their discretion, according to their needs and preferences; but if they do not consume the service, there is no way to store it.

A customer's impression of the quality of a service which is provided depends on the entire experience. Employee attitudes, facilities, and comfort are, among others, elements having a direct impact on quality perception.

SELF-REGULATED QUALITY SYSTEM FOR TOURIST SERVICES

The Self-Regulated Quality System is a process involving several stages and activities to provide companies of varying sizes with criteria and tools to carry out their own quality control in order to ensure efficient service delivery for customer satisfaction and fulfillment of their own expectations.

The system responds to companies' need to have their own quality controls tailored to their real needs and constraints, so

they can be more competitive and operate independently of outside organizational supervision.

Quality is what happens when customer satisfaction is achieved, when customer expectations are met, when the tourist product provided is authentic, honest, and in line with price and with customer interests.

This is known as Self-Regulated Quality because is not externally imposed, but rather the result of a close relationship between businesspeople and their customers. The importance of this system lies in the shift from an oral to a written culture, where there is a clear specification of work procedures, responsibilities for given areas, quality commitments, product and service technical specifications, monitoring and testing methods, and customer service records.

Figura No. 3
Sistema Autorregulado de Calidad

TURISTA

SISTEMA AUTORREGULADO DE CONTROL DE CALIDAD

SERVICIOS TURISTICOS
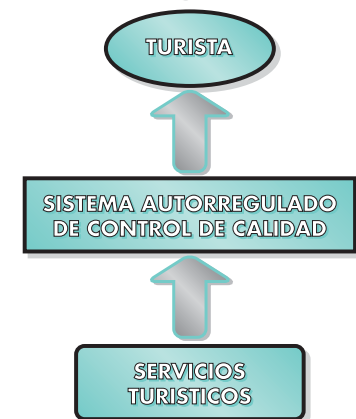
System Stages

The system's design has four phases or stages:

1. **Rating:** An assessment of company service quality level that requires:

   ▌ A definition of rating criteria agreed upon by members providing the same type of products and/or services.

   ▌ Adoption of quality criteria considered to be the most appropriate for products and/or services delivered, and their respective importance.

   ▌ Development of a self-evaluation form containing the criteria and their importance or relative weights.

2. **Improvement:** Companies that do not score the minimum rating have the option of improving their service quality levels through:

   ▌ Identification of areas in need of improvement.

   ▌ An improvement plan, with detailed activities, anticipated outcomes, and clear deadlines.

3. **Control:** In ensuring service quality, a monitoring system is needed to check compliance and maintain standards achieved and the needed improvements.
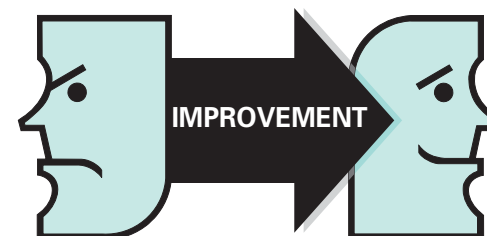
IMPROVEMENT

4. **Adjustment:** The company should periodically revise its criteria to tailor them according to new characteristics or aspects of services demanded by customers.

What Should Be Done to Improve the Quality of a Process or Product?

a) First think about satisfying customer needs and requirements.

b) Achieve quality improvement by getting rid of the causes of system problems, which will result in enhanced productivity.

c) Keep in mind that the worker performing a job is the person with the best knowledge about the position and its duties or tasks.

d) Assume that everybody wants to become involved in the organization and perform well on the job.

3.4.2 IMPORTANCE[59]

In recent years, tourist industry growth in Latin America has been significant, particularly in the ecotourism and sustainable tourism segments.

This growth in tourist demand has provided families, rural communities, and organized groups in the region with new opportunities to engage in economic activities. It has also led, however, to unfair competition, mostly among small and medium businesses, which has affected tourist service quality and thus decreased income from tourism.

By and large, government and tourism authorities watch over compliance with fiscal, labor, and environmental legislation and regulations. Similarly, they register and rank –usually with the star system– businesses that provide lodging and other tourist services. It is worth clarifying that the star-ranking system does not evaluate the quality of services provided, but is limited to facilities and instalations.

Traditionally, service companies have followed a model based on long-standing manufacturing principles which was successful at the time. Today, however, it is obsolete and has become a threat to business survival, since it leads to a decline in service quality. The symptoms of such a decline include customer loss of confidence and subsequent disloyalty, high personnel turnover, decreased sales, low productivity, and high operating costs.

Currently, both large and small service companies have turned around from the "failure cycle." For years, customers had no choice but to accept the poor performance and quality found in almost every company. Nowadays, with the globalized marketplace and increasing competition, customers have a number of choices available to them before having to decide on one. Pressure for good performance and high quality are increasingly stronger, and if a company does not meet customer expectations, one of its closest competitors will.

Being a quality service organization is not an easy task, but if you want to become a successful business or continue to operate as one, you must find a system that makes your enterprise competitive.

3.4.3 BASIC PRINCIPLES

■ Adopting the necessary measures to ensure the quality of products and services provided to customers and intermediaries.

■ Installing a preventive maintenance program for all facilities, vehicles, and equipment.

3.4.4 PRACTICAL TIPS

▋ Every person wants to be an important contributor to the organization.

▋ In improving a system, it is best to work in teams, rather than individually. A structured problem-solving process aided by graphic techniques leads to better results than a non-structured one.

▋ Improving product or service offering to customers is possible through a quality assurance system that meets all or some of the requirements of a particular system or methodology, such as Self-Regulated Management. In order to compete with other suppliers and service providers, we need to offer more assurances to our potential customers, in terms of costs, delivery times, and post-sales service. This is why quality system elements are good indicators that we are on the right track to quality.

▋ Should you be interested in outsourcing a portion of your operating processes, either because it is more profitable or because it offers a particular advantage, find a reliable supplier and establish a long-term business relationship, making sure this supplier's product and service quality levels are compatible with yours.

▋ Develop quality manuals that:
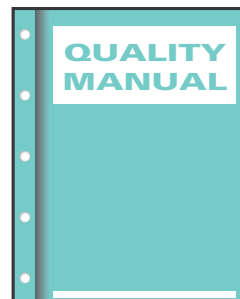
a)   Say what has to be done.

b)   Make it possible to carry out actions.

c)   Demonstrate the effectiveness a measures taken to ensure quality.

d)   Make the changes needed to attain effectiveness.

e) Avoid changing procedures and documents without authorization from those in charge.

f) Keep employees posted as to their activities and responsibilities.

g) Tell your customers about company goals and your commitment to quality.

h) Help auditors assess system effectiveness in meeting established quality requirements.

▋ Define the company mission and quantitative and qualitative goals. Maintain and long-term vision to channel organization energies and potentials towards particular objectives.

▋ Take stock of organizational strengths and weaknesses in terms of resources, in order to make the best use of company potential.

▌ Involve all members of the organization in the quality policy, and encourage the building of work teams that take responsibility for documenting the quality assurance system.

▌ Carry out an ongoing evaluation of issues related to quality, and determine the necessary corrective and preventive actions.
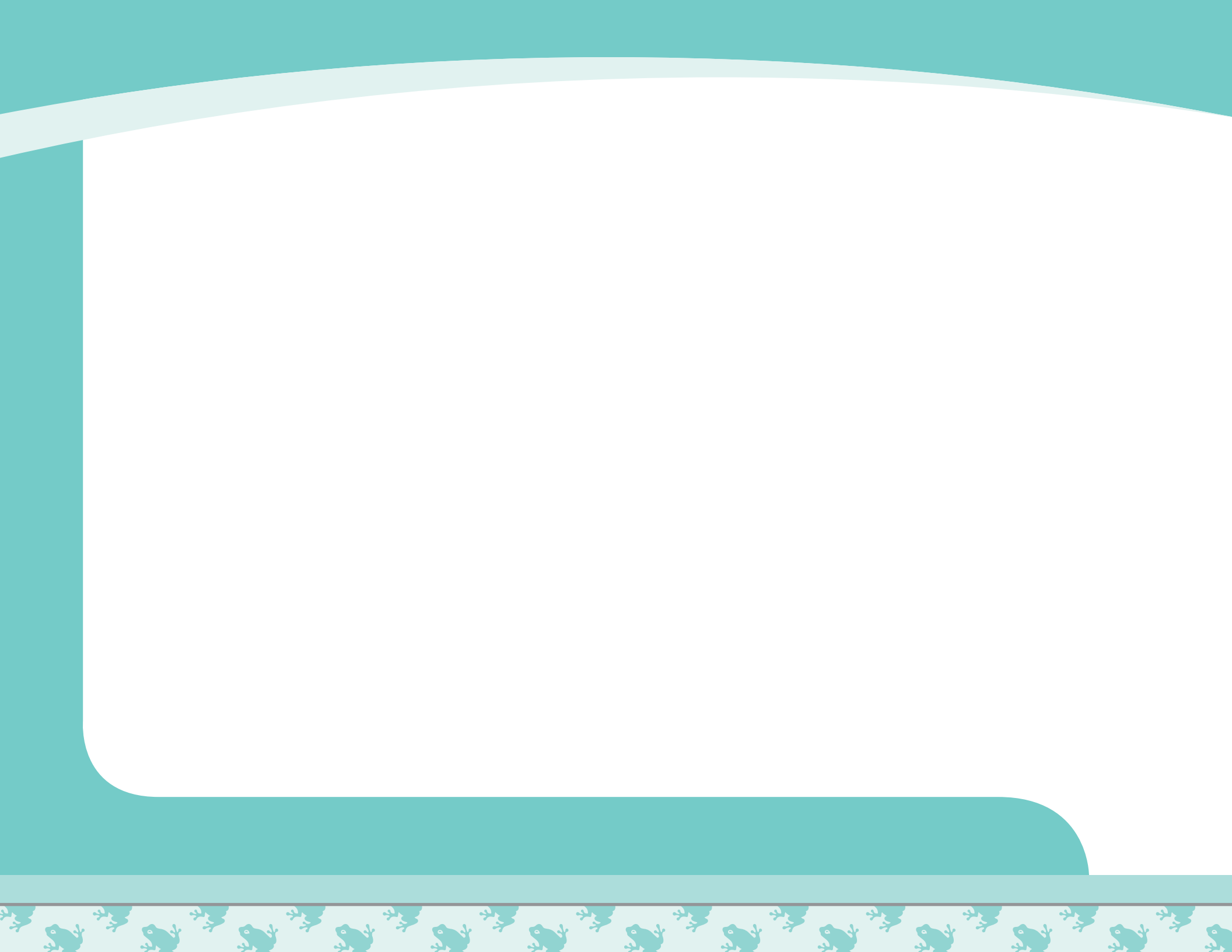
Certified Sustainable Product Alliance
Rainforest Alliance

Business Partners

▌ Balzac Brothers

▌ Boyd Coffee Company

▌ Cascadia Forest Goods

▌ Chiquita Brands Internacional

▌ Citigroup

▌ Coffee Enterprises

▌ D.R. Wakefield & Co.

▌ Doug White Architect

▌ ECOM Coffee Group

▌ Environmental Systems

▌ Research Institute

▌ Forest World Group

▌ Gibson Musical Instruments

▌ Good Coffee Company

▌ Green Mountain Coffee Roasters

▌ IKEA

▌ International Wood Specialties

▌ Java City

▌ Nespresso

▌ Neumann Kaffee Gruppe

▌ Royal Cup

▌ S&D Coffee

▌ Volcafe

Partner NGO's

▌ Conservación y Desarrollo, Ecuador

▌ Fundación Interamericana de Investigación Tropical, Guatemala

▌ Imaflora, Brazil

▌ Instituto para la Cooperación y Autodesarrollo, Honduras

▌ Fundación Natura

▌ Nepenthes, Denmark

▌ Pronatura Chiapas, Mexico

▌ Rainforest Alliance (Secretariat), United States and Costa Rica

▌ SalvaNATURA, El Salvador

▌ Toledo Institute for Development and the Environment, Belize

3.5   Communication and Marketing

3.5.1   CONCEPTS

Internal Communication Program[60]

A good internal communication program promotes or contributes to improved performance by taking into account the following elements: interaction in communication process interpretation, negotiation among communication participants, and the impact from social factors and the environment. Program outcomes might be, for instance, the encouragement of employee practices, or training systems to promote these practices. The internal communication program should be supported by work design and performance evaluation systems.

Furthermore, an internal communication program is useful in understanding a problem, and makes it easier to solve it. Similarly, it may create satisfied employees – who can be thought of as internal customers– which would result in improved quality and value of the service provided to external customers. That is to say, if we manage to satisfy our internal customers, their performance will get better, and the increased quality will lead to external customer benefits, thus increasing business profitability.

As to the way of achieving such a degree of satisfaction, one of the most useful tools is found in the following matrix, which

reflects how people's satisfaction in an organization relates to their job importance or relevance. To the extent that something is unimportant to members of an organization, their satisfaction will be low; however, if performing the task is unimportant but satisfaction is high, efforts need to be revalued. If the task is unimportant and produces little satisfaction, there is room for improvement. Finally, if it is very important and gives high satisfaction, it is best to keep that position.

Marketing Plan [61]

A marketing plan is a management tool used in determining steps to follow, methodologies, and the needed time to achieve particular objectives. It must be kept in mind that this plan should not be an isolated activity. On the contrary, it should be

carefully linked to the other departments of the enterprise, for example, finance, production, quality, personnel, etc..

Forecasting

This consists of answering the following question:

◗ If the company goes on operating in this way, and if the same market and environmental trends continue, what will be the short and long-term situation?

◗ You should ask yourself:

◗ Where is the company right now?
◗ Where is it going?
◗ Where does it want to go?

Objectives

Right after the above analysis, it is best to set the goals you intend to reach with the means available to you.

Objectives should:

◗ Be qualitatively and quantitative measurable
◗ Be attainable

◗ Have the needed means available
◗ Be fully described
◗ Be accepted by all people involved.

Marketing Plan Stages

A marketing plan requires a methodology that has to be accurately followed if it is to be carried out in an orderly manner. It is important that you follow all the stages shown below in the same order.

Situation Analysis

Under this heading, the following should be identified:

◗ Existing competitors
◗ Strengths, weaknesses, opportunities, and threats
◗ Each competitor's products, prices, discounts, location, as well as systems for invoicing, design, manufacturing, finance, etc.

◗ Sales policies, distribution channels, employees, advertising and promotion.
◗ Environmental and market situation
◗ Economic, political, legal, and technological issues, among others
◗ Consumer behavior, product use patterns, as well as usual practices in the sector, industry, and market
◗ Likely market trends and evolution.
◗ Company situation concerning the product, financing, production, technological and R&D capacity, costs, personnel, and policies related to the media.

A number of questions have to be addressed:

◗ Who are the customers?
◗ Why are they buying?
◗ When do they buy?
◗ Where do they buy?
◗ How do they buy?
◗ How much do they buy?
◗ How frequently do they buy?

Forecasting Objectives

◗ General marketing plan objectives
◗ Sales objectives by product
◗ Market share objectives
◗ Brand share objectives
◗ Quality objectives

◗ Deadline and time objectives
◗ Price objectives
◗ Margin and cost objectives
◗ Advertising and promotion objectives
◗ Definition of target segment
◗ Sales quotas per salesperson or team

Strategy

Strategy is the way of reaching objectives, in other words, *What are you going to do to reach the goal?*

The term strategy comes from military jargon. A strategy is "the engine that increases organization flexibility in adapting to change, as well as increasing the capacity to arrive at new and creative opinions." Strategy is a creative task. Details are provided in the following four headings:

Product Policies

◗ Which product do you wish to market?
◗ Product characteristics
◗ Package design
◗ Brands
◗ Labels
◗ Target market
◗ Features
◗ Presentations

Pricing Policies

◗ Rates
◗ Sales terms
◗ Discounts
◗ Margins
◗ Breakeven point

Distribution Policies

◗ Physical distribution of goods
◗ Distribution channels to be used
◗ Sales network organization

Advertising and Promotion Policies

◗ Promotional campaigns
◗ Media plan
◗ Advertising campaign development
◗ Advertising effectiveness analysis

Tactics to Be Used

Tactics are lower ranking strategies, that is, they are actions to attain smaller objectives in shorter periods of time. They are more specific tasks than strategies, and not as comprehensive.

◗ What specifically should every person do?
◗ When should they do it?

◗ How should they do it?
◗ Who should do it?
◗ What are the resources available?
◗ Work and task planning
◗ Technical, economic, and human resources
◗ Organization

Controls to Be Applied

Control procedures should be established in order to measure each action effectiveness and ensure that scheduled tasks are being performed according to the established or foreseen timetable, way, and method.

There are three types of control:

Preventive

Previously determined as possible causes of error or delay. These include an established corrective action in case the error or delay occurs.

Corrective

Applied when the problem has already happened.

Late

Applied when it is too late to make corrections. This is why it is best to set preventive controls for each proposed action.

Feedback

As the marketing plan is implemented, some initial conditions may change, for instance, response from competitors, new products entering the market, etc. This means the plan should be revised as needed. Similarly, developing a contingency plan for every possible new situation is important.

3.5.2   IMPORTANCE

Customers are every tourism company's reason for existence. This is why responsible businesses are expected to make a serious commitment to take measures concerning the services they provide, environmental protection, and social well-being.

By publicizing these efforts for customers to see, several purposes are met: on the one hand, ratifying company commitment, and on the other hand, these actions functions as a as a differentiating market element, and create a positive impact on customer attitude.

3.5.3   PRACTICAL TIPS

▐ The business should take advantage of all the efforts it makes in social, cultural, and environmental areas to share them with customers, inviting them to participate in company sustainability policies and actions.

▐ Some communication mechanisms could be photo albums documenting completed community efforts, as well as bulletin boards and written documents.

▐ Guest rooms are an excellent space for inviting visitors to cooperate in resource conservation and savings initiatives, since information on initiatives and voluntary actions can be part of room decor.

▐ Include elements that move customers to identify themselves with company sustainability policies and to get actively involved in them.

▐ Put information in writing; a small note or card might be enough to inform customers about these efforts, the importance of their cooperation in terms of the immediate impact they could have and the longterm benefits.

▐ Some specific actions could include setting up a clearly identified and moderately sized garbage sorting system, which could consist of either just one bin with a number of divided sections, or several different containers.

▐ Install water and energy consumption control devices, or start your efforts by posting signs that remind guests to reduce consumption.

◗ Invite customers to use towels and linens more than once. Give clear instructions, and disseminate the results of these efforts. Make it clear how the company is thus able to channel more resources to support conservation and neighboring community development.

◗ Identify smoking areas, and make sure they have good ventilation and do not interfere with non-smoking areas. Ask customers about their preferences.

◗ In training programs, include techniques for staff to teach and induce customers to implement water and energy-saving measures. As part of this effort, post discreet signs in rooms encouraging guests to turn off lights, air conditioners, and water faucets when not in use.

◗ Make sure the room is a living example of environmentally-friendly efforts, and ask customers to report any leaks or malfunctioning electrical units that may result in excessive consumption.

◗ Make sure you are the number one proponent of all actions in which your company is directly or indirectly involved, making them known to your employees and customers, and inviting them to play an active role.

◗ In marketing actions, use low-impact resources and products, for instance, by printing advertising materials on recycled paper and using soy-based ink, by assessing printed materials importance versus their actual impact, by evaluating advertising media to be used and analyzing joint marketing opportunities, etc.
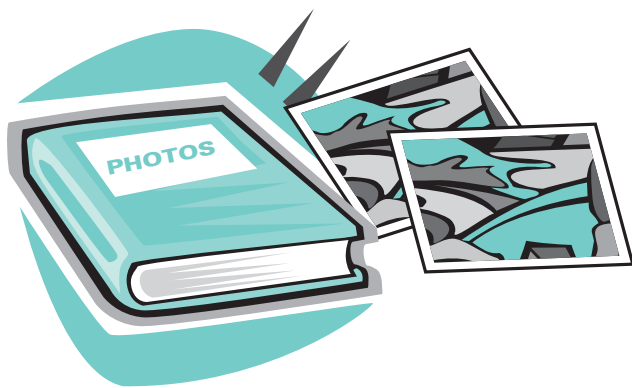
3.6 Staff Training

3.6.1   CONCEPTS[62]

Every training process must undergo continuous changes and improvements to the extent that the changing world around us demands new capabilities, new competences, and new styles associated with changes in organizations, personal motivation, and the challenge of bringing about a better match between training and work performance.

Training and modifying behavior through a group approach should be the overall objective, while bearing in mind each participant's motivation, interests, and joint responsibility. The goal consists of achieving significant learning not only to meet the proposed objective but also to create close relationships and connections between content, individual experiences, and shared collective experience, in such a way that everyone is able and willing to share and multiply what was learned.

The existence of Strategic Planning provides a general framework in guiding design towards fulfillment of organizational objectives; thus, it should be taken into account for teaching-learning process coherence through links between personal, organizational, and environmental requirements.

Based on the objectives set by the organization in need of staff training, planning should define the following:

▌ Types of participants

▌ Objectives to be achieved through training

▌ Contents: which areas will training address, and what competences, knowledge, and skills should be gained, based on needs

▌ Subjects. Specific objectives. How long will they take

▌ Types of activities to be performed

▌ Teaching resources

▌ Evaluation system

3.6.2   IMPORTANCE

A company's training processes are undertaken to make sure company sustainability policies and goals are understood and internalized by personnel.

The basis for good business performance is training. This covers everything from getting ready to take on a job to the knowledge needed for thoroughly understanding why and how a commitment to sustainability is made, this being a commitment that includes neighboring communities, customers, and employees. Furthermore, a training process brings a whole series of additional benefits, particularly if it uses a participatory approach:

- Training guides the business towards continuous improvement of processes.

- When employees are involved in the teaching-learning process as both recipients and subjects, motivation and commitment are increased.

- Substantial improvement is gained in communications and cooperation, and assimilation of socialized group objectives.

3.6.3   BASIC PRINCIPLES

- Developing policies and implementing specific actions to train staff in environmental issues relevant for operating a tourism business.

- Developing policies and implementing specific actions to train staff in the company quality system, as well as in operational issues.

3.6.4   PRACTICAL TIPS

- Train your people to carry out several functions (multifunctional staff); this way monotony and operating costs are reduced, as well as excessive employee turnover.

- In attaining the above (or if you prefer, holding onto a traditional job specialization system) you should implement a comprehensive training process encompassing new employee orientation processes, ethics and behavioral codes, operations training, service quality, sustainability policies such as the conservation of water, energy, etc., tourist safety, first aid, how to provide tourist information, labor and tourism legislation, and basic knowledge of the community and the environment. It is important that ALL working employees having contact with customers receive this basic training package.

▌ Some businesses located in far-away places choose to train families and enter into contractual relations and dealings with them. This way they can get the highest reduction in absenteeism due to family problems, while at the same time, they benefit the entire family, since family income level is maintained regardless of which member goes and performs job functions.

▌ Contact public or non-governmental organizations that provide training, and try to use their services.

▌ Barter by exchanging training for room and board for instructors, and lend them your facilities to teach courses.

▌ Make these efforts known to other businesspeople, and to community members, even if they are not your employees.

▌ Design simple evaluation tools to measure training program impacts, not only on your company but also on the community at large.

▌ Offer training programs to your employees; this will not only encourage them, but will also help them maintain their performance.

▌ To the extent possible, reward your best employees with scholarships to enhance their training.

▌ Define your training needs, prioritize them, and find alternatives to address them.

▌ Let your trained staff become disseminating agents who, in turn, will train others.

▌ Evaluation should measure the achievement of your training program goals, but also changes in attitude as a result of training.

▌ Design a customer response survey form that includes key issues reflecting training program results. Ask customers if they know about the program, if they were given information, or if they saw employees performing specific functions.

▌ Contrast result evaluations in concrete areas for which training was received; for instance, compare the absence of water leaks to training received in the importance of water management.

▌ As a rule, you should include all topics that are useful for implementing your sustainability policy as the content in an ongoing training program. This way, your staff will have the tools needed to perform their duties adequately.
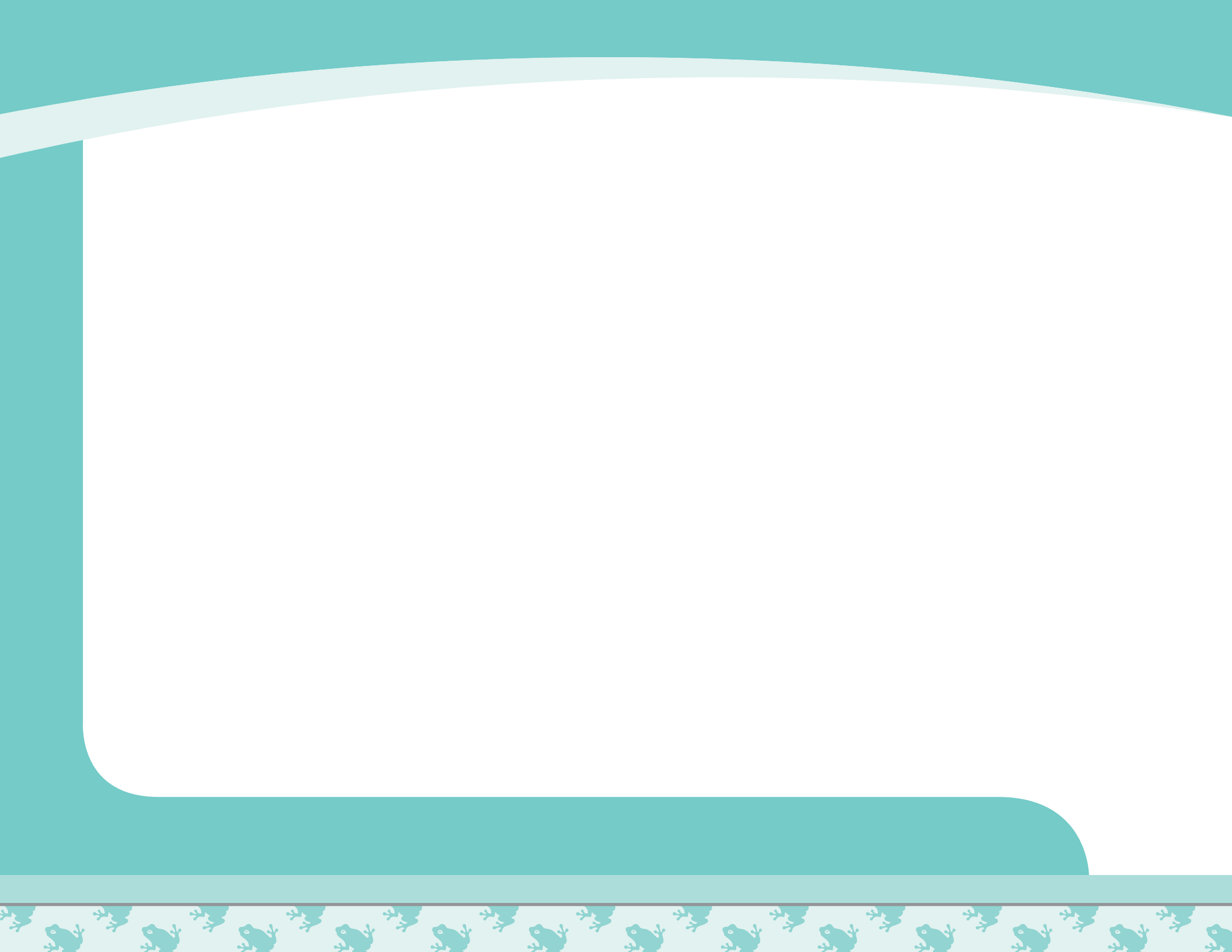
3.7 Design and Construction

3.7.1 CONCEPTS

Sustainable design strives to meet the current needs of society without reducing the possibility of future generations meeting their own needs. Applying sustainable design principles requires holistic short and long-term awareness of the consequences brought about by any environmental transformation.

From design to demolition, a sustainable design –identified with organic and/or "green" design– entails environmental practices in planning, methodology, production, construction, renovation, and maintenance.

Sustainable design requires the development of holistic and ecological strategies to create projects that will not alter or harm systems existing at the site, but rather will help to repair or restore them[63].

Sustainable Architectural Design

By definition, sustainable architectural design seeks to achieve balance and harmony with its natural and cultural environment. Thus, a critical analysis of natural and human factors should be carried out when proposing and debating architectural solutions. Some fundamental principles and considerations that should govern an architectural design process for ecotourism buildings and facilities are provided below.

Natural Factors

The architectural design of buildings and facilities should first take into account natural environmental conditions, and determine which ones have to be managed in order to make the best use of them and to minimize their impact on facilities or visitors. For example, in predominantly warm weather, you should maximize roof and attic ventilation, use hedges as divisions and to reduce heat accumulation, and insulate heat-generating facilities or functions, such as kitchens, etc.

Factors to be taken into consideration include temperature, exposure to sun and wind, humidity, rainfall, other weather phenomena (fog, storms, tornados, etc.), as well as vegetation, topography, hidrography, geology and soils, seismicity, pests and fauna.

Human Factors

Likewise, architectural design should include, preserve, and highlight historical-cultural resources not only from the immediate area but also from

the entire region. This work should start with a deep knowledge of said resources and with a planning team's joint analysis of which resources can and should be incorporated in the design. For instance, if using a certain local material or building technique endangers a resource in the long run, such a practice should not be approved. In contrast, when local practices show a resource is being used rationally and sustainably, some of these traditional design features should be included to preserve and highlight local or ancient people's customs and knowledge.

Analysis of human factors includes archaelogical resources, vernacular architecture, historical resources, anthropology, ethnic background, religion, sociology, arts, and handicrafts.

Additionally, architectural design should consider another crucial human factor: the needs and expectations of users, that is, visitors, ecotourists, or officials. In this respect, design sensory experience has to be considered in terms of dealing with visual, auditory, tactile, and olfactory resources.

The importance of carefully analyzing the desirability of using local techniques and materials in construction can not be overemphasized.
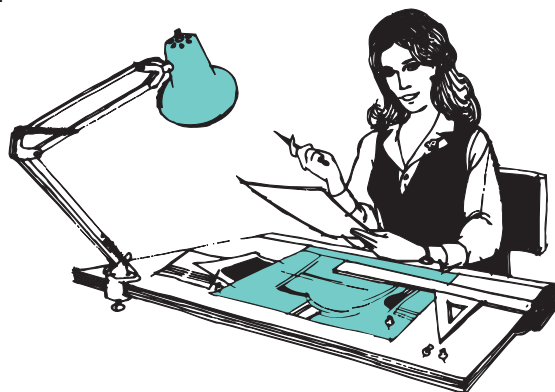
Short and long-term material availability, various extractive processes, transportation fthe materials, the need for special procedures and additives to treat them, etc., should all be taken into account.

Ambiance creation is the entire process of providing interior decoration and fixtures required to make facilities suitable for ecotourism. Ambiance creation and architectural design should be planned in conjunction so that they will complement one another, instead of competing or clashing.

It is worth emphasizing how important it is in ecotourism development to take advantage of every space, occasion, and stage of the business to "teach" visitors about rational use of resources and respect for an area's natural and cultural heritage. Hence, ambiance characteristics should be consistent with and follow the same guidelines as site and architectural designs. The same as in these two cases, long-term environmental and cultural costs should take precedence in decision making over strictly short-term economic criteria

Ideally, the choice of decor, furniture and fixtures should be placed in the hands of a decorator or person with experience in the matter. In practice, most projects in a protected area do not earmark resources for this purpose. It must be stated very clearly, however, that presenting a consistent and quality product which can compete on the market is fundmental to developing tourist service facilities which are profitable and self-sustainable.

Luxuries and expensive and sophisticated equipment are not necessarily the answer, but having the advice of someone who is knowledgeable in the matter is a good investment for the future. The most relevant issues to be considered include:

▍ Planning the right type and quantity of required equipment and furniture, based on site functionality objectives and area capacity, as well as on expected consumer profile.

▍ Technical criteria regarding equipment and furniture quality, durability, and sturdiness under particular weather conditions.

▍ A concept of the kind of design and decor to be implemented.

▍ Choosing decorative elements on the basis of proposed design and budgetary means.

3.7.2 IMPORTANCE

A sustainable lodging enterprise should start with a development concept that can also be sustained. Ideally, business sustainability should be present as early as the design stage of the facilities, since at this time it is easier to undertake a series of measures, such as those relating to architectural style and building materials.

3.7.3 BASIC PRINCIPLES

▪ Building designs for the company and its facilities should respect the integrity of the landscape and have an appropriate scale, that is, be proportionate to the surroundings.

3.7.4 PRACTICAL TIPS

Site Design:

▍ Minimize vegetation-disturbing areas, movement of soil and earth, and alterations in water channels, such as rivers.

▍ Locate structures in such a way that they make the best use of passive energy, such as sunshine and breezes, to provide comfort for guests and staff.

▍ View the site as an integrated ecosystem, with changes occurring over time in a dynamic balance. Impact from development should be confined and integrated within these natural changes.

▍ Promote spiritual harmony with the natural landscape and the area's resources, and integrate built-in ethical responsibility for them.

▋ Provide space to process all waste created at the site (collection/recycling facilities, digestor ponds, lagoons, etc.) to avoid the loss of reusable/recyclable resources, and prevent hazardous or destructive waste from being released into the environment.

▋ Adapting designs to the site itself must be taken into consideration. To this end, natural and cultural characteristics should be analyzed; the former include wind and sun exposure, rainfall, topography, geology and soils, aquatic ecosystems, vegetation, fauna, and visual characteristics of the landscape. In turn, the area's archaelogy and history, as well as indigenous cultures and other community groups currently living in the area, are analyzed in the cultural context.

▋ Be sure designers start by recognizing and analyzing the context framing the site, and not just characteristics of the site itself.

▋ Make an effort to have historical or culturally interesting elements and buildings identified, preserved, protected, restored and/or reused.

▋ The facilities' design should help interpret and renew interest in cultural and natural heritage existing in the area and the region.

▋ Negative human impacts on natural and cultural heritage should be minimized and/or mitigated.

▋ To the extent possible, construct small buildings that "blend into" the landscape.

▋ Use tourist facilities to showcase and enhance the value of native practices, techniques, materials, designs, and customs.

▋ Avoid building tourist facilities in proximity to unpleasant sound or odor sources.

▋ Check that architectural and overall design has taken into account all seasonal variations such as rainfall and sun angle, as well as the existence of other natural hazards (landslides, floods, poisonous plants or dangerous animals, etc.).

▋ Avoid erecting tall buildings as lodging facilities; the maximum should be two stories high. Always seek an overall design with organic shapes that are in harmony with the environment and match site topography.

▋ Plan an evacuation system for emergencies.

▋ Find low impact ways of accessing attractions, for instance, by means of pedestrian trails.

▋ Try using means of transportation that pollute as little as possible, in terms of air, water, noise, and visual contamination.

▌ Design and build an adequate trail network with signs providing both ecological information and behavioral recommendations.

▌ Do not design trails that follow river banks for long stretches, but rather that only come close to the river at some attractive points. Trail and road design should minimize river and creek crossings.

▌ In mountainous terrain, do not lay out a road along the crest itself; follow lower contour lines instead.

▌ Avoid having highly conflictive shared uses, for instance, people and horses using the same narrow path.

▌ Roadside vegetation cover should be conserved and/or restored.

▌ In building rolling surfaces or trails, use recycled or waste materials: tire residues, steps or boards made with recycled plastics, etc.

▌ Landscaping surface construction should use materials with colors and textures similar to those in the environment.

▌ Do not install outdoor lights that could affect habitats. If this cannot be avoided, install them less than 50
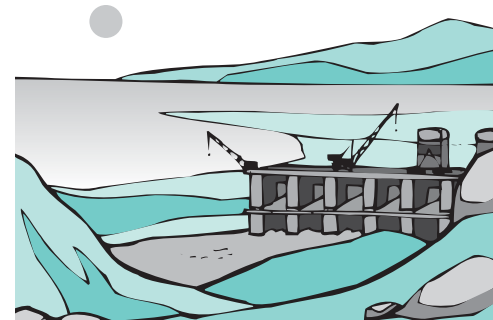
cm from the ground, and plant hedges between lights and natural habitats to make them indirect. Use low intensity lamps.

▌ Dampen environmentally disturbing noises with constructions or hedges. In your ethical code include regulations on sound-generating activities: rooms, recreational and social areas.

▌ Establish a time to turn off all sources of noise: power plants, motors, sound equipments, etc.

▌ Encourage the use and revival of aboriginal practices, techniques, materials, designs, and customs, provided they do not use fragile resources or materials –such as endangered palm species– and do not conflict with site safety norms, i.e, earthquake-proof contructions.

▌ In coastal areas or marinas, incorporate special resources and techniques in designing trails. For instance, construct aerial or elevated trails, self-guided trails with special signals for canals, or aquatic or underwater paths, such as buoy systems.

Architectural Design

▌ Create opportunities for visitors to become aware of and learn about the resources used in architectural and site design.

▌ Adjust design to the evaluation parameters used by "green" or environmentally responsible hotel ranking systems.

▌ Use local materials and labor, including that of artists and artisans in the area.

▌ Include quiet, secluded areas where visitors are able to rest and reflect in a natural environment.

▌ Plan ahead for future expansion in order to minimize further demolition and waste.

▌ Embrace technologies and mechanisms that ensure the rational use of water and energy resources.

▌ At certain sites, take into account possible technical requirements, such as earthquake- and hurricane-proof measures, etc.

▌ m,eans for controlling insect, reptile, and rodent populations should be included when designing and using particular materials.

▌ If possible, provide facilities for visitors with special requirements (wheelchairs, walkers, and ramps, specially designed toilets, wide entryways, etc.).

▌ In rural sites include outdoor showers areas for such special uses as boot cleaning, camping and raingear storage, etc.

▌ The planned architectural design should be feasible and sustainable from the economic, social, and technological point of view.

▌ The design should also be based on long-term environmental considerations, rather than strictly economic or financial short-term criteria.

At the **construction stage**, the following should be taken into account:

▌ When selecting contractors for the construction stage, both their previous experience in building in fragile spots and their ability to organize themselves and build in rural and/or remote areas, should be considered. Such construction tasks as moving earth, waste disposal, etc., should be planned and managed properly. Permanent access roads, for example, should be laid out first, and then used to carry construction materials and waste, instead of building provisional roads or trails.

▋ Foundation excavation should be done, if possible, by hand, in order to avoid using heavy-duty machinery.

▋ Construction specifications should reflect environmental and conservation interests concerning wood products and other building materials. Use forest plantation wood, and reject construction materials containing harmful chemicals.

▋ Preference should be given to construction or decoration materials that are native to the area, renewable, and environmentally campatible.

▋ All construction debris should be removed from the site once works are completed, and should be disposed of with the least possible impact on the environment.

▋ Soil and other materials removed in order to set the foundations should be redistributed in the surroundings of the construction site.

▋ To the extent possible, use self-help construction techniques and designs to reduce building time and complexity.

▋ The construction stage may cause some of the following negative impacts, which should be minimized as much as possible:

◗ Sound pollution.

◗ Air quality deterioration.

◗ Pollution from using vehicles, equipment, and machinery.

◗ Oil, paint, or other chemical spills.

◗ Increased erosion, sedimentation, or soil compactating.

◗ Soil removal.

◗ Changes in quantity or quality or watercourses, and surface or ground water sources.

◗ Vegetation changes or destruction.

◗ Habitat alteration, fragmentation, or destruction.

◗ Barriers to wildlife's freedom of movement.

◗ Introduction of exotic and/or invading species.

◗ Changes in the life cycles of wild species.

◗ Altered nutrient flows and/or chains.

◗ Introduction of alien food or habitats in the environment.

Decor and Creating Ambiance

▌ Avoid using high energy consumption equipment and hazardous material.

▌ Limit and control artificial lighting at the site in order to prevent disturbing nocturnal plant and animal life cycles.

▌ Position or treat glass window panes in such a way they do not reflect the environment on the outside, to prevent flying birds from crashing on them (windows can be equipped with overhanging eaves to block sun reflection, you can place silhouettes on them, polarize them, etc.).

▌ Provide enough areas to store traveling gear, such as instruments, equipment, baggage, bags, backpacks, boots, etc., particularly at extended stay sites.

▌ Place landscaping elements such as trees and bushes in such a way that they promote natural ventilation in buildings and thus prevent unnecessary energy consumption.

▌ Use air conditioning only in spaces where it is strictly necessary. If ventilation is required, use electric fans, preferably of the overhead type that hang from the ceiling.

▌ Use TV sets and sound equipment with discretion in multiple use areas, and preferably only for educational purposes.

▌ To the extent possible, provide several small areas for lounging and socializing, both within and outside the facilities. Also establish a comfortable indoor area to be used when weather and conditions are inhospitable (rain, storm, wind, cold, heat, mosquitos, etc.).

▌ Use colors, textures, or other elements to create different atmospheres. Color absorbing and reflection capabilities should be taken into account for interiors, if applicable.

▌ Have maintenance tasks carried out away from public areas.

▌ Place hedges and other natural elements to control noise between public and private areas.

▌ Incoporate "natural" colors and other decoration elements to "camouflage" exteriors and harmonize with the area's cultural values.

▌ Use decoration details in such a way that visitors can learn about and become aware of environmental conservation measures that have been built into facilities design and operation.

▌ Use fabric towels and/or paper towel and soap dispensers, instead of individual packages, biodegradable cleaning products.

▌ By means of information posters on the advantages of using these elements, make visitors aware of your efforts.

▌ Post signs on switches reminding guests to turn off the lights when not in use, as well as water or power consumption meters placed at visible spots. Tell visitors where they can get these resources and what the use standards are in urban and rural areas, etc.

▌ Promote visitor contact with natural elements, such as the sounds of the wind or ocean, smells that are typical of the area, etc. For example, keep doors and windows open as much as possible, plant gardens and landscaped areas with aromatic native plants that are pleasant to the eye, or that attract friendly animals and insects, etc.

▌ Create common use spaces where guests can come into direct contact with local inhabitants and staff performing day-to-day chores, such as gardening. Have wide, open kitchen areas, and allow visitors access to observe alternative energy sources and composting areas; have a particular area within the facilities available to local inhabitants for holding meetings or manufacturing handicrafts, etc.

▌ Preferably, use decorative elements, such as locally produced handicrafts, that can double as educational or informational items.

▌ Provide customers with a space for them to access reference material (books, periodicals, lists of species, maps, overhead projector, TV set, VHS, etc.). This space should have comfortable furniture for reading and researching, as well as visitor books or albums for guests to write remarks on flora and fauna.

▌ Facilitate environmental observation on roads and trails through properly worded signs, especially at starting points.

▌ When relevant, make use of roofing to protect heavily used trails against erosion, and also to provide shelter from rain along passages between connected buildings.

▌ Use technology, equipment, and fixtures which cause the least pollution possible.

▌ Furniture selected should be high quality and of standard size.

▌ Post environmental behavior codes for tourists and staff in visible spots.

▌ Only trained personnel should be in charge of equipment installation and maintenance.

▌ Facilities should have evacuation plans in case of earthquakes and fire, as well as fire fighting and other emergency equipment.

3.8 Health and Safety

3.8.1   CONCEPTS[64]

Workers' Health

The World Health Organization and the International Labor Organization has established the obligation to "encourage and maintain the highest level of physical, mental, and social well-being of workers in all professions, to prevent any damage to their health caused by working conditions, to protect them at their jobsites against health hazards, and to place and keep workers at jobs that are suitable for their psychological and physiological aptitudes."

Objective

Preventing both labor accidents and occupationally-related diseases. To this end, comprehensive workers' health is sought, that is to say, health in all workplace environment dimensions, since workers cannot be separated from their environment.

Function and Level

The two functions of occupational health efforts are monitoring and intervention, which are carried out at both the individual and the collective levels:

	INDIVIDUAL	COLLECTIVE
Monitoring	**Effects:** Analyzing accidents and their consequences, as well as occupational diseases	**Hazards:** Organization, structure, tasks
Intervention	**Individual Protection** Job position change **Immunization** Individual counseling	**Changes in the organization** Machines, products, legislation, inspection, training, information

The table above shows that monitoring at the individual level involves analyzing the effects of health and safety risks, i.e., accidents, their consequences, etc., whereas potential hazards are studied at the collective level, because they are common to all workers. In order to prevent hazards, both company organization and structures such as stairways and aisles should be analyzed.

Concerning the individual level intervention needed to prevent one worker from getting sick or having an accident, we should develop individual protection measures, such as changing job positions, immunizing at-risk workers, providing them with advice, etc. In contrast, protecting a group of workers requires making changes at all levels in the organization.

Risk Factors

Poor safety conditions

Unsuitable physical environment of the workplace
Chemical and biological pollutants
Excessive work load and poor task organization

Prevention Levels

Obviously, we can either replace toxic products, for example, cleaning chemicals, with less risky products, or install a gas extractor. There are, then, different protection levels –individual and collective– and hence different ways of preventing exposure. Preventive measures to eliminate the root of the problem should be tried first, followed by direct measures at the worker level.

3.8.2   IMPORTANCE

Although we are often not aware of it, our company's success relies largely on employee health and well-being, given that they provide day-to-day service to our customers. Having a front-office employee with a serious case of the flu, for instance, will not only affect the worker's performance, but it also will spread to the other employees and even our customers. Not to even mention other kinds of contagious diseases!

This is why company officials should watch over the safety and health not only of their customers, but also of their staff.

Investments made in improving health and safety conditions should be seen precisely as such –investments that may bring future savings from lower absenteeism, improve staff performance and morale, and avoid as much as possible having to pay damages for injured workers and customers> Keeping morale high also serves to prevent theft, etc.

3.8.2   BASIC PRINCIPLES

- Providing employees, guests, and neighbors with the necessary health and safety conditions.

- Having a contingency plan for environmental emergencies.

- Having a contingency plan for health and safety emergencies.

- Taking all the necessary measures to ensure guest safety during tours or other recreational activities.

- Providing visitors with information on the safety measures they should take while they are at a given site.

- Making sure water used for human consumption, including ice, is proven to be safe.

- Following insect and rodent control practices that use biological or environmentally-friendly products.

3.8.3 PRACTICAL TIPS

▍ All businesses, regardless of their size or activity, should have an Occupational Health Program (OHP) in place, not only because protecting workers' health IS A MORAL DUTY, but also because it is A LEGAL REQUIREMENT. Furthermore, a good OHP program contributes to improve company productivity and results in multiple benefits.

▍ Keeping employees physically and mentally healthy and satisfied with their jobs encourages production and a sense of ownership. Besides, lower absenteeism diminishes administration problems.

▍ The company should evaluate its Occupational Health Program at least every six (6) months and revise it every year, in line with productive process modifications and results.

▍ Promote attitude change towards creating a preventive culture which is based on the need for systematically controlling and managing mishap-causing, risky work conditions. The idea is to decrease accident rates and protect workers' health, and company facilities and equipment.
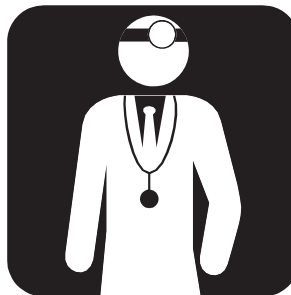
▍ Build an efficient emergency brigade with responsibilities and approved resources, equipments and elements.

▍ The company should develop a mutual self-help plan together with other businesses that agreed to collaborate.

▍ A brigade should have enough members to insure success in typical events expected in the company. An inadequate number of brigade members may result in losing control of the situation and thus shifting to an emergency level that makes any intervention more difficult. On the other hand, too many brigade members may cause difficulties in management as well as higher operating costs.

▍ The need for having available emergency procedures depends on the different kinds of emergencies that may arise. Some typical procedures are:

1. Fire control
2. Emergency medical care
3. Rescue
4. Vehicle control
5. Emergency communications
6. Evacuation
7. Storage tank refrigeration
8. Transportation of victims
9. Water supply

10. Command post establishment
11. Operation
12. Information for the community

▌ Some characteristics to be taken into account in designing procedures are the following:

1. Who is responsible for implementation
2. When it should be implemented
3. When the right time to start it will be
4. Which actions it encompasses
5. What the implementation sequence is
6. Which decision-making criteria are involved
7. Who actions should be coordinated with
8. Who will decide on the action
9. When actions should finish
10. Who should receive the report
11. Which basic resources are to be used

The Sustainable Tourism Certification Network of the Americas

Mission
Promoting sustainable tourism in the region through strengthening certification initiatives based on mutual respect and recognition, joint effort, system harmonization, and shared information and experiences.

Vision
The Network is the referent for sustainable tourism certification in the Americas. Its initiatives are recognized in the market, have credibility, and generate benefits to conservation, local communities, and tourism industry competitiveness.

Objectives

1. Consolidating the Network: Identifying and structuring relevant actor involvement.
2. Establishing Effective Communications: Developing communication channels and information exchange among interested parties.
3. Developing Common Work Tools: Compiling and harmonizing best practices for sustainable tourism, and developing a baseline of standards.
4. Increasing SME participation: Encouraging and supporting SME participation in the implementation of best practices and certification processes.
5. Developing a Marketing Strategy: Agreeing on joint marketing strategies.
6. Supporting and Strengthening Certification Programs: Help provided through training programs, technical assistance, and institutional strengthening.
7. Securing Resources: Securing cooperation technical, economic, and financial resources that contribute to achieving the Network's mission and general objectives.

Rainforest Alliance. Apdo. 11029-1000
San José, Costa Rica • Tel/Fax: (506) 234-8916

3.9 Supplies and Suppliers

3.9.1   CONCEPTS

Just-In-Time Procurement[65]

Just-in-time procurement decreases waste generated in purchased material receiving and inspecting, and also lowers excess inventory, poor quality, and delays.

Just-in-Time Procurement Objective:

Elimination of unnecessary activities. For example, receiving and inspecting purchased products is no longer needed with Just in Time. If procurement staff have been effective in selecting suppliers, purchased items can be received without formal counting, inspecting, and testing procedures.

Almost no raw material inventory is required if materials meet quality standards, and are delivered where and when they are needed. Raw material inventory is only necessary if there is good reason to believe supplies are not reliable. Inventory reduction or elimination makes it possible for problems with other production process issues to emerge and be corrected. An inventory tends to mask problems.

In-transit inventory elimination. Modern purchasing departments manage to reduce in-transit inventory by encouraging their suppliers to locate near the company and to transport goods rapidly. The smaller the money and materials flow within the resource "pipeline," the smaller the required inventory. Other way of reducing in-transit inventory is by having it under consignment. Under a consignment agreement, the supplier retains inventory ownership.

Just-in-Time Purchasing Characteristics:

Suppliers

These are few in number, located either nearby or at a distance, and repeat business is given to them. Ongoing supplier analysis is carried out to let preferred suppliers become price competitive and stay that way. The search for new suppliers is mostly limited to new purchases.

Quantities

Constant production rate, which is a desirable prerequisite. Frequent deliveries in small lots. Long-term contractual agreements. Reduced order paperwork. Delivered quantities vary from one shipment to the next, but are fixed for the entire contract term. Little or no permission to increase or decrease received quantities. Suppliers are motivated to package in exact amounts and reduce production lot size (or store non-shipped material).

Quality

Minimum product specifications imposed on suppliers. Assistance is provided to suppliers for them to meet quality requirements. Close relationships and communication maintained between quality assurance staffs of both buyers and sellers. Suppliers motivated to use process control charts instead of lot sampling inspection.

Shipments

Scheduling of incoming cargo. Insuring control through the use of the company's own transportation, or outsourcing transportation and storage.

3.9.2   IMPORTANCE

One principle in a serious commitment to the environment consists of reducing overconsumption of products, particularly those generating waste that is hard to treat or dispose of, such as single-use food or personal care product packages.

3.9.3   BASIC PRINCIPLES

■ Favoring certified suppliers who follow best environmental and social practices.

■ Whenever possible, acquiring environmentally-friendly supplies, such as recycled or nontraditional paper, organic food items, certified wood, etc.

3.9.4   PRACTICAL TIPS

■ Define a consistent supplier-screening and trade-relation management policy to insure implementation of a good procurement policy.

■ Identify "green" suppliers or promote their "greening" process.

■ Promote socioeconomic practices and activities in neighboring communities to help galvanize their economies.

■ Develop trade relations with companies that have sustainability certifications; these are also known as "green seals."

■ Meet your needs with local products and materials first.

■ Find out about existing recycling businesses and self-managed cooperatives in the area, and develop relationships with them to acquire both operating and construction materials.
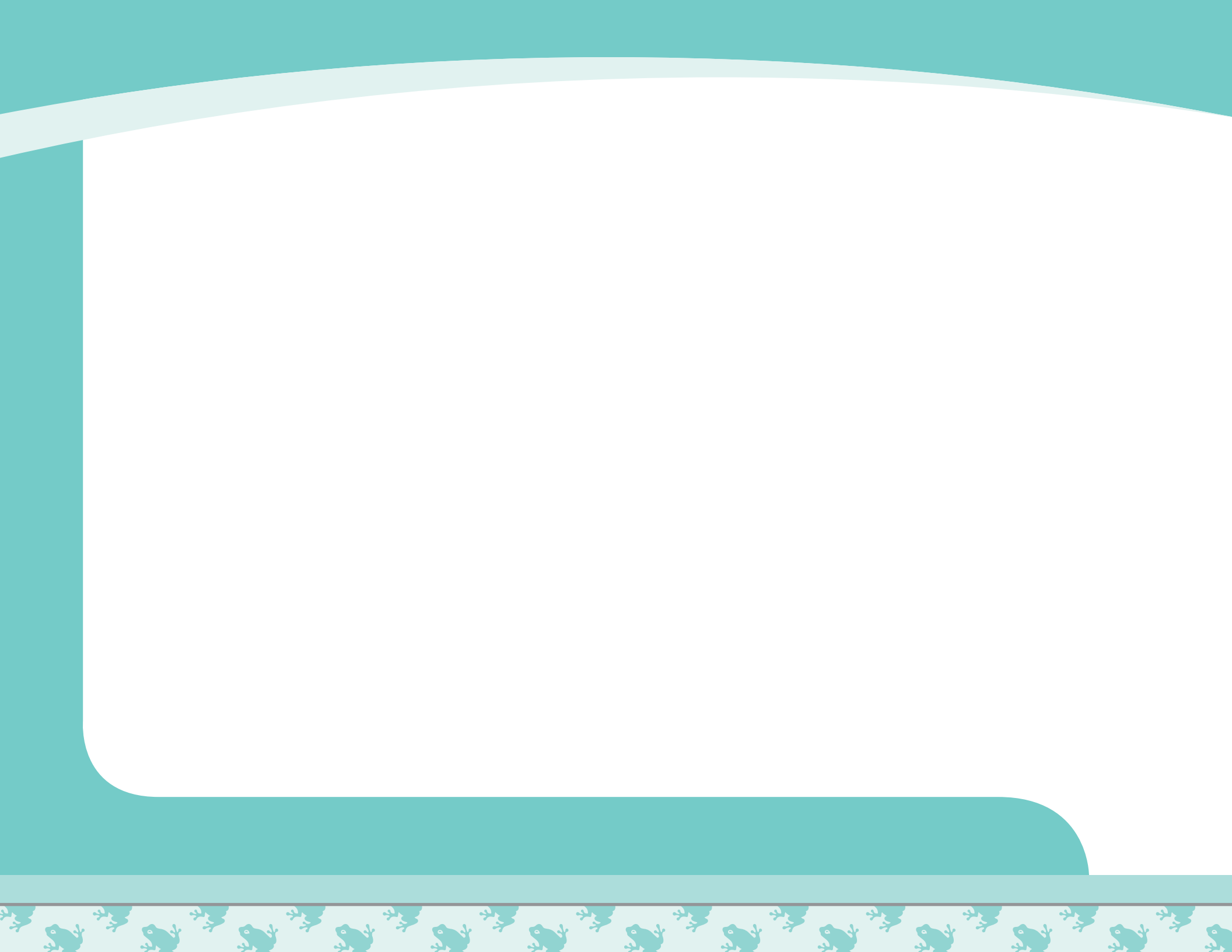
▌ Establish outsourcing norms that favor the emergence of local microbusinesses.

▌ Be innovative and creative.

▌ By reading labels and talking with suppliers, make sure all products used are safe for the environment and for people's health.

▌ Consider using recycled paper for your stationery, as well as biodegradable toilet paper, personal care products, detergents, napkins, etc.

▌ Do not use lead-based paints or aerosol products containing chlorofluorocarbons (CFC's).

▌ Enter into product repackaging agreements with suppliers.

▌ Replace or eliminate hazardous or toxic compounds with biodegradable cleaners or detergents.

3.10 Monitoring and Corrective Actions

3.10.1 CONCEPTS

Management Control

Management control is aimed at evaluating decisions made by the administration, as well as overall organization performance and level of compliance with set objectives.

The first issue to be considered in management control deals with a company's current general situation. In this respect, certain basic indicators should be established to acertain the progress made in the most relevant management issues, and they should be presented in such a way that all decision makers can easily understand them.

Some commonly used techniques in management control are:

◗ Budget control (income and expense budgets; time, space, materials, and product budgets; capital expenditure budget; balance sheet budgets; variable budgets; budgets by programs, etc.).

◗ Statistically based control

◗ Control through special reports and analyses

◗ Breakeven point analysis

◗ Operational audits

◗ External audits

◗ Personal observation

◗ Strategic control

Environmental Management System

The economy is an environmental subsystem in which no economic activity may trespass environmental boundaries for an extended period of time without negative consequences for both the economy and the environment. The economy, as well as social and political issues, must be taken into account while making the best decisions to achieve sustainability.

Achieving sustainability is a complex task for any society. Essentially, the idea is to optimize the economy-environment relationship in such a way that the economy is able to meet present needs, while at the same time maintaining the environmental base to also meet the needs of future generations.

Building environmental issues into every entity's management decision making should be given a very high priority from the conceptual stage on through studies, projects, implementation,

new goal setting, modernization, and new technological introduction to product and service marketing. It is important to remember that while environmental protection is the key to sustainability, it is not the only factor to be considered.

Most businesses face environmental problems that have been brewing for decades and cannot be addressed immediately. In this case, the continuous or ongoing improvement principle should be applied.

A balance must be struck between development and environment, without blocking or curbing development, but achieving instead continuous improvement through decreased costs, and eliminating natural resource overexploitation as well as the negative impacts of disorganized development, while both minimizing waste and bearing in mind modern environmental management techniques.

National and international regulations are continuously being reviewed and enhanced and are increasingly more stringent concerning the business-environment management interface. The negative consequences of production activity impacts on natural environment and human beings are beginning to be better understood, and now it is common knowledge that economic well-being can only be reached together with sound environmental management. A company's competitiveness and its medium and long-term survival definitely require that environmental issues be built into its management.

General Principles of an Environmental Management System (EMS) 66
An Environmental Management System establishes a process meant to bring about continuous improvement, with process dimension and scope being determined by the company in the light of economic factors and other circumstances. While some environmental performance improvement is expected from adopting a systematic approach, an EMS should be viewed as a tool for the company to systematically achieve and control its own target environmental performance level. Just by implementing and operating an environmental management system will not guarantee, in and of itself, an immediate decline in adverse environmental impacts.

Through resource allocation, delegating responsibility, and continuous evaluation of practices, procedures, and processes, an EMS provides order and coherence for company efforts toward addressing environmental concerns.

Principles for implementing an EMS include:

▶ acknowledging that environmental management is one of the company's highest priorities

▶ determining the legal requirements and environmental issues associated with company activities, products, and services

◗ developing top management and employee commitment to protecting the environment, with clearly defined duties and responsibilities

◗ establishing a process to reach target performance levels

◗ providing adequate and sufficient resources, including training, to continously achieve target performance levels

◗ evaluating environmental performance against company environmental policies, objectives, and goals, and making improvements as needed

Potential benefits from an effective EMS include:

◗ maintaining good public relations with the community

◗ meeting investor criteria and improving access to capital

◗ enhancing image and market share

◗ improving cost control

◗ reducing mishaps that could lead to loss from legal liability

◗ saving on materials and energy consumption

◗ promoting development and shared environmental solutions

◗ improving relationships with local industry and authorities.

Five stages need to be implemented in developing an EMS. The first consists of enlisting company the top managers to commitment to improving environmental management.

During the second stage, the company should develop a plan to follow environmental policy. In the third stage, support capacities and mechanisms needed to pursue environmental policies, objectives, and goals should be developed. During the fourth stage, the company will measure, monitor, and evaluate environmental performance, and in the fifth stage, it will carry out an ongoing review and improvement of its overall environmental performance. Implementing these five stages will ensure the business's a continuous environmental performance improvement.

The continuous improvement concept is an integral part of an EMS, achieved by continuously evaluating its environmental performance system against its environmental policy, objectives, and goals, with the purpose of identifying improvement opportunities.

A continuous or ongoing improvement process should identify areas of opportunity to enrich the EMS, which will then lead to improved environmental performance, determine the root causes of noncompliance or deficiencies, develop and implement one or several corrective and preventive action plans (to address these root causes), monitor corrective and preventive measure effectiveness, document changes in procedures as a result of improved processes, and establish goal and objective benchmarks.

An environmental management system's degree of detail and complexity, documentation scope, and allocated operating resources will depend on the company's size and specific kind of business.

Environmental Policy[67]

This is a company's declaration of intent and principles regarding its overall environmental behavior, and provides a framework for action and for setting environmental goals and objectives. It is a company's commitment to the state, its workers, and to the community, on all issues concerning the environment.

Environmental policy is the driving force in implementing and enhancing a company's environmental management system in such a way that it can maintain and potentially improve environmental performance. Thus, environmental policy should reflect a commitment at the highest level to enforce

relevant laws and bring about continuous improvement. It has to be clear enough to be understood by all parties involved, and should be periodically reviewed to make sure it reflects changing conditions and information.

Company management should define and document its own environmental policy, in line with the environmental policy of any larger entity to which it belongs, and with said entity's suppport.

Planning

Environmental issues (baseline study, environmental appraisal, pollution source inventory). This is the process followed by a company in identifying significant environmental issues thought to have a high priority in environmental management. This process should consider the cost and time involved in undertaking the analysis, and reliable data availability. Available information on regulations or other topics may be used in this procedure, and each company will also consider the degree of practical control it has over the environmental issues in question.

A company that does not have an environmental management system in place should first determine its current situation concerning the environment through an environmental appraisal. The idea is to take all environmental issues faced by the company as the basis for implementing the environmental

management system. In every case, consideration should be given to both normal and abnormal company operations, as well as to potential emergency situations. This work is contained in the baseline study.

The process to identify significant environmental issues should consider air emissions, discharge into water, waste management, soil pollution, raw material and resource consumption, and other local and community environmental subjects.

Hiring the services of a specialized and accredited company is recommended for this task. The baseline study or environmental appraisal will be the basis for developing the monitoring system and for starting to procure equipment for this task.

After all waste and pollutants generated by production processes and support activities have been initially identified and described by the baseline study, an up-to-date inventory of pollution sources and their descriptions should be carried out and then systematic monitoring must be carried out.

Legal Requirements. Legal and other requirements applicable to environmental issues regarding company products and activities should be identified to make sure they can be met by the company. If possible, copies of laws, norms, regulations, or other environmental legislation requirements should be available, including all environmental permits issued.

Objectives and Goals. The objective is the overall and, if possible, quantifiable environmental goal deriving from a company's environmental policy. The goal is made up of detailed performance requirements that need to be met to reach environmental objectives.

Company-wide environmental objectives and goals, in line with environmental policy, should be set and documented. While objectives will be specific, goals will be quantifiable, and preventive actions must be taken whenever appropriate.

Environmental Management Program (Environmental Action Plan, Environmental Protection Plan, Environmental Program). As a result of the baseline study or appraisal, an action program targeted at eliminating company pollutants should be developed. The program has to be objective and feasible, and must include all implementation stages and cost estimates. The program should describe how company objectives and goals will be achieved, including deadlines and persons responsible for implementation. This plan has to be approved by the board of directors.

Developing and using the program is a key factor for success in implementing an environmental management system.

Implementation and Operation

Structure and responsibility are key to successful implementation of an environmental management system. Such as system requires the commitment of every employee in the company.

This way, environmental responsibilities will not be seen as being confined only to the company's environmental department, but will also include other company areas and departments.

This commitment must start with top management's commitment. Consequently, after developing the environmental policy, the highest company level should make sure the environmental management system is implemented. As part of this commitment, the manager should designate a specific management representative (say, the production manager) who will have defined and delegated responsibility and authority for implementing the environmental management system. In addition to these duties being defined, it is also important that key environmental management system responsibilities be communicated to the relevant staff.

Training. In order to achieve adequate system operation, a training plan should be developed through courses for top management and administrative personnel, seminars on specific subjects for different company areas, new employee orientation seminars, dissemination of company environmental policy, training for experts about the different environmental issues, and participation in national and international events.

Environmental education should be viewed as an ongoing process that is part of all citizens' comprehensive education, and is aimed both at acquiring knowledge and developing habits, skills, and attitudes, as well as building values. It is targeted at harmonizing relations among individuals, society, and nature, as well as nurturing economic, social, and cultural

processes with an eye to sustainable development. To this end, the company should establish and follow procedures to identify training needs.

Communication. This comprises procedures for receiving, documenting, and responding to relevant stakeholder information. It may include dialogue with interested parties, as well as a consideration of their relevant concerns. In some circumstances, responding to stakeholder concerns may include information on environmental impact caused by company operations.

These procedures should also define the communications needed with public authorities. The company may impart environmental information in several ways: externally, through the annual report, in legally required documents filed in government public records, in publications, on mass media, and in advertisements; and internally, through newsletters, posters, internal news, meetings, and e-mail messages.

Environmental Management System Documents. Documents should contain enough details to describe an environmental management system's central elements and interactions, and provide guidance as to where to get more detailed information on the functioning of some specific parts of the enviromental management system. Such documents do not have to be contained in one single manual.

The company should have at least one Environmental Management Manual, which is the company's environmental

management base document describing organizational structure, activity planning, responsibilities, practices, procedures, processes, and resources for developing, implementing, reviewing, and updating environmental policy.

Waste Management. This document provides general guidelines about each type of waste generated by the company (gas, liquid, or solid), specifies management actions to be taken and activities involved, responsibilities, sampling and monitoring systems, and the coding and complementary documents that may ensue, such as treatment process operating instructions. It lists all required reports, including monitoring result records.

Surface Water and Groundwater Management. Water quality is a very important issue in the ecosystem since human, animal, and plant life depends on it. Thus the need for preserving it, and for compiling in this manual all water management actions and regulations.

Hazardous Waste Management. Waste from any activity and in any physical state is considered to be hazardous if, due to the intensity or mode of its corrosive, toxic, poisonous, explosive, flammable, biologically harmful, infectious, irritating, or any other characteristics, it poses a threat to human health and to the environment. Thus, it is important to have full information about products handled by the company, as well as their treatment, storage, and hazardous waste disposal.

Document Control. The company should develop a system to keep documents readily available for environmental management system implementation. Documents could then be easily found and periodically examined, and their current versions would be available everywhere essential operations of the environmental management system are being performed. Nevertheless, a company's core task is to effectively focus on environmental management system and environmental performance, rather than on a complex documentation control system.

Operations Control. The company should identify all operations and activities relating to significant environmental issues identified according to its stated policy, objectives, and goals. These activities, including maintenance, should be planned to make sure there are documented procedures to address situations which could otherwise lead to irregularities.

Preparedness and Response Plans for Emergencies. The company must have and periodically update a program to respond to potential accidents and emergency situations, and to prevent and abate their likely environmental impact. The company should review and revise its emergency plans and response procedures as needed, particularly after breakdowns or emergency situations arise, and should also put test procedures through practical exercises and drills.

Monitoring and Corrective Actions.

Environmental Monitoring. The company must establish procedures for periodically measuring and monitoring key operating characteristics and activities that might have a

significant impact on the environment. Consequently, the business should have an Environmental Monitoring System encompasing all measurable environmental issues, and information records should be included.

Measuring equipment, if any, should be calibrated and kept in good condition, and records of these processes should be kept according to company procedures. Compliance with relevant environmental legislation and regulations should also be periodically assessed. For this purpose there should be equipment monitoring, maintenance and calibration plans to ensure measurement accuracy of the different equipment and instruments in the monitoring plan. Results should be recorded and kept as evidence of instrument quality and of maintenance tasks having been performed.

Non-compliance, corrective and preventive actions. For the purposes of investigating and correcting non-compliance, the company should take the following steps: identifying non-compliance's causes, identifying and implementing the necessary corrective actions, applying or revising the controls needed to prevent non-compliance from happening again, and recording all changes in written procedures resulting from the corrective actions.

Depending on the situation, these steps may be taken quickly and with minimum formal planning, or they may consist of a more complex and long-term activity. Associated documentation should be in line with corrective action level.

Records. All monitoring data and charts, complaints, frequencies, significant environmental impacts, evaluation and inspection results, environmental management reviews, results of government inspections, and operations follow-up should be entered in standard record-keeping books, and filed as operational evidence.

Record identification, maintenance, and disposal procedures should focus on records needed for implementing and operating the environmental management system, and for documenting the extent to which planned objectives and goals have been met.

Environmental records may include information on environmental laws, or about other applicable requirements; complaint records; training records; process information; product information; inspection, maintenance, and calibration records; relevant information on contractors and suppliers; incident reports; information on preparedness and response to emergencies; information on significant environmental issues; audit reports; and management reviews.

Environmental management system audits are systematic and documented verification processes for obtaining and objectively assessing evidence, with the purpose of determining whether or not the company's management system conforms to Environmental Management System evaluation criteria set by the company. Results are then reported to top management.

Audits may be carried out by company staff and/or outsiders selected by the company. In both cases, the persons in charge of auditing should be absolutely unbiased and objective. An audit performed by a registered company is recommended for the first quarter of the following year to assess past results and report on company performance.

Management Review

In order to maintain an environmental management system's continuous improvement, adequacy, efficiency, and performance, the company's management should review and evaluate the system at defined intervals. This review should have a comprehensive scope, although not all elements in an environmental management system need to be reviewed simultaneously; note that the review process may take some time.

Reviews should include audit reports, the extent to which objectives and goals have been met, continuous revision of the environmental management system in relation to changing conditions, and stakeholder information and concerns.

3.10.2 IMPORTANCE

Monitoring and control are among the most useful tools, albeit less frequently used by companies, in ensuring not only service and product quality but also environmental and social performance. It is virtually impossible, however, to take timely corrective measures if monitoring and control actions are not performed first, since they enable us to find out where and when impact or errors are occurring.

3.10.3 BASIC PRINCIPLES

■   There should be a records plan or program to identify and monitor environmental impact caused by company operations.

■   Mechanisms should be in place to receive customer evaluations, complaints, and comments, as well as records of the above and of corrective actions taken.

3.10.4 PRACTICAL TIPS

▮   When the company outsources some service or activity, it should have monitoring and control procedures in place to ensure contracted service quality and compliance.

▮   Monitoring and control span the following issues:

◗   Customer service

◗   Facilities maintenance and cleaning

◗ Visitor satisfaction

◗ Advertising and special event effectiveness

◗ Compliance with quality standards

◗ Compliance with resource management policies and strategies for handling waste, and conserving energy, water, etc.

◗ Compliance with internal regulations by both staff and visitors

◗ Compliance with ethical codes by staff, visitors, tour operators, etc.

◗ Monitoring ecotourism's environmental and sociocultural impacts

Glossary

Administration: 1. Act and effect of managing. 2. Function of an administrator.

Biodiversity: Biodiversity is the variability in the genetic material found in a region's flora and fauna.

Biological Diversity: See Biodiversity.

Buffer Zones: Zones adjacent to protected areas and having a portion of them under control, in order to provide protected areas with additional space and to also offer valuable benefits to rural communities.

Business: Organizational unit engaged in industrial, marketing, or service activities for profit.

Circular Trail: A one-way trail starting and ending at the same or approximately the same point. It is thus shaped like a circle, and it is also known as a circuit trail.

Competitiveness: Ability to compete.

Control: Manual or automatic regulation of a system.

Cultural Heritage: Any expression or evidence of human creation having special relevance in terms of archaeology, history, literature, education, arts, science, and general culture.

Customer: Person using the services of a professional or business.

Effectiveness: Capacity to achieve the expected or desired effect.

Efficiency: An effectiveness measure; specifically, work done that is divided by input energy in a given system.

Environment: Set of circumstances around a living being.

Environmental: Pertaining or relative to the environment's conditions or circumstances.

Figure-8 Trail: A trail crossing itself in its path, thus forming a figure-eight shape.

Formal Education: Educational programs developed in formal school systems.

Implement: To put in operation, apply methods, measures, etc. to carry out something.

Inbound Tourism TA: A business engaged in selling tourist services within a destination country or point; an agency that takes care of tourists at a destination point or at an intermediate point.

Infrastructure: Construction either above or below the ground to provide the basis for effective development operation of systems, such as urban areas, industry, and tourism.

Interpretation: A communication process in which a person translates technical language into terms and ideas other people are able to understand. It is an educational method aimed at revealing meanings and relationships through the use of original objects, first-hand

experience, and illustrative media, instead of just communicating factual information.

Linear Trail: A "two-way, dead-end route" where people going in one direction run into people coming from the other direction.

Local Communities: Communities located near or adjacent to wilderness areas.

Management: Act and effect of administering.

Market Research: See Market Study.

Market Segment: Group of consumers or people having common characteristics that set them apart from other groups.

Market Study: The process of gathering, recording, and analyzing all facts about issues related to marketing a good or service.

Marketing: An organization's total system of activities geared to planning, pricing, promoting, and designing products or services that meet target market needs, in order to achieve an organization's goals.

Mechanism: An instrument or process through which something is done or produced.

Monitoring: Process that alerts, checks, controls, or keeps continuous records of something.

Natural Heritage: A group of elements and biophysical characteristics of a site, region, or country.

Non-Formal Education: Educational programs developed outside the formal education system.

Outbound Tourism TA: A business engaged in selling tourist services in one country or place of origin, to be provided in another country or destination; a travel agency sending tourists from one point to another.

Planning: A methodically organized and often comprehensive general plan to reach a particular objective, such as a city's harmonious development, economic development, scientific research, industrial operations, etc.

Policy: Guidelines or directions governing a person's or entity's actions in a particular field or issue.

Pollution: The addition of any natural or man-made materials or substances to air, water, or soil in such amounts that make the resource unfit for a specific use or need.

Principle: Norm or fundamental idea governing thought or conduct.

Procedure: A method for doing things.

Protected Areas: Any land category officially protected by a national or international government, state, organization, or agency, By definition, a protected area should be kept safe from unrestrained use of its resources.

Public Relations: Activities developed to create a good image of the company or organization in the local environment where the company or organization operates.

Rationalize: Organize production or work in such a way it increases yields or reduces costs with a minimum amount of effort.

Record: From Lat. recordari, to remember, recollect. An act and effect of recording. An account in writing or the like preserving the memory or knowledge of facts or events.(Random House Unabridged Dictionary.)

Recycling: Using or reusing waste as raw materials or ingredients in an industrial or agricultural process.

Reducing: Purchasing only what is strictly necessary.

Reject: Refusal to acquire environmentally harmful products due to their origin or production process.

Retail TA: An agency selling tourist services directly to the public, these services being operated or created by other service providers.

Reuse: Using a product or material a number of times without any treatment.

Self-Guided Tour: An interpretive tour in which persons independently follow a series of preplanned stops that are usually identified in a brochure, sign, or recorded message.

Self-Guided Trail: See Self-Guided Tour.

System: A set of orderly interrelated things contributing to a particular objective.

Tour: A series of integrated services under a fixed itinerary that includes several visitation points.

Tour Guide: A person with professional knowledge of the tour area, fluent in two or more languages, who performs advice and support functions for tourists during tours. These services are usually contracted for group or individual tours, circuits, visits, etc.

Tour Operator: A business that creates and/or markets all-inclusive trips and/or provides tourist services. It designs and operates its own tourist services to be sold through other agencies, in addition to selling them directly to the public.

Tourist Attraction: Any point or element in a site's natural or cultural heritage that is appealing to tourists.

Tourist Industry: Or Travel Industry. The collection of companies engaged in providing travel-related services. It includes carriers, hoteliers, and travel agencies in all of their forms (whosale, retail, tour operators, local operators).

Tourist Package: A set of two or more tourist services that can be acquired by an individual customer or a group. Typically, it includes lodging, and a combination of other elements, such as transportation, meals, local tours, etc.

Travel Agency (TA): A business engaged in making travel arrangements and selling single or packaged services as an intermediary between users and service providers.

VIP: Acronym of "Very Important Person," a name given in tourism to special guests requiring preferential treatment.

Voucher: A special slip used in providing tourist services. Upon presentation, a voucher entitles the bearer to the services specified.

Waste Management: The series of operations needed to properly dispose of waste. It encompasses minimization, separation at the source, recovery, storage, collection, transportation, recycling, treatment, final disposal, etc.

Waste Treatment: The series of physical, chemical, biological, or thermal operations aimed at reusing waste, decreasing or eliminating its potential hazard, or adapting its physical, chemical, and biological properties to final waste disposal requirements.

Wholesale TA (Operator): An agency that assembles and operates tourist services for sale through other agencies, in addition to selling directly to the public.

Wilderness Areas: Areas that have not been intensely developed or managed. They include forests, deserts, mountains, grasslands, or other land tracts. The term has long been applied to established lands presenting a natural appearance. "Wilderness areas" may be synonymous or associated with: protected areas; national parks; natural reserves; wilderness forests or refuges; national forests; watersheds; grasslands; biosphere reserves; multiple use areas, reserves or zones, and indigenous reservations. In the international sphere, wilderness areas may encompass any of the above mentioned classifications.

Wilderness Area Management: Management of natural ecosystems that are "wild" and/or subject to different degrees of human use.

Recommended Bibliography

Báez, Ana y Acuña, Alejandrina. **Guía para las Mejores Prácticas del Ecoturismo.** Prepared by Turismo & Conservación Consultores for PROARCA-CAPAS.

Spanish and English version. San José, Costa Rica. 1998 Bien, Amos y Cháves, Damaris. **Manual de Comprobación Centroamérica Verde**. SICA, Fodestur, GTZ, Meso-American Biological Corridor. April, 2003.

Bien, Amos. **Estrategia de certificaciones turísticas en Centroamérica**. Fodestur, GTZ, SICA. San José, Costa Rica. October, 2000.

Centro Nacional de Producción más Limpia. 2003. **La empresa Eficiente**. Calendario para las Pequeñas y Medianas Empresas.

Consejo de la Tierra. 2003. **Guía de Acceso al Espacio Físico. Proyecto de Accesibilidad en Parques Nacionales y/o Áreas Protegidas**. San José, Costa Rica.

Consejo de la Tierra. 2002. **Guía de Prevención y Seguridad. Proyecto de Accesibilidad en Parques Nacionales y/o Áreas Protegidas**. San José, Costa Rica.

Consejo de la Tierra. 2002. **Guía para la Realización de un Plan de Accesibilidad en Áreas Protegidas. Proyecto de Accesibilidad en Parques Nacionales y/o Áreas Protegidas**. San José, Costa Rica.

Consejo de la Tierra. 2003. **Accesorios y Adaptación para el Acceso de Personas con Discapacidad a Parques Nacionales y Áreas Protegidas**.

Proyecto de Accesibilidad en Parques Nacionales y/o Áreas Protegidas. San José, Costa Rica.

Consejo de la Tierra. 2003. **Guía para Niños, Niñas y Adolescentes: Una Visión Multisensorial de Nuestro Entorno Natural. Proyecto de Accesibilidad en Parques Nacionales y/o Áreas Protegidas**. San José, Costa Rica.

Cooprena R.L., **Manual de criterios y estándares para el agroeocturismo comunitario en Costa Rica**. San José, Costa Rica, 2002.

Ecotourism Association of Australia International Conference. 2002. **Impact of GeoTourism Development Values on Destination Choice in Coastal New South Wales**. Executive Summary. October 2002.

Fundación SOS Mata Atlántica, Prefeitura de Paraty. **Manual de Coleta Seletiva de Lixo**. Brazil.

Garcés, Fausto. 1995. **Guía Metodológica Desarrollo de Proyectos de Ecoturismo. Inventario, Diseño, Operación y Monitoreo: IDOM**. Quito, Ecuador. January 1995

Green Globe, 1994. **Water Management for Hotels**. 4 Suffolk Place. London SW1Y 4BS. UK

Green Globe, 1994. **Water Management for Hotels**. 4 Suffolk Place. London SW1Y 4BS. UK

Green Globe, **Waste minimization for restaurants and catering facilities**. 4 Suffolk Place. London SW1Y 4BS. UK

Green Globe, **Waste minimization for restaurants and catering facilities**. 4 Suffolk Place. London SW1Y 4BS. UK

Green Hotelier. **Issues 25 & 26**. May 2002.

Green Hotelier. **Issues No.14**. April 1999.

Halpenny, Elizabeth. 2002. **Marine Ecotourism. Impacts, International Guidelines and Best Practice Case Studies. A Resource For Tourism Operators and Coastal Planners and Managers**. First Edition. Burlington, Vermont, USA.

Halpenny, Elizabeth. **Marine Ecotourism: Impact, International Guidelines and best practice case studies**. The Ecotourism Society. Burlington, Vermont, USA. 2002

Hamele, Herbert. 1996. **The Book of Environmental Seals & Ecolabels. Environmental Awards in Tourism. An International Overview of Current Developments**. 2nd Edition: March 1996.

ICT. 1996. **Certificación para la Sostenibilidad Turística. Hacia una nueva ventaja competitiva**. Departamento de Recursos Naturales. Instituto Costarricense de Turismo. San José, Costa Rica.

ICT. 1997. **Certificación para la Sostenibilidad Turística. Manual de Categorización y Guía de Aplicación**. Departamento de Recursos Naturales. Instituto Costarricense de Turismo. San José, Costa Rica.

Instituto Nacional de Aprendizaje. Núcleo de Turismo. 2001. **Aplicación de Normas de Sostenibilidad para Empresas de Hospedaje**. San José, Costa Rica. May 2001.

Mason, Peter & Mowforth, Martin. **Codes of Conduct in Tourism**. Occasional Papers in Geography, No. 1.1995. Department of Geographical Sciences. University of Plymouth.

Ministerio de Turismo Ecuador. Junio 2002.**Turismo y Desarrollo Sostenible**. Primera Edición: August 2002. Quito, Ecuador.

Molina Concepción, Rubinoff Pamela, Carranza Jorge. 1998. **Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo**, México. Primera Edición 1998.

Pereza-Breedy, Jorge. **Guía sobre mejores prácticas de manejo para turismo sostenible**. Elaborado por la División de Turismo Sostenible de Rainforest Alliance Proecotur. 2002. **Ecoturismo. Visitar para conservar e desenvolver a Amazonia**. Brazil

Red Iberoamericana de Reserva de la Biosfera. 1998. **Taller Internacional de Ecoturismo; Aciertos y Debilidades en Casos Concretos**. San José, Costa Rica. August 1998.

Sociedad Mundial de Ecoturismo. 1995. **Directrices para el Ecoturismo. Una Guía para los Operadores de Turismo Naturalista**. Norte Bennington, Vermont, USA.

Stichting Keurmerk Milieu. **Le Barométre Environnenmental**. Brochure.

Rainforest Alliance ... Innovative Solutions for Global Conservation

Rainforest Alliance is an international conservationist organization working in agricultural, forest, and tourist sectors to implement sustainable management practices. It has created a global standard that helps people protect biodiversity, and provides them with opportunities.

Rainforest Alliance's mission is to protect ecosystems, as well as people and wildlife depending on them, by transforming soil use and business and consumer behavior practices. Companies, community groups, and owners involved in our programs meet stringent biodiversity conservation standards and are responsible for people's sustainable well-being.

SAVING FORESTS – Rainforest Alliance pioneered forestry certification through its 1989 launching of **"SmartWood"**, the first sustainable forestry certification program in the world. In order to provide market incentives for proper environmental, economic, and social forest management, we issued a seal of approval to all operations showing strict compliance with sustainability standards.

SEEDING FOR THE FUTURE – We developed our **Sustainable Agriculture** program to integrate agricultural production with biodiversity conservation and human development. Ten years ago, after ascertaining that pesticide use had significantly declined, investments had been made in recycling, and workers were receiving better training, housing, health care benefits, and education, we certified our first banana farm. Today, we also stamp our seal of approval on coffee, cocoa, palm products, citrus fruits, and cut flowers from properly managed operations.

TRAVELING ECOLOGICALLY – Rainforest Alliance's Tourism Division is engaged in transforming tourist company business practices and tourist behavior, promoting a socially and environmentally responsible and profitable industry to protect ecosystems, as well as the people and wildlife depending on them. Our vision consists of becoming a self-sufficient, pioneering, and catalyzing program in sustainable tourism, one which is managed to strengthen other similar organizations. Our staff is recognized for their professionalism and transparency, strong motivation, and commitment to our organizational mission.

We envision a tourist industry in which environmental and social responsibility and accountability are inherent components in tourist service operation and marketing. This reduces negative impact on the environment and on local cultures, particularly in biodiversity-rich areas with fragile ecosystems and vulnerable communities.
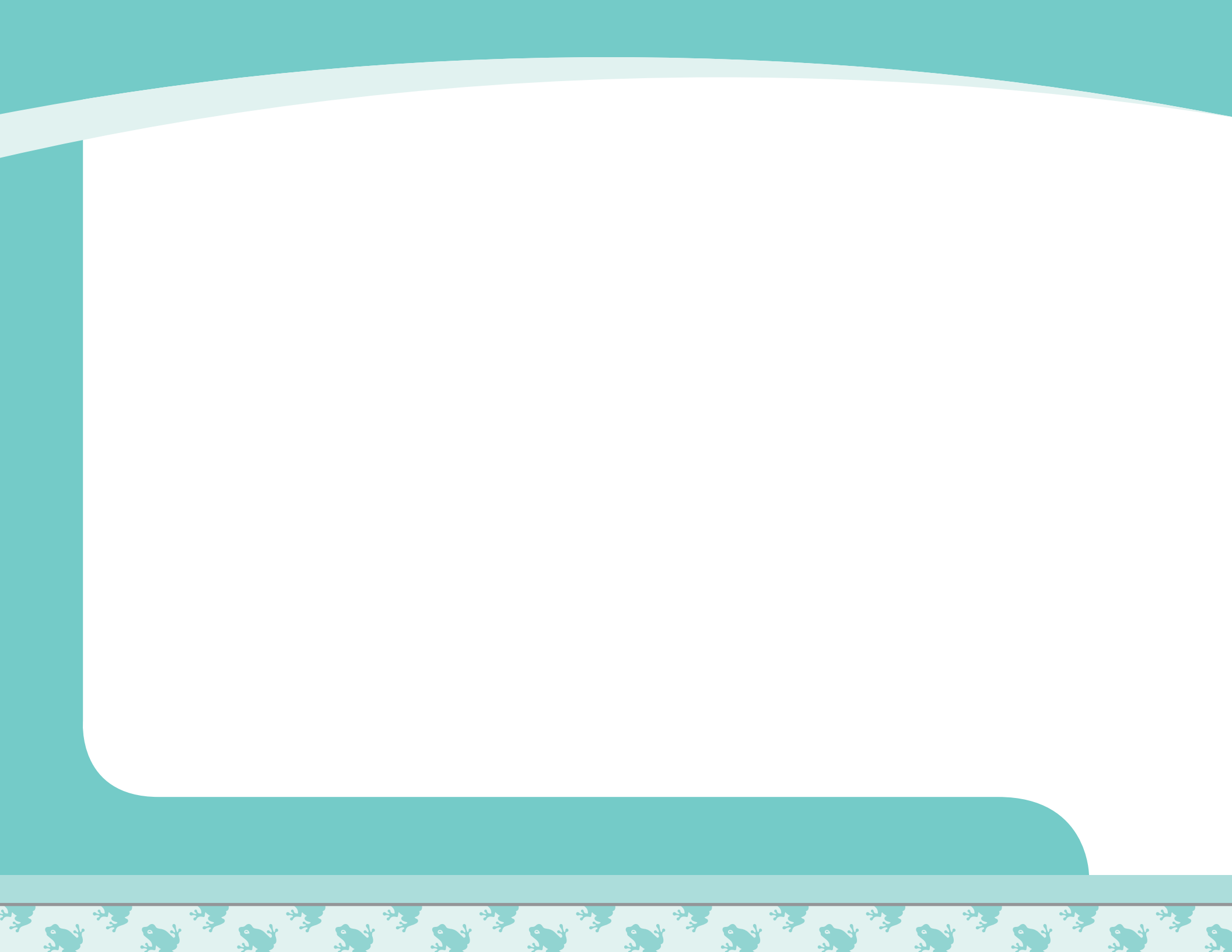
Bibliographic References

1 http://www.world-tourism.org/sustainable/esp/concepts.htm

2 Extracto de la definición de la Real Academia Española, según consulta en línea a http://www.rae.es/

3 Tomado de: Guía Metodológica de Educación Ambiental para el Recurso Agua. Documento electrónico en formato PDF, pág. 28: http//www.meneduc.cl/medio_ambiente/Libro Agua.pdf

4 Tomado de: http://www.aya.go.cr/htm/index.htm

5 Tomado de: http://www.portalagrario.gob.pe/rrnn_agua.shtml

6 Tomado de: http://www.netsalud.sa.cr/aya/club/chapt04.htm

7 Adaptado de: http://www.netsalud.sa.cr/aya/club/chapt05.htm

8 Tomado de: Guía Metodológica de Educación Ambiental para el Recurso Agua. Pág. 47

9 Adaptado de: http://www.cne.cl/fuentes_energeticas/e_renovables.php

10 Tomado de: http://www.cne.cl/fuentes_energeticas/e_renovables/eolica.php

11 Tomado de: http://www.cne.cl/fuentes_energeticas/e_renovables/hidrica.php

12 Tomado de: http://www.cne.cl/fuentes_energeticas/e_renovables/solar.php

13 Tomado de: http://www.cne.cl/fuentes_energeticas/e_renovables/geotermica.php

14 Adaptado de: http://www.cne.cl/fuentes_energeticas/e_renovables/biomasa.php

15 Adaptado de: TOI. A Practical Guide to Good Practice. Pág. 2

16 Ilustración tomada de: Antecedentes, Actividades y Noticias sobre la Contaminación Ambiental. Programa de Educación Ambiental. Ministerio de Educación Ambiental. República de Chile. Documento PDF. Pág. 22. http://www.mineduc.cl/ambiente/medio_ambiente/LibroContaminacion.pdf

17 Información adaptada de: http://www.grupoice.com/esp/cencon/gral/energ/consejos/ahorricelec1.htm y http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=2039

18 Esta información está referida a usos domésticos y se suministra únicamente como referencia, podría aplicarse a empresas comunitarias pequeñas, por ejemplo. Busque siempre la asesoría de un profesional.

19 Toda la información sobre este tema, fue adaptada de: http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=2049

20 Adaptado de: http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=2037 y http://www.grupoice.com/esp/cencon/gral/energ/consejos/ahorricelec4.htm

21 Información adaptada de:http://www.grupoice.com/esp/cencon/gral/energ/consejos/ahorricelec6.htm

22 Adaptado de: http://www.grupoice.com/esp/cencon/gral/energ/consejos/ahorricelec6.htm

23 Todos estos consejos prácticos fueron tomados o adaptados de: http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=2042

24 Adaptado de: http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=2038 y http://www.grupoice.com/esp/cencon/gral/energ/consejos/ahorricelec3.htm

25 Adaptado de: http://www.grupoice.com/esp/cencon/gral/energ/consejos/ahorricelec2.htm y http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=2040

26 Tomado de: http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=2040

27 Adaptado de:
    http://www.conae.gob.mx/wb/distribuidor.?seccion=2041

28 Adaptado de: http://www.jmarcano.com/recursos/floyfau.html y http://
    www.entomologia.net/seprona1.htm

29 Tomado de: http://www.jmarcano.com/biodiverso/wildlife.html

30 Tomado de: http://www.jmarcano.com/biodiverso/wildlife.html y http://
    www.jmarcano.com/biodiverso/wildlif1.html

31 Adaptado de: Francisco Heras Hernández.
    http://ofdp_rd.tripod.com/ambiente/curso/biodiv.html

32 Adaptado de: Juan Carlos Guix.
    http://ofdp_rd.tripod.com/ambiente/curso/bosque.html y
    http://ofdp_rd.tripod.com/ambiente/curso/bosque2.html

33 Adaptado de: http://www.jmarcano.com/biodiverso/endanger/
    definicion.html y http://www.jmarcano.com/biodiverso/wildlif3.htm

34 Adaptado de: http://www.jmarcano.com/recursos/floyfau.html;
    http://www.jmarcano.com/biodiverso/wildlif2.html y
    http://ofdp_rd.tripod.com/ambiente/curso/biodiv.html

35 Adaptado de: Javier Gómez - Limón García y J. Vicente de Lucio
    Fernández http://ofdp_rd.tripod.com/ambiente/curso/area.html y http://
    ofdp_rd.tripod.com/ambiente/curso/area2.html

36 Adaptado de: Guía Didáctica de Educación Ambiental. Medio
    Ambiente, Ecología y Acuicultura. Ministerio de Educación de Chile.
    Santiago, 1999. Págs.7-8

37 Adaptado de: http://www.jmarcano.com/recursos/floyfau.html ; http://
    www.jmarcano.com/biodiverso/wildlif2.html y http://ofdp_rd.tripod.
    com/ambiente/curso/biodiv.html

38 Adaptado de: http://www.pvem.org.mx/dest_averde.htm
    http://www.pvem.org.mx/dest_averde.htm

39 Adaptado de: http://www.fao.org/forestry/foda/wforcong/publi/v1/
    T3S/1-4.HTM#TOP y http://www.iadb.org/regions/re2/en2/2NOWAK.pdf

40 Adaptado de:
    http://www.conae.gob.mx/wb/distribuidor.jsp?seccion=672

41 Adaptado de: http://www.jmarcano.com/recursos/conta.html

42 Adaptado de: http://www.mma.es/educ/ceneam/pdf/blanco.pdf; http://
    usuarios.lycos.es/ambiental/ea2/pro_ea.html; http://ofdp_rd.tripod.com/
    ambiente/njsmith.html y
    http://ofdp_rd.tripod.com/ambiente/curso/fund.html

43 Adaptado de: http://www.mma.es/educ/ceneam/pdf/blanco.pdf;
    http://usuarios.lycos.es/ambiental/ea2/pro_ea.html;
    http://ofdp_rd.tripod.com/ambiente/njsmith.html y
    http://ofdp_rd.tripod.com/ambiente/curso/fund.html

44 Manual de Buenas Prácticas del Facilitador de la Naturaleza. Consejería
    del Medio Ambiente. Junta de Andalucía. España. Capítulo 3.

45 Manual de Buenas Prácticas del Facilitador de la Naturaleza. Consejería
    del Medio Ambiente. Junta de Andalucía. España. Capítulo 3.

46 FAO/PNUMA, 1992. P. 63

47 Ham, 1992 pp.7

48 Tomado de FAO/PNUMA, 1992.pp 103-119

49 Tomado de: http://www.el-quinto-pino.com/Culturas/Definicion.htm

50 Tomado de: http://www.ipc.gov.ve/conocimiento/descrip.html y http://
    whc.unesco.org/world_es.htm

51 Tomado de: http://www.ipc.gov.ve/puestavalor/valordescrip.html

52 Tomado de: http://www.earthcharter.org/innerpg.cfm?id_menu=51 y
    http://www.cinu.org.mx/temas/p_ind.htm

53 Tomado de: Gabriel Duran Esquivel, http://www.gestiopolis.com/
    canales2/gerencia/1/planaccion.htm

54 Adaptado de: Guía Didáctica de Educación Ambiental. Medio Ambiente, Ecología y Acuicultura. Ministerio de Educación de Chile. Santiago, 1999. Págs.9 - 10

55 Adaptado de: http://www.gestiopolis.com/recursos2/documentos/fulldocs/emp/gesempresarial.htm

56 Tomado de: http://www.podologia.cl/belkis.htm

57 Consulta en línea del diccionario de la Real Academia Española

58 Preparado por Denia del Valle, Rainforest Alliance. Julio, 2004

59 Preparado por Denia del Valle, Rainforest Alliance. Julio, 2004

60 Adaptado de: María Escat Cortés http://www.gestiopolis.com/canales/gerencial/articulos/44/progconinter.htm

61 Adaptado de: Karin Hiebaum http://www.gestiopolis.com/recursos2/documentos/fulldocs/mar/planmktkarim.htm

62 Por: MSc. María de los Angeles Linares Borrell, http://www.gestiopolis.com/canales2/rrhh/1/mejcontcd.htm

63 United States Department of the Interior. National Park Service. Guiding principles of sustainable design. September 1993. P 41

64 Adaptado de: http://www.ingenieroambiental.com/29/evaluacion-riesgos2.pdf

65 Adaptado de: http://www.gestiopolis.com/recursos/experto/catsexp/pagans/fin/no7/comprasinventarios.htm

66 Adaptado de: Lázaro Lago Pérez. http://www.monografias.com/trabajos14/gestion-ambiental/gestionambiental.shtml#fo

67 Adaptado de: Lázaro Lago Pérez. http://www.monografias.com/trabajos14/gestion-ambiental/gestionambiental.shtml#fo