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MICHAEL MATARASSO

TARGETING BEHAVIOUR

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Developing Conservation Education, Communications and Advocacy Programmes with the Participation of Local Communities

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Published by: WWF Indochina Programme, Hanoi, Vietnam

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Citation: Matarasso, M., 2004. Targeting Behaviour: Developing Conservation Education, Communications and Advocacy Programmes with the Participation of Local Communities.

Hanoi: WWF Indochina Programme

First edition: 2004

Design by: Erika Gildersleeve

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Publishing License No: 62-08/XB-QLXB
Quantity: 100cps
Size: 19 x 24.5 cm
Production by HAKI

Acknowledgements

Publication of this book would not have been possible without the financial support from Save the Tiger Fund, The National Fish and Wildlife Foundation. Thanks to the communities in Vinh and Pa Toi villages and the staff of Song Thanh Nature Reserve, Quang Nam who were involved in testing the content of this book. Special thanks to Dr. Joe Peters for reading this book and giving excellent advise and support. Also thanks to Jane Story for all her help in editing in English. We are also grateful to Erika Gildersleeve for her hard work and creativity in designing this book.

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INTRODUCTION

Since ancient times when hunter-gatherers protected sacred groves and followed hunting taboos, to the establishment of the first national park at Yellowstone (USA) in 1872 and beyond, humans have attempted to conserve nature and to halt the environmental destruction they themselves have caused.

While different preventative and restorative techniques have been employed to protect and preserve nature, all take, to varying degrees, one of two diametrically opposing philosophical views. At one end of the scale, some conservationists hold that nature reserves should be fenced off and isolated, their entry barred by armed guards. At the other end of the spectrum are those conservationists who believe that local communities must be involved in conserving and managing the resources around them.

There are many other approaches that fall between these two extremes. However, regardless of the philosophy upon which conservation intervention is based, the unifying underlying factor that these approaches all aim to address is human behaviour and the impact people have on the environment.

Humans pose the greatest threat to the environment, with perhaps natural disasters the only exception. Whether it is the clear cutting of the forest for agriculture, the hunting and consumption of wild animals, unsustainable logging for timber, the construction of huge dams and highways, or simply turning on the air conditioner, human action threatens the environment.

Despite the undeniable threats posed by the actions of humans, people's behaviour is often overlooked and sometimes dismissed entirely when designing environmental projects, when instead it should be the main focus of most conservation efforts. Conservationists should become aware of the social and economic pressures and education that influence people to behave in a way that hurts the environment. It is essential that we look at the reasons behind the destructive practises of people, while at the same time reinforce behaviour that respects and conserves nature.

using plastic bags? How many of us think about the environment when making a purchase? Very few conservationists can say they do. Why? Because it is difficult to live in an environmentally sustainable way. So if we, as conservationists, find it difficult to behave in an environmentally benign way, how can we expect those who don't work in conservation and perhaps don't understand and value nature as much as we do to change? Everyone needs to find a comfortable balance in his or her life between using and preserving natural resources. We all should strive daily to reduce our environmental impact as much as possible. As conservationists, we should remember that our behaviour has no less an impact on the environment than the people with whom we are working. In fact, we may have a greater impact than people living a more traditional lifestyle, including those whose livelihoods depend directly on nature.

By trying to practise what we preach, we become better role models, teaching by example.

Once conservationists understand why people behave the way they do in relation to the environment, they then can identify the knowledge, skills, attitudes and incentives that will enable people to continue with practises that benefit the environment while adopting new ways of behaving that will conserve and restore natural resources. The best means of bringing about this change is by raising people's awareness, providing them with options and training, advocating the removal of barriers and, most important, ensuring their meaningful participation.

It is difficult to change behaviour. Think about yourself and other conservationists you know. How many of us actually live in a way that has very little impact on the environment? How many of us walk or ride a bicycle to work? How many of us eat at the lower end of the food chain and avoid meat or consume only fresh organic food instead of relying on packaged and processed foods? How many of us carry a basket when shopping instead of

By practising what we preach and changing our own behaviour so that we cause less damage to the environment, we can better understand the challenges and obstacles facing those whose behaviour we are trying to change. We also become better role models, teaching by example.

How can we encourage others to change behaviour, and why would anyone want to change if they are currently benefiting from their existing behaviour? Only if people are willing and involved and see an advantage for

themselves, will they make the necessary changes. There are compelling reasons to be made for changing behaviour, including the profitability of new practises that have less impact on the environment.

Change takes commitment, effort, time, and, sometimes, a substantial investment, the costs of which can outweigh immediate benefits. Some might argue that we are duty bound to make changes because of the intrinsic value of nature and for the sake of future generations. However, others are of a different frame of mind. People at both ends of the economic spectrum - those preoccupied with surviving day by day, and those motivated by greed to make more and more money - are prepared to overlook the need to change their behaviour.

Only when people fully understand the value of conservation and its importance to their own lives will they change their own personal lifestyles and attitudes. Once they grasp how their own actions contribute to the destruction of the environment, and how this affects them and their families, they will appreciate how, by changing their behaviour individually and collectively, they can save the planet for future generations. For this reason, their participation in the development of conservation efforts is essential.

A core part of the methodology presented in this guide is to determine by a participatory process the reasons people behave in ways that harm the environment. These reasons may include ignorance, a poor attitude, inadequate laws and policies, a weak infrastructure or a lack of skills, options, technology and/or financial incentives.

This guide was developed in an attempt to focus conservation projects on human behaviour, and to provide a set of tools that professional conservationists can use. A facilitative process that enables people to access and attain the knowledge, skills, values, and options needed to participate equally and fully in the conservation and preservation of natural resources is the preferred method outlined in this guide. Education, communications and advocacy are the tools used to achieve these goals.

The information and tools contained herein will assist staff of local conservation projects to develop and design conservation education, communications and advocacy (CECA) programmes with the participation of the community.

The guide consists of four parts. The first part, *Getting Started*, includes a story which can be read to a community as an icebreaker before beginning to design a CECA programme with them. Reading a story may also help the conservation educator to get to know the community better, while beginning to educate them in a fun way about the major issues.

The second part, *Why Consider Behaviour and How Behaviour Relates to the Environment*, will clarify why it is important to understand behaviour in the context of the environment and CECA. This section will also introduce the different factors that influence behaviour affecting the environment.

The third part, *Introduction to Different Values of the Environment*, gives an overview of the different ways people value the environment. Information and an activity for the community to analyse values are included in an effort t o incorporate the value of conservation or preservation into the decision-making process. It will also give the conservation educator an idea of the community's values.

The fourth part, *Putting It into Practise: Developing Conservation Education, Communications, and Advocacy (CECA) Programmes*, introduces the user of the guide to the five steps in developing such a programme: assess, design and plan, pre-test and revise, implement, and monitor and evaluate. This section is divided into five parts each of which explains a different step. The first part includes information and tools which enable the conservation educator to work with the community and other stakeholders to determine what threatens the environment and natural resources in their areas and to identify the activities that pose these threats. This part also explains how to work with communities to identify the knowledge, attitudes, options and skills that a CECA programme must address if communities are to adopt conservation behaviours and the barriers to this adoption are to be removed. The second part provides information on how to develop and conduct a training programme, implement a communications campaign and do advocacy work. It also includes a description of the tools required to assist communities to actualise their conservation solutions. Also provided are some guidelines for writing an action plan, developing a budget and raising funds. There are likewise some tips on writing effectively and designing materials. In the third and fourth parts, basic information is provided on how to pre-test, revise and implement a CECA programme. Finally, in the fifth part of section four, there are detailed suggestions on how to monitor and evaluate a CECA programme.

Methodology:

Instead of teaching communities about issues that we think they need to know about in order to conserve natural resources, we need to begin by learning from and working with local people to find out what they think they need to conserve natural resources and what action is required to meet those needs. Facilitation is the key for this to happen successfully. If people don't participate in identifying solutions and decide for themselves to conserve natural resources, the learning or implementation of an activity will be half-hearted, misunderstood, and will most likely fail (*Braakman and Edwards, 2002*). Facilitation enables conservation educators to assist communities to design, plan and implement education programmes tailored specifically to their needs while also meeting the requirements of conservation organizations. The process of facilitation supports the participation of multiple stakeholders in identifying and solving problems, planning, making decisions, and resolving conflicts.

New skills are needed to work with and train communities using facilitation skills. According to Braakman and Edwards (*2002*), facilitation should allow for mutual understanding, full

participation, inclusive solutions, and shared responsibility. In order for this to happen, ideally conservation educators should guide the process of a group without bias and without making value judgments on the content being discussed. However, inevitably, because the task of a conservation educator is pre-determined (i.e., conservation), a value judgment has already been passed: nature conservation is a desired outcome. Nonetheless, any bias should be minimized as much as possible, and, as Braakman and Edwards stress, the facilitator must have an interest in people's lives and situations, feel empathy in order to understand other people's perspectives, respect the views and behaviour of others, and trust in a group's potential to find a solution to its own problems. Certain skills are required to be successful. They include the ability to listen, ask questions, probe, initiate dialogue, develop inclusive solutions, and find common ground.

There are different levels at which people can participate. According to Braakman and Edwards (*2002*), the process is the least participatory when the most powerful stakeholder makes the final decision and announces it to the other stakeholders. The process is most participatory when all inputs, analysis and decisions for a project are made jointly by all stakeholders. There are three other levels between these two extremes: the most powerful stakeholder "sells" the decision; the most powerful stakeholder presents a tentative decision for discussion; and, the most powerful stakeholder makes the final decision only after the issue has been jointly analysed. In this guide, we take the latter approach. We will work with the communities to design the programme so that it best answers their needs to enable them to participate in conservation, and is appropriate for their situation. However, we will also have to make some of our own decisions to ensure that the quality of the programme and materials are of the highest standard possible and that conservation objectives are met most effectively.

As a precondition for the success of the process outlined here, a strong relationship based on trust and confidence between conservation educators and communicators and community members is essential. The community conservation educator using this guide should be diligent, use common sense and cross-check responses by close observation to ensure that the process and results reflect the real situation. The user will find that many participatory techniques are required to use this guide. Besides facilitation, some participatory rural appraisal techniques are used including semi-structured interviews and group discussions, brainstorming sessions, seasonal calendars, historical timelines, problem trees, and village walks. More detailed explanations of how to apply these techniques are presented later.

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One of the most important steps in designing a CECA programme is developing a good working relationship with all the participants involved in the process. Fostering an open, respectful and trusting relationship is central to working together successfully and agreeing on goals and future activities that will protect the environment while mutually benefiting all stakeholders.

Before implementing a CECA programme, users should read and familiarize themselves thoroughly with the content, methods and tools contained in this guide.

To start the process, introduce yourself, the project staff, and your organization. Explain the goal of your organization and the work you do. Begin by introducing the concept of conservation education, communications and advocacy. Then explain why such a programme is relevant to the community, why you and your organization want to develop one with their community, and how it will potentially help people to understand what is necessary to practise environmental stewardship and how this will benefit their lives. Outline what is involved in designing an education programme in conservation including the process, activities and desired achievements. Find out if the community wants to take part in this process and in CECA activities in the future. Let people know that if they want to take part, they will be expected to participate in different activities and the results depend on their hard work and commitment. If the community is not interested, find out why and try to resolve this matter before starting.

Once a community indicates an interest in taking part in CECA activities, explain the objectives, flow, and desired results of the process of designing such a programme.

Explore the expectations of the local stakeholders and discuss whether or not they can be met. Agree on guidelines for how the group will function, set norms and develop an agenda which includes times of meeting. After this is done, select an equal number of men and women and elders and younger adults who represent the community with whom you will work. Once introductions have been made, the process understood, the sample group selected and the agenda set and agreed upon, begin with an icebreaker. You may start with a story, film or a game followed by some thought provoking questions about what people have just seen, heard or participated in. A sample story is included below.

The Man Who Planted Trees, was written in 1954 by Jean Giono, a French writer. It is a truly incredible tale of how one man's determination to pay tribute to the Earth by planting trees every day of his life for more than 40 years transformed a once desolate and dry wasteland into a vast forest with sparkling streams and abundant wildlife. This story is about a man who makes his dream of taking care of the Earth by planting trees without any payment in return, come true.

A story like this one can be used as a good way of making the community feel comfortable with not only the conservation educator but with the concept of conservation. Stories are also a good way of teaching values and for motivating and inspiring people to take action. Tell the following story to the community you are working with so that they warm up to you and to prepare them for the work they are about to take part in during the next couple of days. You may want to adapt this story to make it more relevant to the community with which you are working. If this story is not appropriate, you may want to make up your own story or recount a traditional folktale from the area that will inspire people to become active in conservation.

The Man Who Planted Trees

Giono, 1954

For a human character to reveal truly exceptional qualities, one must have the good fortune to be able to observe his or her performance over many years. If this performance is devoid of all egoism, if its guiding motive is unparalleled generosity, if it is absolutely certain that there is no thought of recompense and that, in addition, it has left its visible mark upon the earth, then there can be no mistake.

About 40 years ago I was taking a long trip on foot over mountain heights quite unknown to tourists in that ancient region where the Alps thrust down into Provence. All this, at the time I embarked upon my long walk through these deserted regions, was barren and colourless land. Nothing grew there but wild lavender.

I was crossing the area at its widest point, and after three days' walking, found myself in the midst of unparalleled desolation. I camped near the vestiges of an abandoned village. I had run out of water the day before, and had to find some. These clustered houses, although in ruins,

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like an old wasps' nest, suggested that there must once have been a spring or well here. There was indeed a spring, but it was dry. The five or six houses, roofless, gnawed by wind and rain, the tiny chapel with its crumbling steeple, stood about like the houses and chapels in living villages, but all life had vanished.

It was a fine June day, brilliant with sunlight, but over this unsheltered land, high in the sky, the wind blew with unendurable ferocity. It growled over carcasses of the houses like a lion disturbed at its meal. I had to move my camp.

After five hours' walking I had still not found water and there was nothing to give me any hope of finding any. All about me was the same dryness, the same coarse grasses. I thought I glimpsed in the distance a small black silhouette, upright, and took it for the trunk of a solitary tree. In any case I started toward it. It was a shepherd. Thirty sheep were lying about him on the baking earth.

I thought I glimpsed in the distance a small black silhouette, upright, and took it for the trunk of a solitary tree.

He gave me a drink from his water-gourd and, a little later, took me to his cottage in a fold of the plain. He drew his water - excellent water - from a very deep natural well above which he had constructed a primitive winch.

The man spoke little. This is the way of those who live alone, but one felt that he was sure of himself, and confident in his assurance. That was unexpected in this barren country. He lived, not in a cabin, but in a real house built of stone that bore plain evidence of how his own efforts had reclaimed the ruin he had found there on his arrival. His roof was strong and sound. The wind on its tiles made the sound of the sea upon its shore.

The place was in order, the dishes washed, the floor swept, his rifle oiled; his soup was boiling over the fire. I noticed then that he was cleanly shaved, that all his buttons were firmly sewed on, and that his clothes had been mended with the meticulous care that makes the stitching invisible. He shared his soup with me and afterwards, when I offered my tobacco pouch, he told me that he did not smoke. His dog, as silent as himself, was friendly without being servile.

It was understood from the first that I should spend the night there; the nearest village was still more than a day and a half away. And besides I was perfectly familiar with the nature of the rare villages in that region. There were four or five of them scattered well apart from each other on these mountain slopes, among white oak thickets, at the extreme end of the wagon roads. They were inhabited by charcoal burners, and the living was bad. Families crowded together in a climate that is excessively harsh both in winter and in summer, found no escape from the unceasing conflict of personalities. Irrational ambition reached inordinate proportions in the continual desire for escape. The men took their wagonloads of charcoal to the town, and then returned. The soundest characters broke under the perpetual grind. The women nursed their grievances. There was rivalry in

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everything, over the price of charcoal as over a pew in the church, as well as over the ceaseless combat between virtue and vice. And over all there was the wind, also ceaseless, to rasp upon the nerves. There were epidemics of suicide and frequent cases of insanity, usually homicidal.

He left the dog in charge of the little flock and climbed toward where I stood.

The shepherd went to fetch a small sack and poured out a heap of acorns on the table. He began to inspect them, one by one, with great concentration, separating the good from the bad. I smoked my pipe. I did offer to help him. He told me that it was his job. And in fact, seeing the care he devoted to the task, I did not insist. That was the whole of our conversation. When he had set aside a large enough pile of good acorns he counted them out by tens, eliminating the small ones or those which were slightly cracked, for now he examined them more closely. When he had thus selected one hundred perfect acorns he stopped and we went to bed.

There was peace in being with this man. The next day I asked if I might rest here for a day. He found it quite natural or, to be more exact, he gave me the impression that nothing could startle him. The rest was not absolutely necessary, but I was interested and wished to know more about him. He opened the pen and led his flock to pasture. Before leaving, he plunged his sack of carefully selected and counted acorns into a pail of water.

I noticed that he carried for a stick an iron rod as thick as my thumb and about a yard and a half long. Resting myself by walking, I followed a path parallel to his. His pasture was in a valley. He left the dog in charge of the little flock and climbed toward where I stood. I was afraid that he was about to rebuke me for my indiscretion, but it was not that at all; this was the way he was going, and he invited me to go along if I had nothing better to do. He climbed to the top of the ridge, about a hundred yards away.

There he began thrusting his iron rod into the earth, making a hole in which he planted an acorn; then he refilled the hole. He was planting oak trees. I asked him if the land belonged to him. He answered no. Did he know whose it was? He did not. He supposed it was community property, or perhaps belonged to people who cared nothing about it. He was not interested in finding out whose it was. He planted his hundred acorns with the greatest care.

After the midday meal, he resumed his planting. I suppose I must have been fairly insistent in my questioning, for he answered me. For

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three years he had been planting trees in this wilderness. He had planted one hundred thousand acorns. Of the hundred thousand, twenty thousand had germinated, of which he expected to lose half, to rodents or to the unpredictable designs of Providence. There remained ten thousand oak trees to grow where nothing had grown before.

That was when I began to wonder about the age of this man. He was obviously over 50. Fifty-five, he told me. His name was Elézeard Bouffier. He had once had a farm in the lowlands. There he had his life. He had lost his only son, then this wife. He had withdrawn into this solitude where his pleasure was to live leisurely with his lambs and his dog. It was his opinion that this land was dying for want of trees. He added that, having no very pressing business of his own, he had resolved to remedy this state of affairs.

Since I was at that time, in spite of my youth, leading a solitary life, I understood how to deal gently with solitary spirits. But my very youth forced me to consider the future in relation to myself and to a certain quest for happiness. I told him that in 30 years his 10,000 oaks would be magnificent. He answered quite simply that if God granted him life, in 30 years he would have planted so many more that these 10,000 would be like a drop of water in the ocean.

Besides, he was now studying the reproduction of beech trees and had a nursery of seedlings grown from beechnuts near his cottage. The seedlings, which he had protected from his sheep with a wire fence, were very beautiful. He was also considering birches for the valleys where, he told me, there was a certain amount of moisture a few yards below the surface of the soil.

The next day, we parted.

The following year came the War of 1914, in which I was involved for the next five years. An infantry man hardly had time for reflecting upon trees. To tell the truth, the thing itself had made no impression upon me. I had considered it a hobby, a stamp collection, and forgotten it.

After the war was over, I found myself possessed of a tiny demobilization bonus and a huge desire to breathe fresh air for a while. It was with no other objective that I again took the road to the barren lands.

There remained ten thousand oak trees to grow where nothing had grown before.

The countryside had not changed. However, beyond the deserted village I glimpsed in the distance a sort of greyish mist that covered the mountaintops like a carpet. Since the day before, I had begun

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to think again of the shepherd tree-planter. “Ten thousand oaks,” I reflected, "really take up quite a bit of space."

I had seen too many men die during those five years not to imagine easily that Elézeard Bouffier was dead, especially since, at 20, one regards men of 50 as old men with nothing left to do but die.

He was not dead. As a matter of fact, he was extremely spry. He had changed jobs. Now he had only four sheep but, instead, a hundred beehives. He had got rid of the sheep because they threatened his young trees. He told me (and I saw for myself), the war had disturbed him not at all. He had imperturbably continued to plant.

As the water reappeared, so there reappeared willows, rushes meadows, gardens, flowers...

The oaks of 1910 were then ten years old and taller than either of us. It was an impressive spectacle. I was literally speechless and, as he did not talk, we spent the whole day walking in silence through his forest. In three sections, it measured 11 kilometres in length and 3 kilometres at its greatest width. When you remembered that all this had sprung from the hands and the soul of this one man, without technical resources, you understand that people can be as effectual as God in realms other than that of destruction.

He had pursued his plan, and beech trees as high as my shoulder, spreading out as far as the eye could reach, confirmed it. He showed me handsome clumps of birch planted five years before – that is in 1915 when I had been fighting at Verdun. He had set them out in all the valleys where he had guessed - and rightly - that there was moisture almost at the surface of the ground. They were as delicate as young girls, and very well established.

Creation seemed to come about in a sort of chain reaction. He did not worry about it. He was determinedly pursuing his task in all its simplicity, but as we went back toward the village, I saw water flowing in brooks that had been dry since the memory of man. This was the most impressive result of the chain reaction that I had seen. These dry streams had once, long ago, run with water. Some of the dreary villages I mentioned before had been built on the sites of ancient Roman settlements, traces of which still remained, and archaeologists, exploring there, had found fish-hooks where, in the twentieth century, cisterns were needed to assure a small supply of water.

The wind too, scattered seeds. As the water reappeared, so there reappeared willows, rushes meadows, gardens, flowers, and a certain purpose in being alive. But the transformation took place so gradually that it became part of the pattern without causing any astonishment. Hunters, climbing into the wilderness in pursuit of hares or wild boar had, of course, noticed the sudden growth of little trees, but had attributed it to some natural caprice of the earth. That is why no one meddled with Elézeard Bouffier's work. If he had

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been detected he would have had opposition. He was undetectable. Who in the villages or in the administration could have dreamed of such perseverance in magnificent generosity?

To have anything like a precise idea of this exceptional character one must not forget that he worked in total solitude, so total that, toward the end of his life, he lost the habit of speech. Or perhaps it was that he saw no need for it.

...it was impossible not to be **captivated** by the **beauty** of those young trees in fullness of health...

In 1933, he received a visit from a forest ranger who notified him of an order against lighting fires out of doors for fear of endangering the growth of this natural forest. It was the first time that man told him naively that he had never heard of a forest growing out of its own accord. At that time, Bouffier was about to plant beeches at a spot some 12 kilometres from his cottage. In order to avoid travelling back and forth - for he was then 75 - he planned to build a stone cabin right at the plantation. The next year he did so.

In 1935 a whole delegation came from the government to examine the "natural forest." There was a high official from the Forest Service, a deputy, and technicians. There was a great deal of ineffectual talk. It was decided that some thing must be done and, fortunately, nothing was done except the only helpful thing: the whole forest was placed under the protection of the State, and charcoal burning was prohibited for it was impossible not to be captivated by the beauty of those young trees in fullness of health, and they cast their spell over the deputy himself.

A friend of mine was among the forestry officers in the delegation. To him I explained the mystery. One day the following week, we went together to see Elézeard Bouffier. We found him hard at work, some ten kilometres from the spot where the inspection had taken place.

This forester was not my friend for nothing. He was aware of values. He knew how to keep silent. I delivered the eggs I had brought as a present. We shared our lunch among the three of us and spent several hours in wordless contemplation of the countryside.

In the direction from which we had come, the slopes were covered with trees 20 to 25 feet tall. I remembered how the land had looked in 1913: a desert. Peaceful, regular toil, the vigorous mountain air, frugality and, above all, serenity of spirit had endowed this old man with awe-inspiring health. He was one of God's athletes. I wondered how many more acres he was going to cover with trees.

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Before leaving, my friend simply made a brief suggestion about certain species of trees that the soil here seemed particularly suited for. He did not force the point. “For the very good reason,” he told me later, “that Bouffier knows more about it than I do.” At the end of an hour's walking, having turned it over his mind, he added, “He knows a lot more about it than anybody. He’s discovered a wonderful way to be happy!”

It was thanks to this officer that not only the forest but also the happiness of the man was protected. He delegated three rangers to the task, and so terrorized them that they remained proof against all the bottles of wine the charcoal burners could offer.

The only serious danger to the work occurred during the war of 1939. As cars were being run on gazogenes (wood-burning generators), there was never enough wood. Cutting was started among the oaks of 1910, but the area was so far from any rail roads that the enterprise turned out to be financially unsound. It was abandoned. The shepherd had seen nothing of it. He was 30 kilometres away, peacefully continuing his work, ignoring the war of ‘39 as he had ignored that of ‘14.

I saw Elézeard Bouffier for the last time in June of 1945. He was then 87. I had started back along the route through the wastelands. By now, in spite of the disorder in which the war had left the country, there was a bus running between the Durance Valley and the mountain. I attributed the fact that I no longer recognised the scenes of my earlier journeys to this relatively speedy transportation. It seemed to me, too, that the route took me through new territory. It took the name of a village to convince me that I was actually in that region that had been all ruins and desolation.

The bus put me down at Vergons. In 1913, this hamlet of 10 or 12 houses had three inhabitants. They had been savage creatures, hating one another, living by trapping game, little removed, both physically and morally, from the conditions of prehistoric man. All about them nettles had fed upon the remains of abandoned houses. Their condition had been beyond hope. For them, there was nothing but to await death, a situation which is rarely predisposed to virtue.

Most amazing of all, I heard the actual sound of water falling into a pool.

Everything was changed, even the air. Instead of the harsh dry winds that used to attack me, a gentle breeze was blowing, laden with scents. A sound like water came from the mountains. It was the wind in the forest. Most amazing of all, I heard the actual sound of water falling into a pool. I saw that a fountain had been built, that it flowed freely and, what touched me most, that someone had planted a linden beside it that must have been four years old, already in full leaf: the incontestable symbol of resurrection.

Besides, Vergons bore evidence of labour at the sort of undertaking for which hope is required. Hope, then, had returned. Ruins

GETTING STARTED

1

The Man Who Planted Trees

had been cleared away, dilapidated walls torn down and five houses restored. Now there were 28 inhabitants, four of them young married couples. The new houses, freshly plastered, were surrounded by gardens where vegetables and flowers grew in orderly confusion, cabbages and roses, leeks and snapdragons, celery and anemones. It was now a village where one would like to live.

more than 10,000 people **owe their happiness** to Elézeard Bouffier.

From that point on, I went on foot. The war just finished had not yet allowed the full blooming of life, but Lazarus was out of the tomb. On the lower slopes of the mountain I saw little fields of barely and of rye while deep in the narrow valleys the meadows were turning green.

It has taken only the eight years since then for the whole countryside to glow with health and prosperity. On the site of ruins I had seen in 1913 now stand neat farms, cleanly plastered, testifying to a happy and comfortable life. The old streams, fed by the rains and snows that the forest conserved are flowing again. On each farm, in groves of maples, fountain and pools overflowed on to carpets of fresh mint. Little by little the villages have been rebuilt. People from the plains, where land is costly, have settled here, bringing youth, motion, and the spirit of adventure. Along the roads, you meet hearty men and women, boys and girls who understand laughter and have recovered a taste for picnics. Counting the former population, unrecognisable now that they live in comfort, more than 10,000 people owe their happiness to Elézeard Bouffier.

When I reflect that one man, armed only with his own physical and moral resources, was able to cause this land of Canaan to spring from the wasteland, I am convinced that in spite of everything, humanity is admirable. But when I consider the unfailing greatness of spirit and the tenacity of benevolence that it must have taken to achieve this result, I am taken with an immense respect for that old and unlearned peasant who was able to complete a work worthy of God.

Elézeard Bouffier died peacefully in 1947 at the hospice in Banon.

Why Consider Behaviour

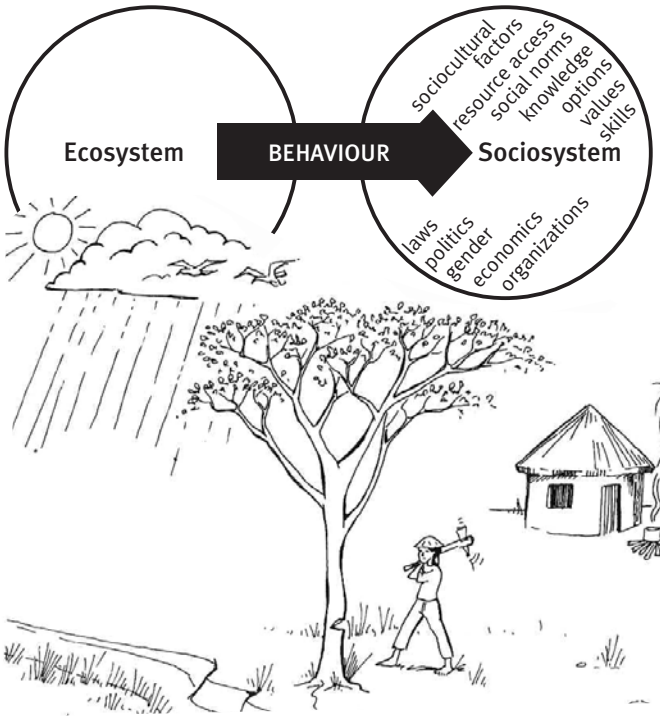
2

& How Behaviour Relates to the Environment

Behaviour is the collective pattern of decisions, practises, and actions of people. So why do conservationists need to consider human behaviour? Well, simply put, since humans pose the greatest threat to the environment, then the only way to reduce the danger posed by these threats is to change the human behaviour that is putting pressure on natural resources and to reinforce behaviour that conserves nature.

According to Bruce Byers (*1996*) the behaviour of individuals and social groups forms the interface between ecological systems and social systems. (*See diagram on the following page.*) In the environmental context, a person or a group's behaviour may support conservation or destroy nature. Generally, people act in what they perceive to be their own interests. Most human behaviour, nevertheless, is influenced by education, values, and the socio-economic situation, as well as by such external factors as the law. Individuals who will be working with communities to develop CECA programmes should be familiar with the concept of behaviour and the factors that influence behaviour. It is important for conservation educators and communicators to understand these influences, as they are intimately associated with the root causes of problems associated with conservation. If these factors and their influence on behaviour are understood, the conservation educator and communicator will be better equipped to work with communities and motivate people to participate fully in the design of CECA programmes. Descriptions of the different factors are listed on the following page.

Behaviour is the Link between the Social System and the Ecosystem



The Factors that Influence Behaviour

Education/Skills

Education is an important factor in determining a person's behaviour. There are three main types of education: formal, non-formal and informal. Formal education takes place in a school. Non-formal education takes place in settings like workshops and in training programmes, or at museums or other non-formal education facilities and through different media. Informal education takes place at home, in the work place and in society where the daily interaction with others and the experiences of daily life instigate discovery and learning. From these different types of education, people gain most of the knowledge and skills, adopt values and ethics, and learn social norms that are needed to enable them to provide for themselves and their families and to be active members of society. The type, quality and extent of education, however, contributes to the way a person behaves and the way they perceive, value and interact with others and the environment.

Value/Ethics

Values may be defined as the system of ideas that determines what something is worth in one's life and what it is worth in the lives of others. People may value the environment, humanity, or technology. When determining

their values, people must generally strike a balance between benefits for themselves and their families and the well-being of others. When making such decisions, one is guided by personal morals or the concept of what is right and what is wrong for oneself and for society as a whole. Values and moral principles are organised into a system of ethics, which people accept as rules of conduct. Values and ethics, therefore, play a significant role in determining a person's behaviour towards the environment. Environmental values are presented in Part III.

Social Mores & Peer Pressure

Humans are interdependent, social creatures that live in groups. The Earth's limited resources must be shared among all members of the global community. In order to create order and avoid chaos, there are generally accepted rules of conduct and social mores that people follow in their daily lives. These are tempered by the values and ethics of that society. When a person strays from the social mores of society, they are often ostracized or punished. There is pressure from one's peers to follow the norms that are considered to be in the best interest of all citizens of that society. Human behaviour and its relationship to the environment is, therefore, very often moulded and guided by social mores and peer pressure.

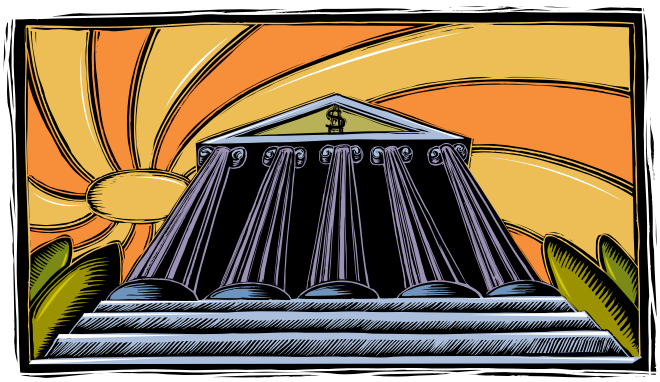
Culture

Culture, according to the Merriam-Webster on-line dictionary, is defined as the integrated pattern of human knowledge, belief, and behaviour that depends upon the capacity of people to learn and transmit knowledge to succeeding generations and the customary beliefs, social forms, and material traits of a racial, religious, or social group. Culture has developed as a result of human interaction both with other people and the natural environment. It has developed as a result of intellectual, spiritual, emotional and creative expression, and as a mean of surviving and maintaining social harmony. Values, ethics and social norms form the foundation of culture, and may differ from one cultural group to another. Culture is always evolving and adapting to the times and the situation. Culture is not a fixed entity. Sometimes, social movements are needed to challenge cultures that are dated and no longer a benefit to society. How people think and behave is heavily influenced by their culture, and this influences the way they interact with the environment.

Economics & Markets

Most humans in modern society consciously or unconsciously are involved in the market economy, and the market economy influences the behaviour of most people. Humans are involved in the economic system whether their role is producer, service provider or consumer. All of us benefit in different ways from the market, and most of us participate in it

Why Consider Behaviour 3 & How Behaviour Relates to the Environment



daily because of our need and desire for food, shelter, medicine, clothing, transport, and entertainment. The manner and extent of our participation in the market are determined by the amount of money and resources available to us, and the degree of knowledge we have about the market and its alternatives. Because of the importance of the market in our lives, it exerts a powerful influence over our daily decisions and overall behaviour towards the environment.

Politics & Law

Politics and legislation have a major influence on the behaviour of people. According to Aristotle (*1998*) humans have two natural desires: to reproduce and to survive. In order to satisfy these natural instincts, people form families, and families eventually unite into villages. When several villages are united into a single, self-sufficient community, a state or polis naturally forms. Aristotle wrote that "every state is a community of some kind, and every community is established with a view to some good, for people always act in order to obtain that which they think is good." Politics is concerned with who governs the state, and to what extent it is governed to obtain the highest good for all. As members of society, people enter into political partnerships with others, and elect officials to carry out the legislative, judicial and executive duties required to administer the state. Aristotle suggests in the Politics that the people elect individuals whom they feel are the best and most qualified to represent them so that they may gain certain benefits and services. People also realize that, in return, they have certain civil obligations, and must maintain standards of conduct that comply with the laws set forth by government. These laws were developed as mechanisms for maintaining order in society and for ensuring the survival and safety of the individuals and groups that make up society. Laws serve to standardize behaviour, and to regulate relations between individuals and groups. Conformance and obedience to laws result in some type of reward or social acceptance while deviance results in punishment. People's behaviour and the way they interact with the environment are, to a large extent, defined by the political system and the laws under which they live. To a large degree, the political system also determines what options are available to people in order to practise a more sustainable lifestyle. Politics, likewise, is heavily influenced by people's values, ethics, cultures and economic systems.

Options, Technology & Access to Resources

People's behaviour and decisions are greatly influenced by the options, technology and resources available to them. People cannot go to their offices by bus if there are no buses. They

Why Consider Behaviour 3 & How Behaviour Relates to the Environment

if people don't own land or resources, but instead have common access, in many cases there is no incentive to conserve, and thus they exploit the resources as much as possible

cannot buy organic vegetables, use renewable energy or travel by airplanes that don't pollute if the options and technology that would enable them to act in a more environmentally friendly way do not exist or are too expensive and difficult to obtain. This is also an economic issue. The same problem holds true for access to resources. A person cannot possibly plant half a hectare of trees if they have only a quarter of a hectare of land on which they need to grow rice. Furthermore, if people don't own land or resources, but instead have common access, in many cases there is no incentive to conserve, and thus they exploit the resources as much as possible before others do. People may have the moral values and ethics to do the right thing, but if the options, technology and access to resources do not exist, they will not be able to act according to their consciences.

Gender

Gender often plays a role in determining behaviour. Gender refers to the roles men and women play in certain societies, and in many cases these roles are not equal. Due to cultural and traditional underpinnings of many societies, this impacts on the decision-making and the division of labour, wealth and power in a society. It is important to determine and understand the gender dynamics of a society in order to fully comprehend what is the reason for a particular behaviour.

INTRODUCTION TO

3

Different Values of the Environment

As discussed in the previous section, values have a strong influence on a person's behaviour. As the basis for attitude, values may, in fact, be considered one of the root causes of certain behaviours.

Working under the assumption that humans act according to their own self-interest, people determine if something is valuable to them based on the benefit they may obtain for themselves, their friends or family. This is therefore a critical root reason for making a certain decision or taking a certain action. Is something valuable to me or not? Will I benefit from acting this way? These are the first questions people may ask themselves when rationally determining what action to take.

There are two main categories of values in relation to the environment: use and non-use. Among non-use values, there are two types: bequest value and existence value. Bequest value means valuing something for future generations to ensure intergenerational equity. Existence value is valuing something just because it exists.

Among use values, there are two sub-categories: direct use and indirect use and one other type of value called option value. Direct use values include consumptive and productive values. Consumptive values refer to the value of natural resource products that are consumed domestically and which provide food, shelter, fuel, medicine and other products that are used by humans but which are not sold on the market. Productive values include the value of natural resources which are sold commercially and contribute to the market economy. Tourism may also be considered a productive value or a non-consumptive, indirect use value, depending on whether you are a tourism service provider or a tourist.

Indirect use values include ecological and biological values such as maintenance of energy and nutrient flows, protection of the water cycle, reproduction of wildlife, soil production, pollination, and so forth. Also included in indirect values are spiritual and aesthetic values, scientific values and recreational values. Finally, option value refers to the value of preserving natural resources for a potential use in the future.

INTRODUCTION TO

3

Different Values of the Environment

Some people value resources and the environment only for their direct use, while others value the environment for a number of other reasons including its spiritual importance and its very existence. In this book we try to promote an appreciation for and perhaps the acceptance of the full range of values, both direct and indirect as well as non-use values. It may be argued that a person should value the environment for more than consumptive and productive use values in order to have a positive environmental attitude and to protect the environment. It is, therefore, imperative for conservation educators to influence the attitudes of people about the environment by encouraging values that cover a full range of social, economic and ecological ideals. Once this happens, people may be more inclined to conserve nature assuming they have the information, skills and options needed to do so.

Is there a connection between values and the brain?

I propose that there are three contributing or root factors to the development of values, each related directly to the three main evolutionary parts of the brain: the reptilian brain, the most primitive; the limbic system, the second oldest; and the neo-cortex, the most modern part. Understanding how values are formed and how this relates to the brain could make it easier to develop appropriate tools to influence attitudes and to promote a full range of values.

The first proposed root factor of values is the instinct for self-preservation and for meeting people's primary needs. This factor is related to the reptilian brain, which governs the elementary functions needed for a person's survival. These functions include motor functions, territoriality, mating, hierarchy relationships and other instincts needed for survival.
If a person's primary needs are not met, and the person feels stressed because of this, the reptilian part of the brain receives more blood and chemicals such as adrenaline and cortisone making the more rational parts of the brain close down. So for a person to value something, primary needs must be met first and the entity to be valued should contribute to this.

The second proposed root factor is people's emotions and desires, which are directly linked to the limbic system of the brain, where the long-term memory is found. For the brain to validate something and store knowledge in long-term memory, it must connect with emotions first. The limbic system governs our concepts of value and truth. To influence values, it is essential that emotions be evoked. Spiritual appreciation for the environment may be defined in this part of the brain. We can appeal to the emotions with skillful, convincing and stirring messages conveyed by art, TV, radio, newspaper, billboards, and other media.

The third proposed factor is rational thought, which is directly connected to the neo-cortex, the part of the brain responsible for patterning, relationships such as cause and effect, problem solving, language and reasoning. Decisions to value the environment for its ecological functions may be made here. What do you think?

Values Exercise

The following activity is intended to initiate a dialogue with communities about the existence of the array of different values of the environment, which may foster a greater appreciation for them while giving the conservation educator a clearer idea of the community's values towards the environment. A new found appreciation for certain values may form a foundation on which other activities to raise awareness can be built so that values that were previously not held become central to the decision-making processes and overall behaviour.

To carry out the activity, have the community list the values they recognise for the environment, after which introduce everyone to each of the values below by writing them on a flipchart. After introducing the category of each value, ask the group some of the questions below. Have the group brainstorm and engage in a lively discussion to answer the questions and debate the issues. After the group has discussed each value, summarize how the value links to their responses, and explain why it is important in the context of their lives. The information provided on the following pages should be used as a guide for the person working with the community to describe the values and should not be read directly to the community. The complex technical information should not be used or should be simplified greatly and put into local terms for the community to understand. This discussion should give the community educator a better understanding of how the community perceives these values.

Environmental Values	Use Values / Non-use Values
Direct use	Consumptive values represent products used domestically rather than sold in the market such as food (protein and carbohydrates), construction materials, fuel, and medicine. Productive use values represent products that are commercially harvested including fish, game meat, timber, fodder, resins, honey, etc. Wild species also contribute to production and genetic improvement of domestic resources. Also includes tourism.
Indirect use	Ecosystem and biological function values including energy and nutrient flows, reproduction and pollination, evolutionary processes, water cycle processes, soil production and stabilization, etc. May also include scientific use, recreation and spiritual values.
Option Value	Insurance or stand by for future use
Bequest Value	Intergenerational equity
Existence Value	There is a perceived benefit from a species or landscape just existing, irregardless of use.

(McNeely, 1988; Nunes, van den Bergh, and Nijkamp, 2000)

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DIFFERENT VALUES OF THE ENVIRONMENT

Spiritual Values

According to various religious and spiritual practises, the human being is made up of three entities: the body, mind and spirit or soul. The soul, as defined by the Oxford Dictionary, is "the spiritual or non-material part of a person, believed to exist after death." It is easy to define and identify the mind and the body but more difficult to identify the soul or spirit. Directly tied to emotions, the soul or spirit is the innate and instinctual part of us, our intrinsic nature, that guides us through life, and gives us the faith, curiosity, and courage to confront and find meaning in the mysteries of life. The Latin root of the word religion means "to link back to the fundamental source of wisdom and being" (*Perschel, 2002*). The spirit is in this sense the primitive guide that tries to show us the road to the source of our life. The spirit motivates us to investigate the meaning of self and to cultivate this self. It encourages us to try and identify who we are as human beings and what our purpose, responsibility, and role is and what our relationship to others and to the environment around us is (*Perschel, 2002*). The spirit guides us instinctually to connect with people, places and deities to make us feel calm and at peace and to further our survival. The spirit conjures up feelings of awe, splendour and sensation, and can inspire an awesome intimacy with the environment and with others. These feelings transcend those emotions experienced in day-to-day life and work. We may feel these sensations at the birth of a child, or the death of a loved one, or we may feel it as part of the love and compassion we have for a close friend or family member. The spirit also provokes an aesthetic expression or appreciation of beauty in all of us. This is reflected in the powerful images and emotions expressed in paintings, songs, stories and poems.

There are many people of different cultures in the world who feel a direct spiritual connection with the Earth, its abundant creatures, plant life, and the water, soil and sky. This stems from the ancient connection we have with the Earth and from the quest to define and rationalize our existence and relationship with the universe and its other beings. Since ancient times when humans had to collect fire and lived as hunter-gatherers to the development of agriculture, humans have had to stay in tune with the Earth's rhythms and understand its processes and cycles in order to survive. As described by Mary Evelyn Tucker (*2002*), "Religions mediate between the patterns of nature and those of an individual by creating stories of our origins, rituals to ensure continuity through the various stages of life from birth to death, and codes of behaviour that aim to maximize harmonious relations and thus survival itself."

Out of this human need to understand patterns of nature and to define ourselves within these patterns, many different religions and spiritual beliefs have developed around the world.

INTRODUCTION TO

3

Different Values of the Environment

Animism, a system of beliefs followed in many parts of the world including parts of Asia, South and North America, Australia and Africa, holds that all natural objects and phenomena have souls, and that they must be respected in order for productivity and for natural cycles to be maintained. Western religions such as Judaism, Christianity, and Islam claim that God is the creator of the Earth and all its creatures, and humans as creatures vested with the power of reason are entrusted with the responsibility of taking care of the Earth's forests, oceans, rivers and wild creatures. Hinduism is based on the belief that a pantheon of Gods who inhabit heaven and Earth control the elements of fire, water and wind and maintain the balance of the cosmos. Hindus are bound by dharma, a type of code of conduct, to act in certain ways so they appease the Gods and maintain this balance. Buddhists, likewise, follow dharma--Sanskrit for ethical code and way of living--which regulates their behaviour. They believe that all life is interconnected and that in order to achieve universal harmony, all creatures must be treated with compassion. These are just a few examples of how spiritual values for the environment have become central to the way of living and being and have become established in society by religion. This should offer some food for thought for the discussion below.

Have the participants work in groups to identify what spirituality means to them: Why is it important? What qualities make them feel spiritual? How does this actually feel? (What sensations or emotions does it conjure up?) After they understand what is meant by spirituality, try to identify particular attributes of the environment that provoke these feelings. Connect this to the idea of valuing the environment for spiritual reasons.

Questions

1. What do you feel when you hear an emotional song, or read a dramatic poem?

2. What do you feel when someone close dies? Where do you find comfort and consolation?

3. What do you do when you feel nervous, scared or helpless and need some courage to move on?

4. What do you feel when you go to the temple or pagoda?

5. What activities make you feel calm and peaceful? Where do you feel most calm and peaceful? Why? What scenery makes you feel most peaceful?

6. What do you feel when you see an awesome landscape like a mountain shrouded in mist or a crystal clear lake surrounded by forest?

7. Based on what you just heard, what makes you feel spiritual? Why? How does that feel?

8. Why is the spirit important? What would happen without the spirit?

9. Are humans made up of five elements? Is nature made up of the same five elements? Are you the same? If so, why do we not love the Earth as we love other people?

Ecological & Biological Values

The Earth's natural systems are in constant flux. By working hard and with precision, each component, like parts of a clock, performs its unique, individual task and together, in a dynamic interrelationship, they make the Earth tick. Forests clean air; oceans moderate climate; and wetlands filter and clean water, while reducing the effects of storms and controlling floods. Ecosystems, however, can be disturbed and become unbalanced. The planet itself, wildlife and people are all affected if natural ecosystems are destroyed to such a degree that they no longer work together in unison. It is difficult to see all the useful services ecosystems provide for people, but there are many who do recognise their value. This is evident, for example, in the loss of fertility of soil in the fields, the increased occurrence of floods, and the lack of potable water. All of these problems are attributed to a breakdown of ecosystems, which could be prevented by changing human practises. Shown below is a comprehensive list of the important functions of ecosystems.

- Photosynthetic fixation of solar energy and transfer of this energy through green plants in food chains
- Reproduction including pollination, gene flow, cross-fertilization
- Maintaining water cycles, including recharging groundwater, protecting watersheds, and buffering extreme water conditions such as floods and droughts
- Regulation of climate at both macro- and micro-climatic levels (including influences on temperature, precipitation, and air turbulence)
- Production of soil and protection of soil from erosion, including protection of coastlines from erosion by the sea
- Storage and cycling of essential nutrients, e.g., carbon, nitrogen, and oxygen; and maintenance of the oxygen-carbon dioxide balance
- Absorption and breakdown of pollutants, including the decomposition of organic wastes, pesticides, and air and water pollutants

(*McNeely, 1998*)

Questions

1. How do you benefit from ecosystems and biological services?

2. Why are these important? What would you do without them?

3. Do you value the environment for these benefits? If not, should you?

Bequest Values

Bequest means "to hand down" and, in the context of the environment, bequest value infers that future generations are given the opportunity to enjoy and benefit from the use of healthy resources and ecosystems. Just as we depend on the environment for its different uses including consumption, commercial and spiritual purposes, future generations will need the same opportunity. If all resources are destroyed, then future generations will have to struggle through life, and their survival will be compromised. It is up to present generations then to take this into consideration when deciding how resources are used. A resource economist, Emilio Padilla (*2002*), emphasizes that "The unborn have neither political will nor representatives. When considering actions that can seriously affect several generations, the legitimacy of taking only into account the preferences of present generations should be questioned in order to assure the commitment to equity between generations that sustainability represents." Future generations have certain rights that should be respected, and they should be considered when decisions are made.

Questions

1. Is there anything that you bequest to your children?
2. Is there anything you bequest to your grandchildren or other generations? What are they and why are they bequeathed?
3. Do you pass your land on to future generations?
4. How will they benefit if the soil is depleted, the water is unclean, and there are no trees for shade, beauty and consumptive or commercial purposes?
5. Is there anything you give to past generations for their lives after death? What and why?
6. Do you think the environment, and the benefits derived from ecosystems should be included in future or past bequests? Why or why not?

Existence Values

Many people, especially in Europe and North America, value the existence of a species or habitat that they have no intention of ever using or seeing. They may hope that future generations will derive some benefit from their existence, or just feel satisfaction knowing they exist (*McNeely, 1998*). This may stem from the fact that these people value the function of ecosystems to maintain the natural processes, which provide their food, air and water and thus are important for self-preservation. Perhaps they value nature because they love and appreciate certain animals or landscapes that they perceive as majestic and beautiful and, therefore, feel compelled to protect them.

Questions

1. **What exists that you feel is important even though you will never use or see it?**
2. **Is the Red River or a tiger important and valuable? Have you ever seen either? What would you feel if they disappeared? Why?**
3. **Do you feel this way about any other natural habitats or species?**

Option Values

Option value is the importance of ecosystems and biodiversity in providing protection against unforeseen threats or in the event that they will be needed in the future. Possible dangers might include the introduction of a new pest to important food crops. If the crop is not resistant, the whole species may be decimated with serious consequences for the people who rely on it for food and income. Because diversity is conserved for its "option use" a resistant strain in the wild may be found and the situation stabilized. Another threat might be the appearance of a new human disease for which there is currently no cure. A plant from some remote forest may hold the clue to finding a cure. Maintenance of genetic diversity, and thus options, is therefore, an important reason to value resources. Other reasons for conserving natural areas for option value include potential tourism, and the future use of products for food, medicine, or raw materials.

Questions

1. **Do you save anything for future use? What? Why?**
2. **Do you save money for future use? Do you have any type of insurance system for potential disasters or illness?**
3. **Do you leave valuable trees in swidden fields?**

Consumptive Use Values (food, shelter)

All people rely on the Earth and its resources for basic human needs such as food including meat, grains, and various fruit and vegetables, as well as timber and non-timber forest products, such as building materials, fuel, and medicine. All people also drink water, which comes from nature. Some people harvest resources directly from the land or sea, while others buy processed products in supermarkets that come from natural resources or were processed in a way that uses natural resources. However, in this context, when we talk about consumptive value we are talking about "the value placed on nature's products that are consumed directly without going to market" (*McNeely, 1998*). There is an obvious reason to value the environment for the uses mentioned above. If we do not use the resources we have in a sustainable way, however, in the future we will have a difficult time providing for ourselves. We cannot use up the very resources we depend upon. It is important to keep this in mind when making decisions about how resources are used and allocated.

Questions

1. Do you save anything for future use? What? Why?
2. Do you save money for future use? Do you have any type of insurance system for potential disasters or illness?
3. Do you leave valuable trees in swidden fields?

Productive Use Values (money)

Many natural products are valuable for commercial trade contributing to household incomes as well as national economies. Natural products that are bought and sold may include fuel wood, timber, fodder, fish, seaweed, shellfish and crustaceans, wild meat, fruits, mushrooms, honey, medicines, fibres, gums, resins, dyes, rattan, bamboo and other grass products, ornamentals and curios, and textiles such as hemp and silk. The genes of wild species are also important for interbreeding to improve the productivity of domestic crops and the production and quality of meat of domestic livestock that will be traded in the market.

Questions

1. From what natural products do you earn an income?
2. What would you do without these products? Are there substitutes? Are these products limitless?

Putting It into Practice:

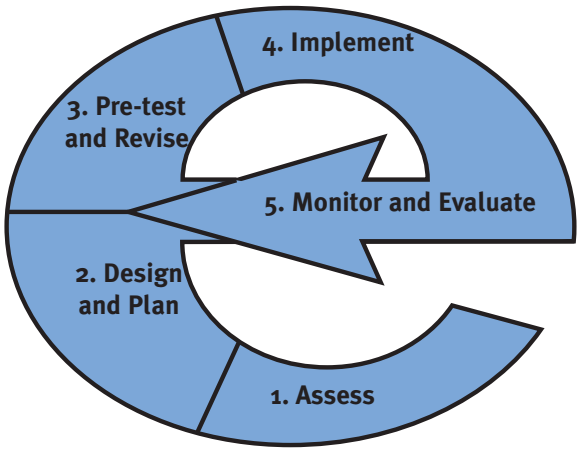
4

Developing a Conservation Education, Communications & Advocacy (CECA) Programme

There is a five step process used by social marketers and conservation communicators of GreenCom (the environmental communications project of the U.S. Agency for International Development (USAID)) to develop communications programmes around the world that promote environmentally sound behaviours. This same process can be used to develop CECA programmes. The five steps and their sequence are shown in the figure below.

When working through the five steps, it is important to note that "taking a positive view, and emphasizing opportunities rather than problems — looking for sustainable behaviours to maintain, promote, and enhance, rather than unsustainable practises to change — is probably an under-exploited approach to conservation and natural resources management" (*Byers, 1996*).

The Five Steps and Their Sequence



I. Assess

- **Identify the target groups**
- **Identify the environmental problem of the target area from the perspective of the forest protection and conservation staff working there and the target communities**
- **Identify human behaviours that are the root cause of the problem and are negative in relation to the environment, and identify positive behaviours in relation to the environment that may contribute to sustainability or help resolve the problem**
- **Identify if the inappropriate behaviour is caused by a lack of knowledge, poor attitude towards the environment, a lack of options and skills or external barriers**
- **Identify the knowledge, attitudes, options and skills required to change the inappropriate behaviour or to support positive behaviour. Identify the barriers that need to be minimized or removed completely. Also identify what support is required to maintain positive behaviours and what options are needed to remove barriers.**

Assessment is fundamental in the five step process. The whole design of the programme to be developed relies on participation, and a proper and thorough collection and analysis of data. The assessment involves the five tasks shown in the box above.

Participatory rural appraisal (PRA) tools will be used to gather data needed for the five steps of assessment in the design of a CECA programme. These tools are mainly characterized by the use of simple methods which provide communities with the opportunity to graphically present their local knowledge while promoting their ownership of and participation in a project. The participatory approach to working with communities was taken in reaction to the failure of the "top down" approach to development work in which decisions were made at the top of the power structure but carried out at the lower levels, among poor communities. Often these decisions were inappropriate and unsuccessful because local communities were not consulted. As a result of these failures, new ways of planning projects that recognize the needs and rights of local communities developed, which emphasize participation and making decisions jointly by local people and project officials.

PRA tools and the theory behind them lend themselves well to being used with equal success in conservation. *These tools will help answer the questions of who, what, where and when for the CECA programme.* What is important is to use creativity, inventiveness and improvisation in order to collect the data needed to develop a successful CECA programme. The results of the data gathered from using the set of PRA tools should be looked at together and synthesized to give a holistic view of the situation, and to answer the information required under the five tasks involved in the assessment. There is no one tool which can be used alone to provide the information required for each point.

There are seven PRA tools used in the design of CECA programmes. They are:

1. Problem Tree
2. Seasonal Calendar
3. Historical Timeline
4. Resource Management Decision Matrix
5. Village Walk/Transect
6. KSA Semi-structured Group Survey
7. Options Ranking Matrix

1. Problem Tree

Defining the specific environmental problems to target is a critical step in the participatory design of a CECA strategy. It is also essential to define the root causes of the problems so that the issues are tackled at their source. The more proximate the source of the problem being addressed, the more successful the approach will be. It is essential to gather this information from government and non-government conservation staff working in the area to identify the main conservation problems as they perceive them. Keep in mind that the perspectives of the government and NGOs may be biased according to ideology, self-interest, politics, or other factors, and, therefore, these potential sources of bias and error need to be considered.

It is just as important, if not more so, to gather information from communities themselves to see the issue from their perspective. In some cases, there may be no conservation organization, governmental or non-governmental, to confer with. In this case, working solely with communities is possible, and should not preclude working on the design of CECA programmes. Communities will probably identify problems that immediately affect their lives, while governments and NGOs will identify the problems that affect biodiversity and ecological services. It may be necessary to direct the discussion with communities by asking targeted questions to get information specifically relevant to conservation instead of information relevant to development per se. A starting question may be, "How have the forest and animals in the area changed since you were a child?" "Why is this?" Remember, that our goal is not to identify the difficulties members of the community have in generating incomes, but to understand the problems with conservation from the community's perspective. If economic difficulties are in any way linked to conservation problems and solutions, then it is important for us to know this information.

Conservation educator developing problem tree with local community in Quang Nam, Vietnam.

It is important to gather information from communities themselves to see the issue from their perspective

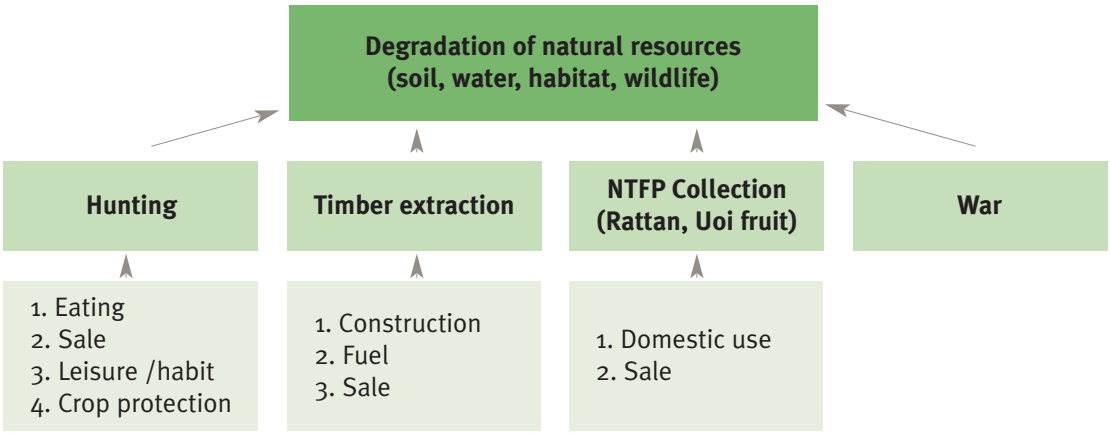
However, if they are not, we need to refocus the questions to get information relevant to conservation.

The two sources of information from government/NGOs and communities should be synthesized to form a holistic perspective that gives an overall view of the situation of conservation.

One effective tool for identifying the problem and its root causes with government and NGO conservation staff is a problem tree developed during a brainstorming session, the process of which is led by informal questions. To develop a problem tree with communities, a good technique may be to gather the information during informal group discussions, write it in a notebook, and then put the information into a problem tree afterwards. By using this method, and not making the problem tree right in front of them, it may be possible to avoid making community members uncomfortable as they may be identified as a source of the problem.

Developing a problem tree with the community may be a foreign technique. The concept may inhibit open and frank discussion by introducing something with which they are unfamiliar. They also may not know how to read the problem tree or understand what it actually means. However, the final product representing the views of the community should be presented to the local people when it has been completed and verified so that any changes they suggest can be incorporated. In some cases, however, the problem tree can be developed directly with the community on a big sheet of paper making it easier for them to visualize the issues. Use discretion to decide which technique is best. An example of a problem tree developed with Ka Tu people from Vinh and Pa Toi villages in Song Thanh Nature Reserve, Quang Nam province is given below. The root causes identified in the problem tree can be translated into specific behaviours and activities, which, when cross-checked with data in the KSA survey, may be targeted in a CECA programme.

Example Problem Tree from Villages in the Song Thanh Nature Reserve, Quang Nam Province



Designing a problem tree

To design a problem tree with government and NGO staff and some community members, gather everyone into a group, and bring along several large sheets of flipchart paper, some blank coloured cards and a number of markers. For communities for which developing a problem tree on a big sheet of paper is inappropriate, follow the general steps below to design the problem tree. Keep in mind that the data should be written in a notebook first and placed on the problem tree afterwards.

1

First explain the purpose of this activity, and how people are going to make a problem tree for their area.

2

Ask the participants what the main problems are now in relation to natural resources in their area. For example, ask how the forest and animals in the area have changed since they were children. Write the responses down, one per card and stick the cards on the top of a large sheet of paper. In the example problem tree below, only one problem was identified. The greatest problem cited in the example is the degradation of soil, water, habitat and wildlife. You may choose to identify the full range of problems, or you may want to focus on a specific species, resource or ecosystem. In some cases, the problem may also be very broad, such as the one in the example. Other potential problems might include loss of biodiversity or loss of forest cover.

3

Next, have the group determine the immediate causes of the problem/s. Write these on the coloured cards and place the cards on the large sheet of paper under the main problems.

4

Ask the reason for each cause. Why have they happened? Write the answers on cards, and place them underneath the immediate causes, or in the lower branches of the problem tree. Continue to do this, adding branches to the problem tree until no more causes can be identified. On the sample problem tree below, there are only three layers of branches. It was unnecessary to identify the root cause of war as it is not something that would be targeted in a CECA programme.

5

Have the participants connect the different levels of branches of the tree with lines to show the connection between cause and effect.

6

Once the root causes or the causes at the lowest level on the tree have been identified, the group should evaluate them and decide which are priorities that need to be urgently resolved. These will be the critical behaviours to target in the CECA programme. The Ka Tu community and Song Thanh Nature Reserve staff, which developed a problem tree similar to the one below, identified hunting and timber extraction as the target behaviours on which to focus in the CECA programme.

2. Seasonal Calendar

Local people harvesting shrimp in Tonle Sap Lake, Cambodia.

A seasonal calendar is a good source of information that will help the conservation educator and communicator understand the particular activities of a community relating to agriculture, forestry and other uses of natural resources and the time of year these activities take place. The information gathered by using this tool, together with the problem tree, can help identify environmental problems and specific behaviours that contribute to the problem. The seasonal calendar will also tell us when certain activities take place, providing useful insight into how the problems caused by these activities can be resolved and when is the appropriate time to work with

Example Seasonal Calendar from Villages in the Song Thanh Nature Reserve, Quang Nam Province

Dry Season | Rainy Season

Lunar Month	1	2	3	4	5	6	7	8	9	10	11	12
Growing beans			harvest							planting		
Paddy rice	planting				harvest		planting					harvest
Dry rice	clearing			planting							harvest	
Building a fence around garden												
Firewood collection	collect all year but most intensively in Sept. because of more free time									intensive		
Rattan harvest	collect all year but most intensively before lunar new year to earn cash											intensive
Timber/ bamboo harvest												
Uoi fruit collection												
Grass/reeds collection												
Animal husbandry												
Honey collection												
Bark harvest of ta vac tree												
Hunting										outsiders hunt all year		
Plant ta vac												
Frog/fishing			fishing year round/frog hunting Mar/Apr									
Cultivating maize			plant									
Growing pineapples												

communities. Calendars can be made on the ground, on flipcharts or on a whiteboard. Draw a two-dimensional matrix, and write the months of the year on the horizontal axis. On the vertical axis, write the main activities of the community related to natural resources. Go down the list of activities with the community and have them note the month/s these activities are carried out. A calendar can be made on the ground by placing stones on the grid. (*Jackson and Ingles, 1998*) See an example of one seasonal calendar made with the same Ka Tu community in Song Thanh Nature Reserve, Quang Nam on which the problem tree was based.

Removing honey comb from a beehive frame.

In Summary

1. **Draw the months of year on the horizontal axis.**
2. **In a group discussion, ask the community to list the main activities throughout the year related to natural resources and list these on the vertical axis (Be prepared to know basic activities beforehand as farmers may omit important information.).**
3. **Have the community identify the month/s during which these activities take place.**
4. **Write the activity under the appropriate month/s.**

3. Historical Timeline

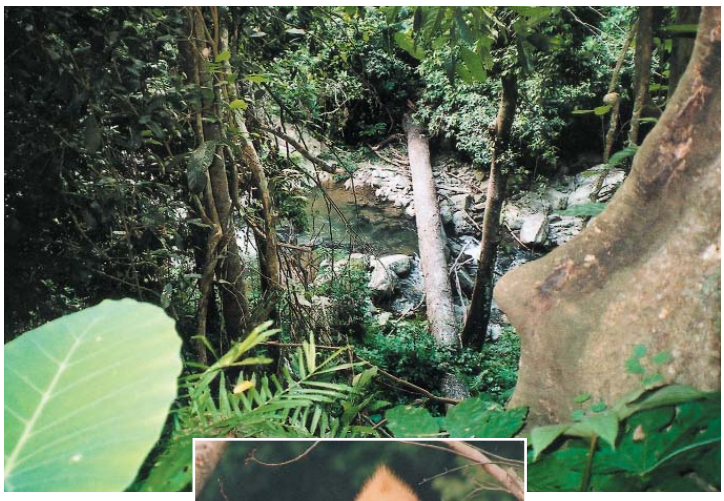
An historical timeline will provide the conservation educator and communicator with a better understanding of the environmental problem and the behaviours which are contributing to that problem. The historical timeline will shed light on different trends in the use of resources in the context of historical events such as drought, famine, war, industrial revolution, in-country migration, changes in land tenure, changes in land use, government decrees, and the construction of roads and other infrastructure, etc. This information will help everyone to understand the issues being addressed in the present in relation to the past, while shedding light on why sustainable practises that might have been carried out in the past have changed. This information will also help in finding solutions to the problems.

Historical timelines can be made on the ground, on a flipchart or on a whiteboard. As a group, ask the community about significant events that have happened in the past that have affected the use of resources. The events might relate to some of the issues mentioned above. Begin with the elders by asking them what they can remember of the past. Then work your way forward through time with younger participants. Draw a two-dimensional matrix, and write the historical periods on the horizontal axis.

Example Historical Timeline from Villages in the Song Thanh Nature Reserve, Quang Nam Province

	Pre -1964	1978	1986	1991-95	2001	Next 5 yrs
	(War and bombing begin)	(Gold mining & ebony tree harvest)	(Road built & Gov. timber company enter)	(Timber extraction from private company)	(Road to Lao #14D built)	
Wildlife	10	9	8	5	2	2
# big trees in forest	10	8	6	4	1	0
Size of forest cover	10	9	8	7	5	3
Forest wood diversity	11	11	10	6	4	2
Cultivated land	1	2	4	6	8	10
Soil quality	10	9	8	7	6	5
Water quantity	10	10	8	6	4	4
Water quality	10	8	7	5	4	4
Rattan	10	10	9	7	4	2
Uoi fruit	10	10	8	7	5	3

Assess



Photos from Top to Bottom: Forest stream in Song Thanh Nature Reserve, Cat Ba Langur (photo by: Tilo Nadler), Women carrying grass for thatch

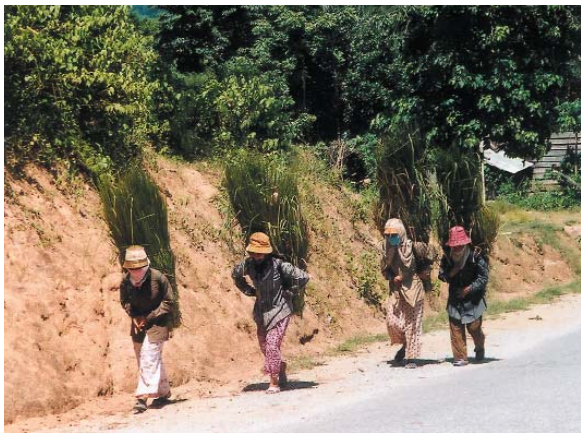
On the vertical axis, note the environmental indicators, such as forest cover, amount of land in fallow, rainfall levels, soil quality, bird diversity, primate diversity, and the amount of water available, etc. that have changed over time in the community. Discuss the indicators with the community and have them identify any changes in quality or quantity on a scale of 1-10 (10 being the highest quality/quantity they can remember). If numbers are not appropriate, use a graphic representation. (*Byers, 1996; Jackson and Ingles, 1998*) See the example below developed with the Ka Tu community in Song Thanh Nature Reserve, Quang Nam.

In Summary

1. At a community meeting, ask about important historical events in relation to the use of resources and list these on the horizontal axis.

2. On the vertical axis write important resource use indicators such as amount of land in fallow, density of trees, occurrence of wildlife, etc.

3. Go through each box and have the community identify by quality/quantity the status for each period.



4. Resource Use & Management Decision Matrix

A resource use and decision matrix is very useful in identifying the people who have the most impact on the resources, and from where the locus of control or decision-making comes in respect to the different practises and actions identified when constructing the seasonal calendar. It is important to understand who uses resources, and who makes decisions. First and foremost in designing a CECA programme, it is important to identify the groups that should be targeted for relevant activities, and the most appropriate tools and media to reach those people.

Go through each category and identify the users and the authority that decides how each resource is used

To develop a resource use and decision making matrix, once again, draw a two-dimensional matrix on the ground or on a large sheet of paper. On the horizontal axis, list the activities or behaviours related to the use of natural resources that were identified as priorities on the problem tree by the community; for example, hunting and timber extraction. On the other axis, list those who use and or who have the authority to decide who uses those resources. For example, they might include the male in the household, the female in the household, the village leader, and specific people (title, position, department, etc.) in the local, district and/or national government. Base the list of resources and users and decision makers on community input. Go through each category on the matrix with the community, and identify the users and the authority that decides how each resource is used and note in the appropriate box (*Byers, 1996*). See the example made by the Ka Tu community in Song Thanh Nature Reserve, Quang Nam.

Coppiced tree in farmers field

Example Resource Use and Management Decision Matrix from Villages in the Song Thanh Nature Reserve, Quang Nam Province

Group Activity	Family	People's Committee	Song Thanh Nature Preserve	External Traders
Animal husbandry	Husband decides; children and old care for animals			
Firewood collection	Wife decides and collects			
Rattan collection	Husband & wife decide together; wife collects with help of children			
Timber harvest	Husband decides and collects	Provide permission for cutting for construction	Enforce & fine for violations	Groups of up to 12 harvest &take out of forest.
Hunting	Husband decides & hunts	Enforce & fine for violations	Enforce & fine for violations	Groups of up to 6 lay traps & hunt while living in forest over long periods of time.
Uoi fruit collection	Husband & wife decide together		Enforce and fine up to 500.000VND/ tree destroyed	
Bamboo harvest	Husband decides and cuts; wife carries			

In Summary

1. Draw a two dimensional matrix and list on the horizontal axis the main activities or behaviours such as hunting, timber extraction, etc. Remember that these are all just examples, and that in a real situation different behaviours will be identified.

2. On the vertical axis, list the resource users and potential decision- makers who influence community use of resources.

3. Go through each box with the community and identify for each behaviour the individuals or group of individuals who use and or who decide the use of each resource. Note the details in the box

5. Village Walk/Sketch Map & Transect

The village walk, sketch map and transect help to visualize current practises and where they take place. These tools can provide important information about which project activities to focus on and where they should be focused. To develop the map, on a sheet of paper draw a large circle which will be the boundary of the area to be charted. Identify the four directions and mark them on the map. Ask the community to identify the principle natural, geological, and man-made distinguishing features of the area such as mountains, rivers, lakes, and roads, and mark these on the map. Ask the community to then identify the main villages and important administrative buildings and mark these on the map. Identify the main habitat such as forest and grassland and primary places where land is in use. Mark these on the map as well. Finally, identify the location on the map where you are and mark this. Once you have done all of this, you have a finished base sketch map. See the example of the base map developed by the Ka Tu community in Song Thanh Nature Reserve, Quang Nam to identify the location of different activities identified on the problem tree and seasonal calendar.

When the base sketch map has been completed, write down on small cards the behaviours or activities identified on the problem tree and seasonal calendar. As in the photograph above, have the community place these cards on the map in the locations where these activities take place.

Example Base Sketch Map from a Village in the Song Thanh Nature Reserve, Quang Nam Province

After the map has been completed, select one transect on the map which passes through most or all of the activities that take place. This transect will dissect the circle, starting at the edge and ending on the other side. Once the transect location is selected, make a two-dimensional matrix such as the one in the example below showing the different activities and the habitats where they take place. On the horizontal axis, list the habitats such as rice fields, rivers, secondary forests, and primary forests.

Example Problem and Behaviour Summary Chart Based on Villages in the Song Thanh Nature Reserve, Quang Nam Province

Environmental problems	Behaviours contributing to the problem	Behaviour which fosters sustainability
Degradation of natural resources (soil, water, forest, wildlife)	Hunting Unsustainable timber harvest	Community enforcement team

Assess

Example Village Transect Walk Map from a Village in the Song Thanh Nature Reserve, Quang Nam Province

Beans		■				■					
Wet rice			■				■				
Livestock						■		■			
Fish/Frogs				■							
Dry Rice	◄	■			■	■					
Firewood		■					■		■		
Bamboo							■				
Thatch	◄ 30 Min.										
Plant Ta Vac	◄								■	■	►
Ta Vac Bark	■									■	■
Honey	◄ near										near ►
Rattan	◄										►
Timber	◄ 7-11 hrs										7-11 hrs ►
Hunting	7-11 hrs										1 day ►
Uoi Fruit	7-8 hrs										7-8 hrs ►
Pineapple		■			■						
Maize		■			■		■		■	■	

On the vertical axis, list the relevant activities identified on the problem tree and seasonal calendar, and mark the box under the habitat where they take place. Afterwards, make a final diagram using graphics to represent the habitats in order to make the information more attractive. (*Byers, 1996; Jackson and Ingles, 1998; Theis and Grady, 1991*) See the example below developed with the Ka Tu community in Song Thanh Nature Reserve, Quang Nam.

Once the map and transect chart are finished, ask a group of willing community members, made up of both men and women, to walk with you along the selected transect, passing through the villages and forest to show you the reality of the transect developed on paper. Make any adjustments to the sketch map or transect based on what you observed in reality and, if you want, note these observations on the chart.

All of the information gathered so far by using the PRA tools described above should be depicted by simple but usable graphic illustrations such as the ones presented so that they can be referred to by the community and to help design the project. A chart such as the one below may also be developed to summarize the problems and behaviours being targeted.

In Summary

1. Make a sketch map as described above.
2. Develop a transect chart on a piece of paper as described above listing the main habitats in the area and principle activities of the community taking place that were identified on the problem tree and seasonal calendar.
3. Take a walk with both women and men from the community along the identified transect passing through villages and forest to see in reality what has been charted on paper.
4. Make any adjustments to the map and transect based on the walk and take notes on what you see to add to the matrix later.

6. KSA Semi-structured Group Interview/Survey

In order to identify suitable interventions, it is essential to know the reasons why people behave or act the way they do towards the environment. This information can be obtained in part by surveys.

The matrix below lists the key knowledge, attitudes, skills/options (KSA) and potential barriers that influence the way people behave in relation to the environment. In the matrix there are four columns, with the following headings: knowledge, attitude, skills and barriers. The boxes in each column under the different headings contain key areas of inquiry. These are used to develop survey questions that yield valuable information to enhance our understanding of existing behaviours in relation to the environment. These areas of inquiry increase in complexity as you move down the columns, with an exception in the barriers column.

Matrix for Identifying Community Knowledge, Skills, Attitudes, Barriers and Options for CECA Programmes

	Existing Behaviours	New Conservation Behaviours
(K) Knowledge (Perception, Understanding)		**(A) Attitude**
Importance of resources & function (based on specific threats) • Water • Soil • Air • Habitat • Wildlife • Humans		**Value** of resources for consumptive, productive, ecological uses
Behaviour How individual behaviour affects the environment and vice versa		**Feel** a relationship with Earth/spiritual & existence value
Impacts/problem Impacts on the environment from behaviour and problems caused to others and themselves		**Care** about impact on others and future generations. Bequest and option value
Need for Change		**Are willing to commit to change**
Options Available		Self-starters, actively seek & develop options (initiative)

To use this matrix, start in the upper left hand corner directly under the knowledge heading. Look at the survey which follows the matrix and notice the first section (I.A).

The questions in this section of the survey correspond with the categories of inquiry in this box. After asking the questions in the survey, the surveyor will have a clear understanding of the importance and function of these resources from the community's perspective. Now look at the box directly to the right of this under the heading of attitude. The areas of inquiry under this heading are used to develop a further question contained in section I.A of the survey.

Moving to the next box on the right under the heading of skills, the surveyor now needs to analyse the responses of the people being interviewed to the first part of the survey, to evaluate their level of identification and comprehension skills.

Next, move to the second box in the knowledge column. The first question in the next section of the survey (I.B) directly corresponds to the areas of inquiry in this box. Continue to move to the right to the next box under the heading of attitude.

The surveyor has to evaluate the perception people have towards their survival in relation to the Earth from their responses. Moving to the right, to the box under the heading of skills, the surveyor once again needs to make a subjective evaluation based upon the responses of the interviewees. The surveyor needs to evaluate the level of problem solving and analytical skills of the community members.

(S) Skills	Barriers (Finance, Extension Services and Materials, Law or Policy, Technology and Infrastructure, Social or Culture Pressure)
Identification & comprehension	1. Are there economic, labour or financial barriers or benefits to behaving differently?
Problem Solving / Analysis	2. Are there sufficient and high quality extension services and materials available to adopt alternative behaviours?
Evaluation	3. Are there laws or policies that promote or prohibit alternative behaviours?
Decision Making	4. Is there sufficient and high quality technology and infrastructure available to promote alternative behaviours?
How to change/ adopt alternative behaviours	5. Are there social or cultural pressures that promote or hinder adoption of alternative behaviours

Once the above is completed, move to the third box in the knowledge column. Several questions in the next section of the survey (I.C) directly correspond to the areas of inquiry in this box. Continue to move to the right to the next box under the heading of attitude. Some of these questions also correspond to these areas of inquiry. Moving to the right, to the box under the heading of skills, the surveyor again needs to make a subjective evaluation based upon the responses of the interviewees. The surveyor needs to evaluate the level of evaluation skills of the community members.

Next, move to the fourth box in the knowledge column. One question in the next section of the survey (I.D) directly corresponds to the areas of inquiry in this box. Continue to move to the right to the next box under the heading of attitude. Another question corresponds to this area of inquiry. Moving to the right, to the box under the heading of skills, the surveyor once again needs to make a subjective evaluation based upon the responses of the interviewees. The surveyor needs to evaluate the level of decision making skills of the community members.

The surveyor needs to evaluate the community's ability to change and adopt alternative behaviours.

Once the surveyor has completed the above, move to the fifth box in the knowledge column. The areas of inquiry in this row are aimed at informing the surveyor about options available to communities which enable them to conserve the environment. Several questions in section (I.E) directly correspond to the areas of inquiry in these boxes. The area of inquiry in the box to the left under the heading of knowledge is used to develop questions about available options. Continue to move to the right to the next box under the heading of attitude. The surveyor has to evaluate the level of initiative of the community members towards actively seeking and developing options. Moving to the right, to the box under the heading of skills, the surveyor again needs to make a subjective evaluation based upon the responses of the interviewees. The surveyor needs to evaluate the community's ability to change and adopt alternative behaviours.

Finally, after moving through these three columns and five rows, the surveyor needs to inquire about different barriers to carrying out alternative behaviours. The questions in section II of the survey have been developed

Ka Tu women from Song Thanh Nature Reserve participating in an assessment exercise

based on the areas of inquiry in the right-hand column of the matrix.

As you move across the rows and down the columns to subsequent boxes, each new area of inquiry is used to develop another set of corresponding questions and evaluation of attitudes and different types of skills.

The questions in the survey relating to knowledge, attitudes, options, skills and barriers are suggestions for the types of questions that should be asked. These may be revised or adapted to make them more appropriate for the group being surveyed. Ask the questions in a semi-structured group interview. Some questions may be skipped if they were already asked when developing the problem tree or when using other PRA tools.

To conduct a semi-structured group interview, gather the members of the community (about 20 people) in a circle on the floor and sit with them at the same level, or arrange chairs in a way that makes people comfortable to talk. Often this means no tables. Make sure the community is well represented and the interview group includes people of all ages, social status, economic classes, ethnicities and both genders. In some cases, people belonging to different social sectors may need to be interviewed separately to allow for free and open discussion. For example, women may not feel comfortable discussing certain issues with men present. The interviewer should be sensitive to this gender divide, and remember that in many cases women may feel more comfortable being interviewed by a female and men by a male interviewer. Make the participants feel at ease. This should not be a serious discussion. Start off by talking about something with which the community is familiar to make people comfortable.

Survey Questions: Questions for communities and mass organizations (leaders and members of Women's Union, Farmers' Union, Youth Union, etc.)

Conduct this survey using interview techniques for groups, which should include the same number of women and men, and both young and old. Hold separate meetings with women and men when needed.

I. Assessing Knowledge, Attitudes and Skills

A. OBJECTIVE: To assess whether or not communities understand the importance and function of ecosystems and resources; value resources for their different benefits; and have the skills to identify and comprehend basic problems and issues regarding the environment.

1. **What is the importance and what are the major ecological functions of the following natural resources?**

- Water
- Soil
- Air
- Habitat (e.g., forest, grassland, wetlands, streams, mountains, clearings)
- Wildlife

2. **How do you and your family benefit from natural resources?**

(*To get things going, the following questions in the box on the nexy page may also be asked. Answers are given in the box as a reference. Communities will never answer the questions as they are answered in the box, but if their responses reflect these ideas, it indicates that they understand.)*

Assess

1. **Why does it rain?** When air molecules heat, they become lighter and like balloons, rise into the air. As they rise, they pick up droplets of water from the ocean and land. These molecules reach great heights in the sky and condense to form clouds.

2. **How do trees help make rain?** Trees suck up water from underneath the ground with their root system. This water spreads throughout the tree for nourishment. Eventually this water moves to the surface of the tree's leaves and the surrounding hot air carries the moisture off. This water is carried off into the sky where it becomes clouds that turn into rain.

3. **How do trees help to prevent floods?** When it rains heavily, floods occur if the amount of rainfall exceeds the absorption capacity of the soil. There are many ways that trees can help to maintain a balance so this doesn't happen. Firstly, thick foliage of trees can catch drops of rain before they hit the ground thus reducing the rain's impact. Secondly, when the leaves dry and fall on the ground, they protect the soil from the erosive impact of heavy rain and help absorb the water. Thirdly, without this layer of leaves on the ground, the soil would become hard, and it would be difficult for water to filter into the ground. Fourthly, the root system of trees stores much of the water deposited by rain. Finally, the root network of trees stabilizes the soil and reduces runoff and the down hill flow of water.

4. **Can an extra one thousand people move into your village and survive forever by using the land and resources found in the forest near your village?** No. All natural things are limited and can only meet the demands of a certain number of people and will become completely exhausted if overused. Natural resources need a certain time to regenerate. If an increasing population of people uses them daily, they will not be able to renew quickly enough to meet the increased demand.

5. **What does soil do to help plants?** Soil holds essential water and nutrients, which a plant absorbs for nutrition and growth. Soil also provides a place for the plants' roots to grow and take hold, thus providing stability for the plants. Small animals that live in the soil such as worms and bacteria help to break down different types of organic material such as dead animals, which provide nutrients that help plants grow.

6. **What do birds do to help plants?** Give examples of other animals or trees that help each other. Bird species such as hornbills help trees by dispersing seeds. Other birds help to control pests such as locusts and limit the destruction of these insects on crops. Some birds, as well as bees, butterflies and other insects, also help to pollinate plants. Vines depend on other trees for support to climb towards the sunlight. Worms in the soil help plants by decomposing leaf litter, which becomes food for the plants.

7. **Give an example of how this relationship can be disturbed and the consequences.** All animals and plants are connected to each other in the web of life. If one of the species in the web is removed, its absence will directly or indirectly affect other species. The loss of species can be caused by human activities such as over hunting, uncontrolled forest fires, over harvesting of timber, clearing of forest for agriculture or industry, dam construction, and pollution of water and air. If one species is lost, another species may also become extinct because of the loss of food or shelter the other species provided. For example, some birds need trees in which to make their nests to lay their eggs. Likewise, if deer disappear, carnivores such as tigers may have nothing to eat and will not be able to survive.

8. **Give an example of how a natural living thing in your village or in the surrounding forest fights with another living thing to survive. What are they fighting for?** Different plants compete with each other for sunlight, nutrients and water. Rice competes with weeds and grass. Animals such as tigers and leopards compete with each other for shelter, territory and prey.

(*Matarasso, 2002*)

Assess

B. OBJECTIVE: To assess whether or not the community understands how behaviour relates to the environment; feels a relationship with nature; has the skills to solve problems and analyse information.

1. What are your main uses of the following natural resources, and what are the main environmental impacts of your way of making a living (e.g., agriculture, forestry, fuel wood collection, hunting) on the following natural resources?
   - Water
   - Soil
   - Air
   - Habitat (e.g., forest, grassland, wetlands, streams, mountains, clearings)
   - Wildlife

C. OBJECTIVE: To assess to what degree the community understands its impact on the environment and resulting problems; cares about the environmental impact on itself and future generations; and has evaluation skills?

1. What is happening that you dislike to the natural resources in your area?
2. How does this affect your life and the lives of others (e.g. other community residents, people living elsewhere)?
3. Are you worried about this?
4. What are the consequences for future generations?
5. How and why have these activities and their impacts changed in recent times (e.g.,good/bad impacts, changes in villagers' livelihoods and production)?
6. Are the extent and quality of the natural resources (e.g., forest, wildlife, and water) in your area increasing, decreasing or do they remain about the same as before? Why is this?

D. OBJECTIVE: To determine if the community understands the need for change; is committed; and has the skills to make decisions.

1. Should something different be done to reduce these impacts?
2. Are you willing to make some sacrifices or to participate in activities to find a solution?

E. OBJECTIVE: To gauge whether or not the community is aware of different available options; has initiative; and has the technical skills to adopt new ways of behaving

1. How could the community develop now and in the future with less impact on the environment? How could the community actually improve the condition of its environment and natural resources?
2. What type of support have you received or do you need to carry out the actions required to overcome your difficulties?
3. What might be some of these alternatives to current means of earning a livelihood and existing policies? What might be some solutions?
4. Are there some traditional/local values/ethics or practises that help conserve nature and natural resources in your community?
5. What skills do you need to change?

II. Barriers

1. Are there obstacles preventing you from choosing new options? What are these?
2. Are there economic barriers or benefits to changing how you behave?

3. Are there sufficient and high quality extension services and materials available to change the way you behave in relation to agriculture, forestry and the use of natural resources? How satisfied are you with the quality of support you receive (e.g. relationship with support staff, quality of the materials/information they provide)?

4. Are there laws or policies that promote or prohibit alternative behaviour?

5. Is there sufficient, high quality technology and infrastructure available to promote alternative behaviour?

6. Are there social or cultural pressures that promote or hinder a change in behaviour?

7. Is there anything else that you would like to say that could help identify options or barriers to options for yourself and the support/ training staff who work with you?

Some basic questions should also be asked of outside stakeholders to cross-check the data gathered in the community as some people outside the community may perceive the situation differently and can provide some useful information that was missed.

Questions for staff of parks and protected areas and NGOs working in the area

1. What local behaviours and activities are most destructive to the natural environment of the protected area?

2. What do you think communities should know about the environment in order to effectively participate in conservation?

3. What options can be offered to communities so that they can change harmful behaviour?

4. What skills do communities need to be effective conservationists?

5. What changes have you observed in the way the community behaves that have improved environmental protection and conservation in the protected area? How has this happened, and why have the changes been successful?

6. In what ways do local communities help protect the environment and support conservation in the area?

In a semi-structured interview, flexibility is an asset, which makes it different from a formal interview. The questions in the survey serve only as guidelines, and can be adjusted during the interview in order to obtain the information required. If it becomes apparent during the interview that some questions are irrelevant, they can be omitted. If it becomes apparent that a new question is needed, ask it. Remember to ask questions and guide the survey process without bias, and without making value judgments on the issues being discussed. Do not ask leading questions or questions that can be answered by only yes or no. Don't finish people's sentences. Instead, frame the questions in such a way as to allow those being interviewed to give answers that truly reflect their ideas and beliefs and not those of the interviewer. Do not lecture or advise. Do not let the interview go on too long; remember people's time is valuable and they may need to work in the field. If people appear bored or start fidgeting or sleeping, wrap the session up. If the same people are answering all the questions while others are quiet, try and direct specific questions to the quiet participants to get them involved.

The interviewer should take good notes of

everything being discussed while at the same time paying attention to the group. The conservation educator as a facilitator should show an interest in people's lives and situations, feel empathy in order to understand other people's perspectives, and respect the views and behaviour of others. Certain skills are required to conduct a successful interview including the ability to listen, ask questions, probe, initiate dialogue, and find common ground (*Theis and Grady, 1991*).

What Should You Do With The Survey and PRA Data?

After the survey, it is necessary to look at all the data gathered by using the different PRA tools. Based on an analysis of the data, the behaviours causing problems need to be identified. As well, the gaps in knowledge, poor attitudes, and options and skills required to enable people to change their behaviour must be identified. You also need to determine what policies, laws and economic factors are barriers that must be eliminated before an effective CECA programme can be designed. Finally, the community must decide what interventions should be included in the CECA programme.

It is quite simple to analyse the data as no complex tools or statistics are needed. Use the problem tree to identify the main problem. Identify the main behaviours to target in the problem tree as well. These behaviours are usually noted on the second branches of the problem tree. In the example problem tree developed with the Ka Tu community in Song Thanh Nature Reserve the behaviours or activities cited are hunting, timber extraction, NTFP collection and war. The community made hunting and timber extraction priorities on which it is most critical to focus. The data gathered during the survey will give a good idea of what people know, what barriers are preventing changes in behaviours, what options exist and what interests people. This information can be analysed concurrently while the interview is happening. Keep in mind the objective of the questions and when they are answered, or in some cases not answered. The conservation educator should immediately have a clear idea of the community's views and needs. Use the results of the use and management decision matrix to identify which target groups should be included in the CECA programme. In the example above, the target groups include both male and female members of the community, Song Thanh Nature Reserve, and external wildlife and timber traders. The seasonal calendar, village walk/sketch map and transect, and historical timeline should also be used to provide the required information to answer the four questions below.

A question and answer check sheet and a flow diagram to identify the interventions required to design a conservation programme have been developed by Bruce Byers. (*2000*) The question and answer check sheet is found below for reference. To simplify things and have a specific tool to identify how CECA can change behaviour, the system developed by Byers has been modified slightly. This simplified system has only four key questions instead of 13. The other nine questions have been incorporated into the four main questions.

For example, the questions under values, social norms and socio-cultural factors have been grouped under the one category of attitude because to influence social norms and culture with CECA, you must affect attitudes using similar tools. Options, resource access, and skills have been grouped into one question as they are related in many ways and

PUTTING IT INTO PRACTICE

4

DEVELOPING A (CECA) PROGRAMME

Assess

According to Byers (2000), questions you might ask include:	Answers:
Knowledge 4 Do people behaving in this way know that it damages resources?	
Value 4 Do they care that the resource is being damaged by this behaviour?	
Social norms 4 Do they care what other people in their community think of them if they behave this way? 4 Are there local influential people or leaders who are seen as role models of sustainable or unsustainable behaviour?	
Socio-cultural factors 4 Are there religious beliefs or taboos that influence the behaviour? 4 Does cross-culture contact influence the behaviour?	
Options 4 Do people have viable options or alternatives that do not damage the resource?	
Skills 4 Do people have the skills and means of taking advantage of options and alternatives that do not damage the resource?	
Economic 4 Are there overriding economic factors that motivate behaviour despite knowledge, values, socio-cultural factors, option, and skills?	
Law 4 Are laws, rules, enforcement rates, and penalties adequate to deter this behaviour?	
Policies 4 Do policies of government agencies encourage or discourage this behaviour?	
Gender 4 Does gender affect the behaviour?	
Resource access or "ownership" 4 Is this behaviour affected by differences among users in accessing resources or owning them?	

are influenced by similar tools; namely, extension services, training and technical assistance. Legislation, policy and economics have also been grouped into yet another question. The four questions will be used to identify which root causes of behaviour can be addressed by a CECA programme, and, thus, which tools are required to remove barriers and to create benefits which enable people to behave in a conservation-minded way. Some of the tools needed are education, communications, social marketing, technical training and influence over the economy and policy by advocacy.

See the decision flowchart below for a graphic representation of the modified process with the four steps for identifying the root causes of behaviour and the suggested interventions.

Finding solutions for many of the barriers and providing benefits for adopting new behaviours requires collaboration with many professionals such as engineers, policy experts, economists, etc. A conservation educator must work closely with these experts to be successful.

The four main questions and answers in the modified system are:

1. **Is the environmental problem being caused because people don't have knowledge and understanding about the environment and related issues? Is their education insufficient?** If people don't know that they are causing environmental problems, they must be provided with information so they become aware of the problems their behaviour is creating.

2. **If people know they are having a negative impact on the environment, do they care about the problem and their contribution to it?** If they don't care, a programme should be developed that influences their values and attitudes.

3. **If people know they are having a negative impact on the environment and care but still continue to behave in this way, do they have the options, and access to resources, technology and skills needed to change?** If they don't have options, access to resources, technology or skills, they must be provided with them first in order to be able to behave in new ways.

4. **If people know they are having a negative impact on the environment and care and have the options, and access to resources, technology and skills needed to change but still continue to behave in this way, are there are laws, policies, economic forces or other barriers that prevent them from changing?** If there are laws, policies or economic forces that prevent them from changing, these must be influenced by lobbying for and promoting policy reform, removing economic and other barriers, and by providing financial incentives.

PUTTING IT INTO PRACTICE

4

DEVELOPING A (CECA) PROGRAMME

Assess

According to Byers (2000):
If the people behaving in a way that damages the environment...

* **Don't know** that their behaviour damages resources,
  Provide this information by educating and communicating with them.

* **Don't care** that the resource is being damaged,
  Try to change their values and attitudes by discussing the issue, educating them and resolving disputes.

* **Do care** that the resource is being damaged,
  Strengthen their resolve with education and dialogue.

* **Do care** what others in the community think of them if they damage the resource,
  Strengthen social norms by raising awareness and monitoring the community.

* **Lack** viable options and alternatives that do not damage the resources,
  Discover or create such options and alternatives.

* **Lack** the skills or means to take advantage of options,
  Train them in the necessary skills.

* **Are motivated** by overriding economic factors to use the resources unsustainably,
  Increase incentives for behaving in the desired way.
  Increase the costs of behaving in such a way that damages resources.

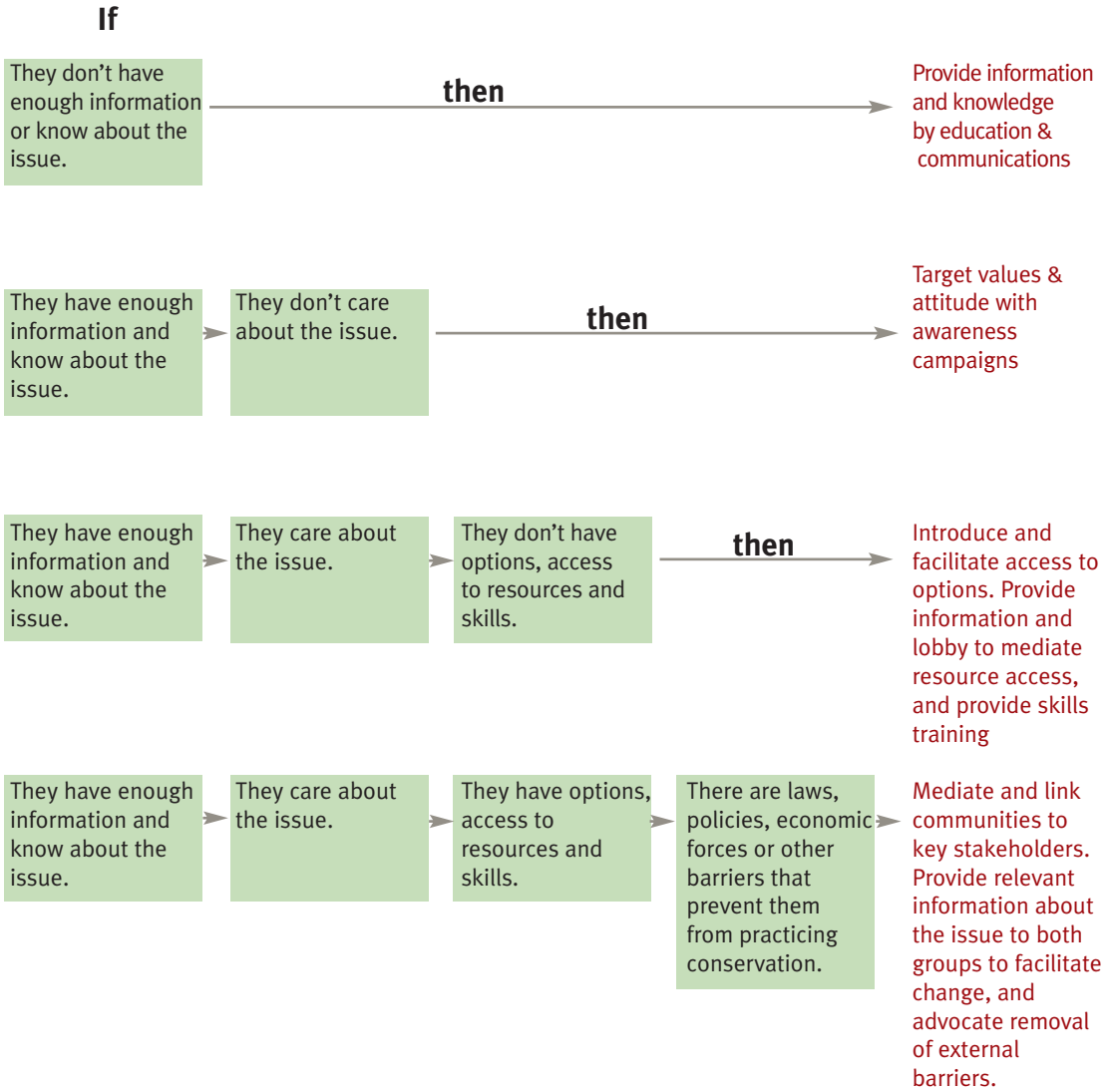
* **Are not deterred** by the law or penalties for damaging the resources,
  Make new laws or,
  Increase enforcement or penalties.

* **Lack** secure rights to use and manage resources and so are not motivated to conserve them,
  Lobby for access to or ownership of resources for those who use them.

* **Are not motivated** because of gender inequality and disempowerment,
  Address gender issues with dialogue, education, and training.

* **Lack** effective organization to manage the resources and promote desirable behaviour,
  Promote institutional development, reform, and capacity building.

Decision Flow Chart



7. Options Ranking Matrix

Once the data gathered by using the PRA tools detailed above and by asking the four questions have been analysed, we should have identified the need for KSA, options and the removal of potential barriers. If a lack of options was identified as an issue, it is important to identify, in a participatory way, the specific options to current behaviours. Different behaviours that could be potential alternatives can be compared with existing behaviours to select the best options for more sustainable living. Use the matrix below to do this. The matrix is just a guide to help the thinking and analytical process and to make sure all of the different variables are considered and compared before making a decision. This is not a mathematical tool that can give a numerical result based on some formula. The chart uses a relative ranking system of +1, -1, and 0. A +1 means the activity has

Example of Options Ranking Matrix from Community in Song Thanh Nature Reserve, Quang Nam

	Hunting	Animal Husbandry	Timber Extraction	Woodlot, Improved Fallow & Border Plantings
Uses				
Fuel			+1	+1
Food	+1	+1		
Construction			+1	+1
Income	+1	+1	+1	+1
Environmental Impact				
	-1	0	-1	+1
Benefits				
Profit	+1	+1	+1	+1
Others				
Barriers				
No skills/Training		-1	0	-1
Hard Work	-1	-1	-1	-1
Labour Intensive	-1	-1	-1	-1
Time Consuming	-1		-1	-1
Money/materials		-1	0	0
Politics	-1	+1	-1	+1
Socio-cultural Restrictions	+1	0	0	0

a positive impact or result on a particular variable; -1 means the activity has a negative impact on a particular variable; and 0 indicates no impact. If a behaviour is frequently ranked as -1, then that behaviour should be replaced with one that is ranked as 0 or +1.

Chart all the existing target behaviours and activities in a separate matrix, and add different potential substitutes based on the community's suggestions. See the matrix below as an example developed with the Ka Tu community in Song Thanh Nature Reserve, Quang Nam. The community identified two main activities as priorities for change: hunting and timber extraction. The options that the community selected as their substitutes were animal husbandry and woodlots. Other options may be suggested to the community if they are having trouble identifying options. Options may include agroforestry, organic farming, and bee keeping. To identify a suitable substitute, the following questions need to be answered.

1. Does the new behaviour provide the same or similar benefits, such as food, construction materials, fuel and income, as the existing behaviour?

2. Does the new behaviour have a positive or negative impact on environment?

3. Are there any barriers to the alternative behaviour, or is anything required such as time, money, technology or training?

Compare the current behaviours/activities with possible substitute behaviours, and have the community select the ones that show the most promise. Make sure the new behaviour has the same use, impact and benefit ranking of +1 as the old behaviour. Also, if under the heading "barriers" the new behaviour is ranked as -1, have the community identify how to change the (-1) to a (0) or (+1). Or at least make sure the community is aware of the barrier and are prepared and committed to bear the costs of taking on this new task. Afterwards, identify the skills needed to adopt the new behaviours that have been selected. These skills will be in addition to those that have been identified in the KSA survey.

Using this participatory assessment tool, conservation educators can help the target audience, both men and women, to identify, negotiate, and set priorities for changes in behaviour that will make a difference. Together they can review the list of ideal behaviours and activities, and select ones that will have the greatest impact on the problem, are the most economically and politically feasible, culturally acceptable and compatible with social norms, and provide the most immediate positive results (*Academy for Educational Development, 2002*).

This exercise may sound easy, but a word of caution before moving on to the next step. This process can be very difficult. Selecting options takes a lot of hard work, creative thinking and commitment to change. But more importantly, after the community has selected the options and committed themselves to them, there is still a lot of work that lies ahead in terms of providing training and resources, and removing economic and political barriers, etc. Once these have been achieved, it still often takes time before new activities reap tangible benefits. There is also the potential that the selected option may fail to provide the expected benefits, or even worse, that an option does not exist for a given situation. You should keep this in mind but not let it hinder you as persistence and creativity go a long way!

Conservation or Development?

When providing options and teaching skills needed to change behaviour towards the environment, it is important to remember that the focus must be on conservation and not development. This is a bit tricky, and the dilemma has been raised time and again in integrated conservation and development project work. There is no clear indication that nature is better protected when incomes increase. In fact, people with higher incomes and the financial means to consume more can cause much more harm to the environment than the poor.

At the same time, the need for people to make a living must be acknowledged. What we are talking about is providing options and teaching skills that enable people to replace old livelihoods that degrade the environment with livelihoods that do not have a negative impact or have less of a negative impact on the environment. The income derived from these livelihoods should be equal to or higher than what is earned from current livelihoods so as not to impoverish those committed to making the necessary changes. But, the goal is not to improve incomes. It is to make it easier for people to practice conservation without being financially penalized. Sometimes an improved income makes this possible, but not always. It is, therefore, important to select the right options for earning an income, which appropriately replace negative behaviour rather than supplement an income while continuing to behave in old ways. Inherent in this is the will, motivation and commitment to do the right thing. No one will change their behaviour for the better unless they are totally committed. A participatory approach to conservation helps to ensure this, but it is also essential to reach agreement on managing resources in return for the education and materials provided to the community.

So in summary, once all the information has been collected, it must then be analysed in such a way that all key behaviours identified in the problem analysis and PRA activities can be addressed by a CECA programme. The reasons for each behaviour should be clear, whether it be a lack of information and understanding, poor attitude, a lack of options or skills or the existence of other barriers. If the reason is a lack of information and understanding, then identify what communities need to know to change the negative behaviour or to continue the sustainable behaviour. If poor attitude is one reason, then identify what techniques can be used to influence attitudes and what messages need to be sent. Finally, if options and skills are lacking, then a substitute for these behaviours must be identified and introduced and the skills required to adopt the new behaviours must be identified and then taught.

II. Design and Plan

Once all of the above steps in making the assessment have been completed, identify the specific target groups, the topic and the tools needed for the CECA project. Whether the goal is to raise the awareness of the community, teach skills for a new behaviour, or to remove a barrier by influencing a policy, three main tools can be used. These tools are training, awareness and advocacy. The way to develop and use these tools will be discussed in this chapter.

Training and Learning

In order to design training programmes for adults, some discussion on training techniques and the learning process is warranted. Learning can be defined as the act, process, or experience of gaining knowledge, values and skills. According to Malcolm Knowles (*1998*), one of the fathers of modern adult learning theory, there are five issues to be considered and addressed in formal learning. They include (1) letting learners know why something is important to learn, (2) showing learners how to find the information to teach themselves, and (3) relating the topic to the learners' experiences. In addition, (4) people will not learn until they are ready and motivated to learn. Often this (5) requires helping them overcome inhibitions, attitudes, and beliefs about learning.

There is some general agreement that adult learners are characterized by the fact that they are willing to apply what they have learned immediately, are more certain about what they want to learn, have a lot of experience and information that affects how they learn, and have learning styles and abilities that are very different. There is agreement also among educational psychologists that learners generally apply one or more of the following learning styles on the following page.

Different Learning Styles

a. Visual Learners: learn by seeing and visualizing. They can "see" their individual learning objectives clearly via either static or dynamic images. They readily 'see' themselves operating in different contexts. They often see images with words or feelings. They affirm their understanding of new information only when they see it happen or see it written or described visually. A visual learner understands and remembers best by reading and looking at photos, maps and diagrams. A teacher using visual methods might often say, "Let's imagine…"

b. Verbal Learners: tend to understand things from an 'internal dialogue' and prefer expressing themselves with language. In anticipation of a new situation, they may mentally rehearse what will happen. These people can usually create a lively and amusing learning environment by speaking. A verbal learner understands and remembers best by listening to lectures, reading out loud and talking about things with others. A teacher using this method might often say, "Did you ask yourself…?"

c. Active Learners: often attach learning to emotions or tactile sensations. When spelling a word, active learners may 'feel' themselves writing it letter by letter beforehand, or it may simply feel right. An anticipated experience is associated with strong emotions. Active learners experience the physical situation with all the related emotions that it brings. A teacher using this method might often say, "How do you feel about…?"

d. Logical Learners: understand subjects best by thinking them through and figuring out in which ways they make sense. They often look for patterns and connections in learning exercises and problems. A person who learns best this way may appreciate systematic approaches to a subject and learns well by taking notes, making lists and drawing cognitive maps. A teacher using this method might often ask "What is the reason for…?"

Adult learning is a complex issue, and there is a lot of debate about how adults learn and how best to train them. However, since the process of CECA is in many ways participatory and facilitative, the selected approach to training in CECA also follows this ideology and incorporates components of the above information based on three major theories of adult learning.

These theories include self-directed learning, critical reflection learning, and experiential learning. Self-directed learning basically assumes that learners take control of their own learning, set their own goals and decide what methods will be used to learn and evaluate. Critical reflection learning is based on the belief that in the learning process learners question and then replace or reframe an assumption that up to that point has been uncritically accepted as representing common

wisdom and take an alternative perspective on ideas, actions, forms of reasoning and ideologies previously taken for granted. Experiential learning is based on the theory that learning is grounded in experience, and that the learning process ought to include hands on methods such as games, simulations and role playing (*Brookfield, 1995*).

Adult learning in the context of CECA, therefore, ought to be self- directed. It ought to be a process of active inquiry, not passive reception, and it ought to be experiential and based on critical reflection. The user of the guide, therefore, needs to be creative and skilled in developing a learning environment based on the experiential learning process described below, and by using a broad range of methods which allow for self-directed learning and critical reflection.

Experiential Learning Process

The learning process is a four-stage cycle. The four stages include: having an experience; observing and reflecting on the experience; forming generalized abstract concepts related to the experience; and testing these concepts in new situations. According to this model, the best way to learn is to experience all these stages in order. However, learners may prefer one stage to others. A person who prefers concrete experiences is often a person of action. Someone who prefers the second stage is a person who likes to appraise.

Self-Directed Learning

In self directed learning, learners assume a decision-making role in the training, often deciding what is to be learned, by which activities, and at what pace. Conservation educators facilitate and mentor learners to design experiences from which they will acquire knowledge, adopt values and develop skills. This method assumes learners learn because of what they bring to the training in terms of their needs, motivations, experiences, knowledge, interests, and creativity. Learners are active as opposed to passive recipients of knowledge. Conservation educators, on the other hand, are facilitators, helpers, and resources. In general, self-directed learning works best when learners are relatively mature and possess significant related knowledge and experiences. The

Experiential Learning in Practice

A practical example of a person going through all four stages is exemplified in the following story. A forest guard is on a field trip to another forest reserve. While on this field trip, he is taken to a site that is being reforested with indigenous tree species. He likes the idea of reforesting after he sees how it benefits the ecosystem and the community. He goes home and reflects about what he just saw. He thinks about the forest reserve he works for and the soil erosion and fragmentation of the landscape. He thinks of a new way to apply the reforestation techniques he learned. He decides to test this method on hillsides in his nature reserve to prevent erosion and to decrease fragmentation. He learns much from this practical implementation of his abstract idea.

self-directed learning approach is in contrast to the trainer-centred approach by which the trainer leads the learning experience by the one-way transmission of information. This approach does not allow for participants to actively engage in the learning process by discussing issues or exchanging information.

Critical Reflection

a. **To help ensure critical reflection, develop lessons which emphasize higher-level thinking skill** - Ensure that the learning objectives specify more than just facts and technical skills and include problem solving, critical thinking, and the exploration and development of appropriate attitudes. See Bloom's taxonomy below.

b. **Make learning more interactive -** Include activities that promote cognitive challenges, and require learners to demonstrate a deep understanding of the subject matter or relevant problems. This may mean using small group activities so that learners have an opportunity to interact with each other and the material to explore, discuss, analyse and explain issues.

c. **Less memorizing of facts and more construction of meaning -** Decrease the amount of factual material that has to be memorized. Spend more time helping learners to understand basic principles.

d. **Less traditional lecturing and more active learning -** Reduce the time allocated for lectures to allow more time for group-based and self-directed learning. The aim is for learners to understand a subject, and to be able to explain it, apply it or use it to analyse problems.

e. **Peer teaching and collaborative group work -** This helps to encourage independent learning by having learners work in groups without tutors or more senior participants. Group leadership requires participants to express their ideas in order to organise them for their audience. This process creates a deeper level of understanding because one of the most effective ways of learning something is to compare interpretations, agree on an argument and how to present it, and then teach it to someone else.

Adult learning is a complex issue, and there is a lot of debate about how adults learn and how best to train them.

Bloom's Taxonomy: Benjamin Bloom (*1956*) created this taxonomy for categorizing levels of learning from the simple to the more complex.

Competence	Skills Demonstrated
Knowledge	• observation and recall of information • knowledge of dates, events, places • knowledge of major ideas • mastery of subject matter • **Question Cues: list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where**
Comprehension	• understand information • grasp meaning • translate knowledge into new context • interpret facts, compare, contrast • order, group, infer causes • predict consequences • **Question Cues: summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend**
Application	• use information • use methods, concepts, theories in new situations • solve problems using required skills or knowledge • **Questions Cues: apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover**
Analysis	• seeing patterns • organization of parts • recognition of hidden meanings • identification of components • **Question Cues: analyse, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer**
Synthesis	• use old ideas to create new ones • generalize from given facts • relate knowledge from several areas • predict, draw conclusions • **Question Cues: combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if, compose, formulate, prepare, generalize, rewrite**
Evaluation	• compare and discriminate between ideas • assess value of theories, presentations • make choices based on reasoned argument • verify value of evidence • recognize subjectivity • **Question Cues: assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize**

Developing a Training Programme

In order to develop a training programme and the materials to support it, it is necessary to analyse the data from the KSA survey and convert them into outline form. Once the outline has been developed, it should be presented to the community for comments, allowing people to select their learning objectives, content and methods. After this is done, the research and writing should begin so that "meat is added to the bones" and the training programme includes lessons that provide all the essential information required by the learners, and uses the methods to allow for experience and critical reflection. After the lessons are finalized, if needed, supporting materials such as posters, booklets, etc. may be developed, which are attractive, and easy to understand, and which incorporate appropriate messages.

Let's look at an example based on the problem identified in the problem tree and from the other PRA tools worked on with the Ka Tu community in Song Thanh Nature Reserve, Quang Nam. To demonstrate how to translate the information gathered in the KSA survey and by using the other PRA tools into an outline and final training programme, let's look at the example in which the following information was identified: The forest area is being degraded due to unsustainable hunting and timber extraction. The community knows that the impact on the forest is not good and that hunting and timber extraction are illegal, but if alternatives to timber and protein from wildlife are not found, people will be short of construction materials, fuel and food. The survey of the community revealed that people did not understand completely the importance of and interrelationships between soil, water, forest, and wildlife. Community members also wanted to develop a community enforcement team as they indicated that the main impact on wildlife and forest was from hunting and timber traders from outside entering the reserve illegally. The community wanted to be trained to develop and participate in a community enforcement group to stop outsiders from coming into the forest. The community also wanted to learn animal husbandry and acquire veterinarian skills, and local residents made the commitment not to hunt if they had enough meat from domestic animals. Finally, the community wanted to learn how to develop tree nurseries and plant trees to improve the soil in their fallows, as farm boundaries, and in woodlots.

Summary of KSA needed

Knowledge	Skills	Attitudes
Basic ecology & interrelation-ships of natural systems (web of life)	Community enforcement Animal husbandry and animal disease prevention Tree nursery and planting techniques	Values pretty good

Let's take one subject from above and put it into a sample framework below to further develop our example. Let's use the subject of basic ecology and interrelationships of natural systems (web of life) to develop a training framework and outline.

Design & Plan

Training Curriculum Framework

Topic	Learning outcomes or objectives by the end of the course, participants will be able to:	Content	Methods & Activities	Materials & Resources	Timing
Basic ecology concepts (web of life)	I. Understand how soil, water, wildlife, habitats and humans interact. Value the importance of the different components and the functions they provide to the Earth.	The different interactions between soils, water, wildlife, and habitats. The benefits these interactions provide to create a balance in nature. How humans play a role in ecology and can live in a sustainable way or unsustainably.	- Lectures/ presentations - Group discussions -Field demonstrations and -Games	-Flipchart -Cards -Pens -Pictures for web of life game -String	6 hours

Developing an Outline

Once the framework is complete, an outline of the content needs to be developed. See the example developed based on the framework above.

I. The different components of the web of life on Earth
   A. Sun
   B. Air
   C. Plants and Habitats
   D. Soils
   E. Water
   F. Wildlife
   G. Humans

II. Interactions in nature and the benefits of different ecological interactions
   A. Sun and plants/animals (photosynthesis/ energy cycle)
   B. Sun and water (rain/water cycle)
   C. Water and plants (growth)
   D. Plants and air (carbon/oxygen cycle)
   E. Plants and animals (pollination/protection)
   F. Plants and soil (nutrient cycle)
   G. Others

III. Human's place in ecology and how people live in sustainable or unsustainable ways
   A. Humans and ecology
   B. Definition of unsustainable and different human practises which have negative impacts on the environment
   C. What is sustainable human behaviour and practises?

Developing a Lesson Plan

Steps for Developing a Lesson plan

1. After the outline has been completed, the conservation educator should then develop a lesson plan and individual lessons for the training programme. Select objectives for the lessons with the community based on the essential knowledge, attitudes and/or skills needed by the learners. Your long-term plan should cover all the learning targets identified by the conservation educator and community. An individual plan covers one subject to meet the learning targets. The entire lesson plan for conservation education should follow a process from awareness to action. In some cases, the lessons should only have the goal of disseminating information. Other lessons should focus on changing attitudes and on developing skills. Many lessons may need to do all three.

2. Identify and select the subject for each lesson with the community. What is an appropriate subject to cover to reach their objective?

3. Develop an outline for each lesson based on the content identified by the community.

4. Identify the methodology with assistance from the learners keeping in mind that you want to maximize the learning process and to develop higher thinking skills and long-term memory. Create an activity using the material in a fun and participatory way.

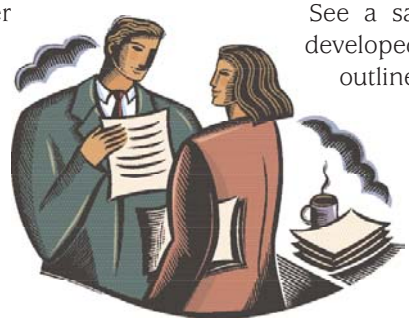
5. Conduct focused research. Read relevant books and magazines. Visit a library, if possible, and gather all the necessary information.

6. Write the lesson so that it is balanced, fun, and emotional and incorporates critical reflection and experiential learning. The lesson should be based on accurate information and include cognitive learning and techniques for long-term memory. See the box on the following page on enhancing long-term memory.

7. Estimate the time for giving the lesson, and identify the venue and the number of participants in your course.

8. List and acquire the materials and equipment needed for the activity and to make the lesson more visual, fun and experiential (e.g., films, games, pictures).

9. Evaluate the training based on indicators developed with your learners. You need to know in what way your course has been successful. What can be done to improve the results of the training? Does the content of the course need to be changed or adjusted? Does the way the course was conducted need to be changed? What do the learners think about the course? Evaluation will be discussed in more detail in section V.



See a sample lesson on page 72, developed from using one part of the outline from the previous page.

Teaching for Long-term Memory

Memory allows individuals to draw on experience, and use the power of prediction to decide how he or she will respond to future events. The stages of memory are the following: immediate, working and long-term. Of those, immediate and working memories are called temporary memories. It is important for conservation educators to understand the characteristics, types of long-term memories and factors that affect the retention of what is learned so that they can design learning activities which help trainees to retain for the rest of their lives the knowledge they have gained. Factors that affect long-term memory include the emotion attached to the learning, degree of focus, the length and type of rehearsal that occurs, the trainee's learning style, and the inescapable influence of prior learning. Listed below are some guidelines that may be useful for educators to improve the long-term memory of their learners:

a. Create emotion with the learning material

b. Rehearse to enhance retention

c. Make use of prime times (in a lesson trainees tend to remember best that which comes first, and remember second best that which comes last. We tend to remember least that which comes just past the middle of the lesson. In a 40 minute lesson, prime time tends to be for about the first 20 minutes with a 7 minutes of down time and a second prime time of 13 minutes)

d. Develop strategies for using time to lengthen prime time and shorten down time for learning

e. Practice effectively

f. Have trainees recall previously learned information and knowledge effectively by actively participating in a new lesson

g. Use waiting time to increase trainee participation (the time following a question asked by the trainer and before the first trainee answers)

h. To enhance retention, group or put in one 'chunk' all kinds of different information. This enables a learner to remember the chunk rather than the many separate pieces of information. The more items in a chunk, the more information can be processed by the working memory and recalled at one time.

i. To help retain information, apply mnemonics, devices used to remember unrelated information without patterns. Rhymes can be used to help remember as can phrases with the first letter of each word representing the first letter of the word to be remembered. For example, the phrase, "King Phillip Came Over For Green Stamps," helps people remember the scientific taxonomic classification of living organisms: Kingdom, Phylum, Class, Order, Family, Genus, Species.)

(*Sousa, 2001*)

Activity: The Web of Life

Objectives: To understand the interdependent relationship and interactions that occur among different components of nature such as water, soil, forest, wildlife.
Time: 50 minutes.
Materials: A set of cards with different pictures of animals, soil, water, air, forest, etc., 100-200 metres rope, and tape/pins.

Background:

The environment is a complex system of intricate relationships between non-living resources such as soil, water, light and air, and living organisms such as animals, plants, bacteria and humans. The sun and moon are also critically linked to this system. All organisms on Earth are interdependent and connected to each other by symbiotic relationships. They depend on each other for nutrition (food), for accommodation, and protection. The sun is the primary source of energy for all organisms on Earth. Plants synthesize this energy together with water and air into organic compounds (starch and sugars). These plants become a food source for herbivores such as insects, birds, monkeys, giraffe, deer, buffalo, and even humans. Carnivores such as tigers, wolves, and bears, on the other hand, eat these herbivores. Microbes, at the same time, depend on the decaying carcasses of these animals and the detritus of plants for their survival. This complex system of relationships is called the web of life. The web of life exists in a fragile balance or equilibrium. If any factor is disturbed or organism removed from the web, then this balance will be destroyed. We should look closely at the relationships that exist in nature to fully understand the wonders of the web of life.

The different types of relationships that exist in nature include:

- **Competition:** when many species seek the same resources and the impact that each individual has on the amount of the shared resource available to others is negative. For example wild buffalo and deer species compete for the same grass resources.

- **Mutualism:** when different species interact and the result of the interaction is positive for all parties involved. An example is a bird pollinating a flower.

- **Parasitism:** when one species benefits from the interaction and negatively impacts on the other species. An example is an intestinal worm in a pig.

- **Commensalism:** when one species interacts with another and the relationship is beneficial to one species and the other species receives no benefit but is not damaged. An example is an orchid growing in the branch of a larger tree.

Some non-living components of the web of life:

- **Water:** Seventy-three per cent of the Earth's surface is water. The vast majority - 97.6% - of this water is salt water found in the Earth's seas and oceans and 2.08% is solid in the form of ice and glaciers. Humans or land

dwelling wildlife do not use these forms of water. The rest (0.03%) of the water that exists is fresh water and is used by humans and other terrestrial wildlife. This water is found in rivers, streams, and underground aquifers.

- **Soil:** Soil is formed by a process of weathering that has taken millions of years. Temperature, rain, sunlight, wind, humidity, and volcanic eruptions are some of the natural processes that cause weathering. A nutrient rich organic layer called humus is important to the survival of many plants. This layer is made from animal dung, decomposed plant detritus and decaying animals. This nutrient rich layer of soil is also home to a host of worms, insects, fungi, algae, moss, and bacteria. Soil holds water, which then is taken up by trees. Soil also contains many types of minerals that are important for plants and animals. Minerals such as calcium, phosphorous, manganese, iron, and zinc are taken from the soil by plants. Mammals get these minerals in turn by eating vegetation or from salt licks. Elephants, for example, may lick ashes from bush fires to get minerals.

- **Atmosphere and air:** Carbon dioxide (CO_2) and oxygen (O_2) are essential for the survival of all organisms. By photosynthesis, plants use CO_2 to produce organic compounds and release O_2 into the atmosphere which humans and other animals breathe.

Preparation:
Photocopy and cut out the set of cards, not included here, and laminate them. Get a long rope or strong string for participants to hold onto when making the web of life.

Procedure:

1. Gather the participants in an open space outside. Introduce the objective of the activity to the group, which is to understand the complex relationships in nature, the “web of life."

2. Ask the group to form a circle. Hand each participant one Web of Life card with a different picture, and have him or her stick it to his or her shirt with tape. Each card represents one component of the web of life including the sun, soil, water and air.

3. Begin the game by giving the participant with the card for the sun the end of the rope and explain that the sun is the initial source of energy for all creatures, and if there were no sun, there would be no life on Earth. Next have the “sun” pass the end of the rope, to the participant with the card that he or she thinks has the most immediate relationship with him or her (The “sun” should pass the rope to a “plant.”). When the participant passes the rope to the next participant have him or her explain why he/she is related to the component represented in the card. The “sun” should mention that he or she is related to the “plant” because it provides energy to the plant for photosynthesis.

4. Continue the game by asking the "plant" to hold the rope tightly to maintain its relationship with the "sun" and to pass the rope to another participant that it is connected to in nature and to give reasons for that connection. For example, a "bird" may use trees to build its nest in and others may find food in trees. The relationships that the participants choose may be relationships about food, living space, protection, etc. The more relationships the participants can think of, the better. Continue the game in this way until all participants have become part of the web.

5. After all the participants have become part of the web, ask them to stretch the rope so there is no slack. Tell them that they have just built a web of life and emphasize the interrelationships between the different components of the ecosystem. Ask the participants if they think there is any part of nature that is not connected to the web of life or if there is any component that is less important than others and have them explain why.

6. Now take one part of the rope and press on it sharply. Explain to the participants that you want to illustrate that a web of life always faces external pressures such as drought, storms, pollution, hunting and deforestation. Now take your hand off of the rope so that it goes back to normal. Explain to the participants that the diversity of relationships in an ecosystem allows for the environment to be resilient to outside pressures and for it to recover when these pressures are removed.

7. Ask participants to imagine what would happen if components of the web were damaged or removed, for example, if trees were all chopped down. Ask the participant with the tree card to drop the rope he/she is holding. All the other participants that have connections with the tree will immediately see the rope that they are holding become loose. When the web of life becomes disturbed as such, ask the participants what would happen if pressures occur again from outside? Now press on the rope again so that the web becomes loose. Conclude that when the web of life is broken, many relationships are disturbed and thus the survival of different species will be threatened. If activities such as deforestation, over hunting, and pollution are not prevented, the environmental equilibrium will be destroyed and even human lives will be affected.

(*Center for Environmental Education, 1996*)

Developing an Awareness Campaign & Materials

According to the results of the assessment, training might be needed to effectively reach the conservation education objectives. However, in many cases, an awareness campaign and accompanying materials will also be needed. In order to develop effective campaigns and materials, you must have a compelling and clear message, effective use of different media, a clear and well written text, and attractive designs. To develop a successful campaign, follow these steps:

Step 1. Define your purpose. Knowing the goals and objectives of your campaign helps you to make important decisions about things such as what information needs to be included, and what is irrelevant and should be eliminated. Another reason you need a clear purpose is to decide whether or not to proceed with your activity. If you do not have a practical purpose, do not go on with the activity. The goals and objectives are based on your organizational goal and the results of the assessment undertaken during the development of the CECA programme.

Step 2. Analyse your audience. Once you are satisfied that you have a legitimate purpose in communicating, take a good look at your intended audience. Your audience is also identified in the assessment undertaken during the development of the CECA programme, but some more info should be gathered to develop a successful campaign. You may need to follow some of the guidelines below:

- Develop a profile of your audience (Who is your audience? What is the audience's knowledge of the subject? What are the age, gender, and educational background of your audience? What interests does your audience have? Is your audience friendly or hostile? What information does your audience need? How can you customize your message so that it best relates to your audience? What does your audience expect?)
- Satisfy your audience's need for information
- Satisfy your audience's motivational and practical needs
- Establish a good relationship with your audience

Step 3. Select the appropriate activities and messages. Specific messages will be based on the conservation needs of the target audience. These specific needs should be identified in the assessment undertaken during the development of the CECA programme. For

If the **constraints can't be overcome,**

the plan should be **modified** or in some cases **cancelled.**

ideas on how to develop compelling and effective messages see the box below. A message can be sent to a variety of audiences via many media. At this time, you have to choose the best medium for your purpose. Available means of communicating your message include television, radio, the World Wide Web (Internet), newspapers, and public presentations. Different materials might include:

- Newsletters
- News and magazine articles
- Internet site
- Radio programmes
- Brochures
- Posters
- Films
- Slide shows
- Books
- Displays
- Talks
- Theatre
- Puppet shows

Step 4. Inventory resources and constraints. Before beginning a campaign, one should assess the time, staff and money available to carry out this activity. If any of these resources are limited, a plan should be made to overcome these constraints. If the constraints can't be overcome, the plan should be modified or in some cases cancelled.

Step 5. Pretest and revise the campaign. The messages and draft materials should be tested with a sample of the intended target group to see how it is received. The messages and materials should then be adjusted to take into account the comments of the sample group before being sent out to its intended audience.

Step 6. Implement. Develop a final schedule that includes writing, designing, and responsibilities for organizing events. Prepare a final budget for all of these activities and list staff responsibilities. After this is done, implement the campaign.

Step 7. Evaluation. Evaluation is an integral step toward determining whether or not your campaign is achieving its objectives and changing certain attitudes and behaviours. Based on the evaluation, you can learn a lot about the successes and failures of your programme. If your programme is ongoing, you should adjust it based on the evaluation. See Section V for more details on evaluation.

(*Jacobson, 1999*)

Organising and Composing an Effective Message

1. Make an outline of your message
At this stage, you need to look again at step 2 above about what you intend to include in your message, and try to organise the information so that it makes sense. This is a very important step because good organisation helps your audience to understand and accept your message. Being well organised also saves your audience time. To organise your message you need to (1) define the main idea, (2) group your ideas, and (3) choose between the direct and indirect approach.

2. Research
Gather all the information required to write a good text by thoroughly using a variety of

resources such as books, articles, the Internet, and interviews. Make sure you compare information from different sources to verify the accuracy of the information before including it in your materials.

3. Compose your message
After following the above steps, you should now have a good outline for your message. Now you have to create good text to deliver to your audience. To do this you, should follow three rules:

1. Write for your audience/reader
   - Relate to your audience
   - Use personal language
   - Avoid language bias
   - Have a lead or introduction that grabs attention
   - Use the active voice
2. Write vividly
   - Choose specific, concrete nouns
   - Select vivid, active verbs
3. Write tight
   - Write readable text
   - Avoid pretentious language
   - Avoid technical jargon
   - Avoid lengthy sentences (succinctness)

4. Edit & rewrite your message
Now you have completed the first draft of your text. However, most professional communicators agree that the first draft is rarely good enough. In fact, many writing authorities suggest that you go over a document at least three times: once for content and organization, once for style and readability, and once for mechanics and format. Thus, what you need to do in this step is (1) evaluate your content and organisation, (2) review your style and readability, and (3) rewrite your message.

Some tips that you may want to follow:

- Rearrange sentences to make them more readable
- Delete unnecessary words
- Read your manuscript out loud to identify awkward sentences
- Rearrange or add new sentences or paragraphs
- Change your nouns and verbs to paint better images
- Use personal language.

* Do not try to edit immediately after writing your first draft. You may need some time for a fresh perspective.

5. Proofread your message
Once you are satisfied with your message's content and organisation, style and readability, word choice, sentence style, and paragraph development, you will want to produce your message in some form that allows you to check it for accuracy, appearance, and detail. Then you will want to proofread your document to ensure that it is letter perfect.

6. Test your message
To get some critical feedback, you should test the message and material on a small sample audience that represents the audience to which you will eventually present this material. Revise your message and material according to the feedback from the test group. Also, ask friends to read your writing and comment on it.

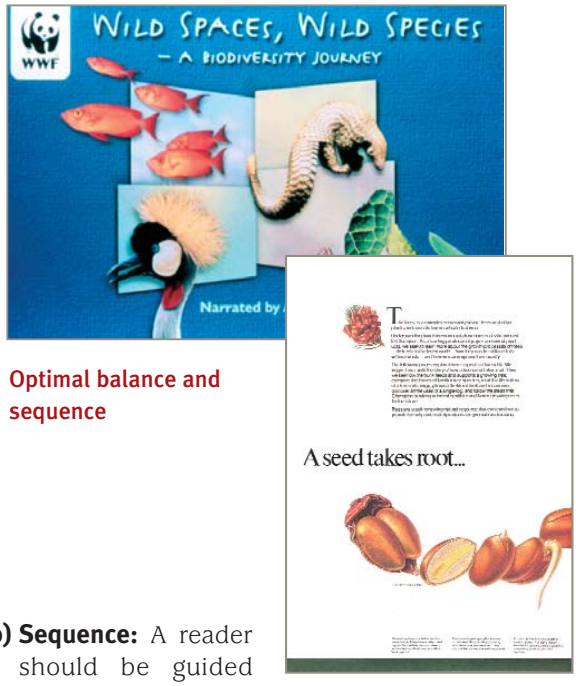
(*Bovee and Thill, 2000; Zehr, Gross and Zimmerman, 1992*)

Designing materials

Writing effective text that carries a good message is a major step towards developing suitable materials for raising awareness, but designing and illustrating materials is also important. Visual attractiveness is the first thing that catches a reader's attention. Emotions are a key to long-term memory, so if you can first captivate your audience with the attractive and emotive appeal of your material, you are half way towards achieving your goal of having your message remembered. The design of your materials should be assertive, positive and creative with interesting headlines and an easy to read type. The composition, form, proportion, light, space and colour of the materials should be effective. Know and understand the various art media used to develop graphics such as pencils, oil and acrylic paints, ink, pastel crayons, the computer, and so forth.

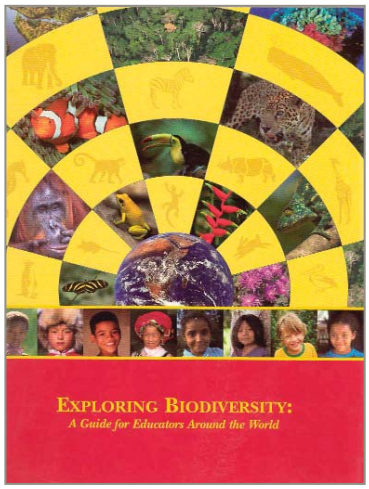
Principles of design composition

a) Balance: Every illustration and block of text on a page is considered a page element. Every page element has its own visual weight. Visual balance comes from arranging elements on the page so that no one section is heavier than the other. Large graphics weigh more than small ones. Dark graphics are heavier than light graphics. Colour is heavier than black and white. A page element at the outer edge of the page has more weight than one on the inside. Opposing sides of a page should balance each other with each side maintaining an equivalent weight. The example above demonstrates this point.

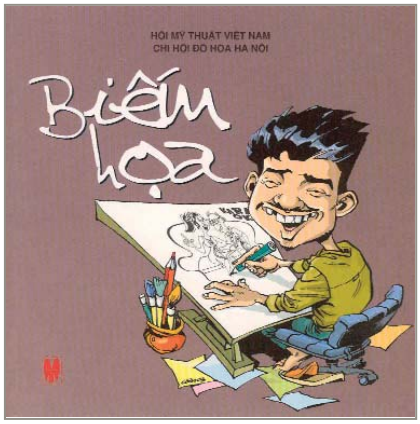


Optimal balance and sequence

b) Sequence: A reader should be guided through a publication by the sequence of text and graphics. According to Zehr, Gross and Zimmerman (*1992*), readers in the west tend to start at the upper left corner and exit at the lower right corner. However, also keep in mind that written Arabic and some Asian scripts start on the right and move to the left. People tend to focus on large graphics first and then on smaller graphics, and their eyes move from colour graphics to black and white. Make sure your graphics and text are in optimal sequence (the most important things will be read first and least important last), and use the graphics to facilitate or guide the reader through the publication. Look at the example above. What do you see first? Notice the sequence of the graphics and the different size text.



Good use of contrast



Clean and simple

c) Contrast: Contrast makes written and graphic material more legible by making headlines and subheadings stand out. Contrast shows what is important by making smaller or lighter elements recede on the page to allow other elements to attract more immediate attention. To design a publication so that it is not bland and to make important text stand out, use contrasting sizes of graphics and fonts, a range of colours, a variety of colour values and different shapes on your page. See some examples below of contrast using fonts. Look also at the example above of the cover of an environmental education publication and notice the contrast between the color photos and the yellow illustrations, as well as the yellow headline set against the red background.

Contrast with VALUE

CONTRAST with SIZE

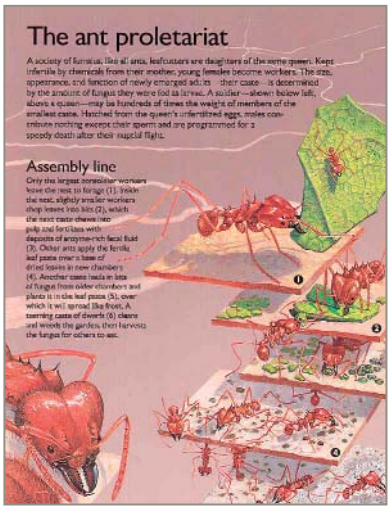
d) Simplicity: Avoid making your page too complicated and busy. Avoid using too many different types, graphics and borders. Make sure you leave white space or blank space on the page. See the cover above of an announcement of an art exhibition, and notice how this illustration remains simple by using a short text, subtle colours, and basic graphics while still being attractive.

PUTTING IT INTO PRACTICE

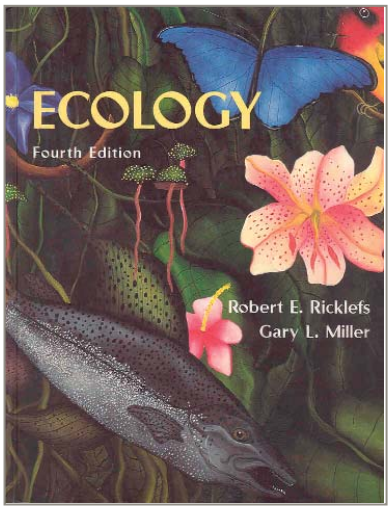
4

DEVELOPING A (CECA) PROGRAMME

Design & Plan



Harmonious elements on a page



A unified composition

e) Proportion: Proportion refers to the comparative or harmonious relationship of one element to another or to the whole with respect to size, quantity, or degree. See the example above of a diagram from National Geographic showing the caste system of leafcutter ants. Notice the different elements on the page, including the text and graphics. See how they are proportionate in size, and neither over powers the other but, on the contrary, seem to harmonize with each other.

f) Unity: This refers to a combination of all parts into one complete, cohesive whole. A composition is unified when the relationships between its parts interact to create a sense of harmony so that no portion of the composition looks out of place and alters the aesthetic integrity and meaning of the page. Look at the example above of the cover of an ecology textbook, and notice how the illustration and text merge with each other to create a sense of unity. Consistency with graphics and typeface can also contribute to this. Readers expect to find page numbers in the same location on each page. When all the text in a given article – even when it spans several pages – has a consistent look, including column width, it enhances legibility. Readers often expect to find sidebars, informational text, and other oft-repeated elements in the same place from page to page .

(*http://www.About.com, 2000*)

Layout/using publication elements

a) Text type: Type can be divided into two main classes: serif and san serif. Serif type has flourishes or small lines that flow from the tops and bottoms of the letters. Sans serif type has no such flourishes. You can see the difference in the examples below from two international newspapers that use both font types. The Guardian Unlimited is in sans serif font and The New York Times is in serif font. Serif types improve legibility by leading the eye along the line of type. Therefore, serif type is best suited for body text. It is recommended that you use sans serif type for small- (smaller than 8pt) and very large-sized font. Therefore, sans serif faces are used for footnotes and headlines. Generally one serif and one sans serif (used for headlines) is a good combination in one text. There are some other general guidelines to follow to achieve the best design. These include:

Example of a san serif typeface

Example of a serif typeface

- Avoid mixing two very similar typefaces, such as two serif types or two sans serifs. There is not enough contrast, and the small differences will cause a visual clash.
- Limit the number of different typefaces used in a single document to no more than three or four, although two is ideal.
- Avoid setting type in lines of more than sixty-five characters. Longer lines cause the reader to get lost.
- Avoid setting type in lines of less than 35 characters. Shorter lines cause sentences to be broken and hard to understand. The ideal line length is 39 characters regardless of type size
- Avoid setting type in all capital letters. Capital letters slow reading speed and take 30 per cent more space than lowercase letters.
- For a predominantly older readership of 65 years and over, or for audiences with known visual handicaps, set body text in sizes from 14 to 18 points.
- Use 11 to 12 point type for readers in the 40-65 age range.
- For most general audiences, body text set at 10 or 11 points is good.
- For beginning readers of any age, a larger type size around 14 points is good.

(*http://www.About.com, 2000*)

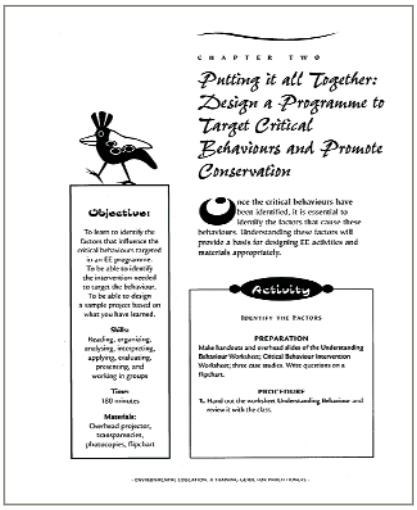
PUTTING IT INTO PRACTICE

4

DEVELOPING A (CECA) PROGRAMME

Design & Plan

Bold attractive headline



Rule and box placement

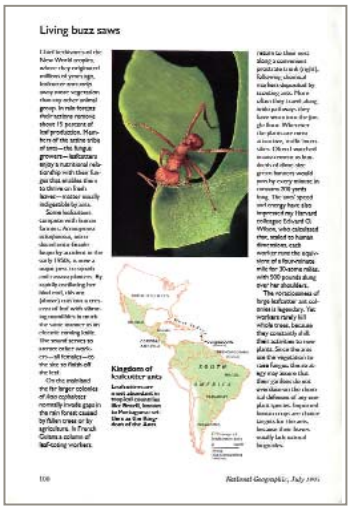
b) Headings: Develop your publication using attractive and catchy headlines. Headlines should be used to draw attention to a new subject in the text or to break up long sections. When selecting a typeface for a heading, try to create a contrast with the body text, and remain consistent in the use of the header throughout the publication. Bold typeface or the use of sans serif can help to create contrast. As a general rule, keep your headlines between 14 and 30 points, bearing in mind that the closer in size the headline is to the body text, the harder it is to distinguish. See the example above, and notice how the headline stands out by using a larger font and a different colour from the main text.

(*http://www.About.com, 2000*)

c) Rules and boxes: Rules or "lines" and boxes can be used to emphasize certain text or information or as decorative elements and as functional parts of the overall layout to separate, offset, or anchor areas of the page. Some general guidelines to follow when using rules include:

- Too many rules are distracting and interrupt the flow of text. Don't box in every element on the page.
- Use appropriate size rules. Thick rules can overpower delicate text and rules that are too thin fade away into the background.
- Pay attention to spacing. Put enough space between text and rules.
- When placing rules above and below or to the left and right of a block of text, make sure the distance between text and rules is visually balanced on both sides.

Look at the example below, and notice the use of various boxes and rules on the page, and how this helps to emphasize different information.



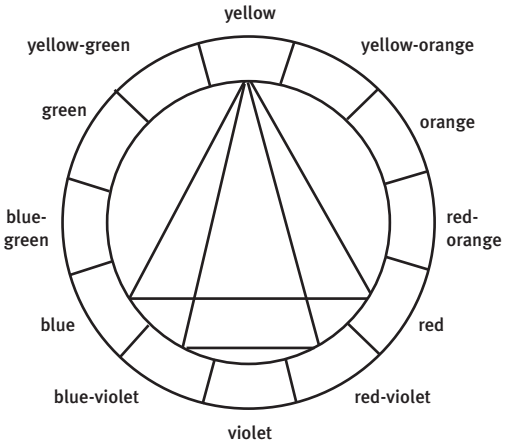
Effective use of white space

Use of powerful images to enhance design

d) White space: The area on the page without print or graphics is called white space. White space provides visual breathing room for the eye. Add white space to make a page less cramped, confusing, or overwhelming. This can be done best by adding white space between paragraphs, in between columns, in margins at the edges of the page, between headlines and between a graphic and text when wrapping text. Be careful not to add too much "bad" white space to the page. See how white space is used effectively in the example above of a National Geographic article on leafcutter ants.

e) Photos and illustrations: Photos and illustrations are essential in the design and layout of a page to make it more visually attractive, easier to understand and to make the long text easier to absorb. If you can, take your own photos or draw or create your own graphics, and include them in your publication. If you cannot draw or take photos, no need to despair. You can hire illustrators or photographers to create the graphics you want, or you can look for existing work that you can buy or use copyright free. Some really good copyright free clip art is available on CD Rom. Remember that when using other people's work, you should acknowledge them with a credit via a citation or reference. See how powerful images or illustrations can liven up your page and captivate the reader in the examples above.

Colour Wheel



Combination of Hues

f) Colour: When designing visual materials, you should pay attention to the colours used. Colour has three properties: (1) hues, the name of a colour found in its pure state in the colour spectrum, e.g., red, yellow, blue, orange, green and violet are hues.: (2) intensity or chroma, referring to the brightness or dullness of a colour, e.g., bright red or dull red; and (3) value, the lightness or darkness of a colour. Lighter variations of hues yielded with the addition of white are called tints and darker variations of hues yielded with the addition of black are called shades. Value is increased with the addition of white and decreases with the addition of black.

When the spectrum is organised as a colour wheel, the colours are divided into groups called primary, secondary and intermediate or tertiary colours and also as warm and cool colours. Take a look at the colour wheel below. Red, yellow and blue in the centre of the wheel are primary colours. All other colours are derived from different mixtures of these three primary colours. Orange, green and violet are secondary colours made from a combination of two primary colours. Orange is an admixture of yellow and red. Green is an admixture of yellow and blue and violet is an admixture of red and blue. The outer ring of the circle contains tertiary colours which are combinations of a primary colour and a secondary colour. For example, in the outer ring of the colour wheel the colour found between red and orange is red-orange. This is a mixture of red, a primary colour and orange, a secondary colour. Red, orange and yellow are warm colours and blue, green and violet are cool colours.

Some general recommendations for combining colours in order to create harmonious design and attractive materials are listed below:

1. The first recommendation for combining colours is to contrast the hues. Different combinations of the six pure hues of red, yellow, blue, green, orange, and violet can be used effectively. Optimally at least three distinct hues are required. The combinations of three colours can be determined by placing a

triangle in the colour wheel like in the figure below. The triangle can be rotated and any combination of three colours where the triangles corners meet with the circle can be used together. The three primary colours carry the most distinct contrast while the three secondary colours are less strong.

2. The second recommendation is to use a mixture of colours directly next to each other on the colour wheel. For example an orange, red-orange and red combination can be used together in a composition.

3. The third recommendation is to combine different colours that are complementary to each other. These pairs of colours are found opposite each other in the colour wheel. So, orange and blue are complements. Violet and yellow are compliments, and green and red are also compliments. Two or three pairs of complimentary colours can also be used together.

4. A final recommendation for combining colours is to use different tints and shades of one hue.

Different colours can evoke different associations and emotions; red, a warm colour, can excite people while green and blue, considered cool colours, can reduce tension. Colours can have cultural significance as well. Some ethnic groups may favour a dominant colour. Colour can contribute too by emphasizing and separating things. If you can control the colours you use, your presentation will be more interesting and attractive.

(*Itten, 2001*)

g) Paper and ink: When your publication is ready for printing, there are some considerations to be made in regards to the paper and ink used for the final product. Paper is separated into grades based on weight. The heavier the weight, the more expensive the paper. Paper also has a finish ranging from rough and flat to glossy. When selecting the ink to use, there are three main choices: one colour, two colours and four colours. One colour is black and white print; two colours include black and white plus a second colour of print; and four colours constitutes full colour printing, which is the most expensive. One has to decide on the choice of paper and ink by balancing budget, quality, and effect.

(*Zehr, Gross and Zimmerman, 1992*)

Advocacy

The first two tools, training and communications campaigns, have been discussed in detail above. The last tool that can be used by a conservation educator is advocacy. The goal of successful advocacy is to inform decision-makers and other influential leaders about an issue related to your programme, and to convince them to support your position on the issue and to enact change. The specific activities used in advocacy are similar to those in a communications campaign and might include:

Sharing of information is also important in advocacy and is similar to networking...

use of media such as newspapers, radio and television, meetings, workshops, personal face-to-face visits, video, telephone conversations, written correspondence, and electronic communication. Networking is important in advocacy work in a CECA programme and requires the development of links with other people and organizations that have a particular area of specialty or appropriate resources to contribute to the development of multi-disciplinary solutions to complex conservation problems. Sharing of information is also important in advocacy and is similar to networking, but specifically involves exchanging information, research results, and materials, which can be used to contribute to conservation. See the case study below for an example of how advocacy may be used.

In order to advocate, network and share information, you must first answer four key questions: What do you want to change? Who can help you to make this change? How can they help you? What methods will you use to bring them on board? The answers to your questions will become clear during the assessment phase of the CECA programme. This information can be supplemented if it becomes apparent that these tools are needed, and there are some gaps in information. The steps are similar to those used in a communications campaign as many of the activities are also very similar. Refer to the section on developing material, writing and design. See below the list of the steps to develop and use these tools.

1. Analyse the situation

- Analyse and identify the CECA needs for advocacy, networking and sharing information
- Analyse the economy, policy, technology, infrastructure, and extension situations relevant to the needs of each programme identified in the assessment phase
- Analyse the audience, and identify by name the key individuals you want to influence or with whom you want to work.

2. Plan and design

- Set your goals and objectives for activities for advocating, networking, and sharing information
- Define your messages if they are required
- Identify appropriate tools
- Prepare a workable timeline
- Make a sequenced list of activities
- Decide who will do what, when and at what cost.

3. Implement

- Contact potential partners
- Form partnerships and relationships
- Research your topic well using sound methodologies which provide evidence.
- Develop realistic/feasible recommendations/options that the target audience is likely to support and provide strong evidence for your stance
- Develop and design materials (see campaign section)
- Launch.

4. Monitor and evaluate

Means of advocating, like any other intervention, need to be thoroughly analysed in order to assess the chances of success or failure, and to identify areas which are more or less effective and useful. Measure the impact you expect to achieve. It is also recommended that you make necessary adjustments during the process of implementation. In planning advocacy activities, it is important to have measurable indicators. See the section on monitoring and evaluation for more on this.

Tanzanian Coastal Policy Case Study

In order to implement new policy, two critical sets of actors—advocates and policymakers—need to be activated. Advocates have considerable influence on the system as a whole. Policymakers must have the political will to overcome both obstacles and the societal tendency toward apathy to bring it about. In Tanzania, multiple international donors had been investing in "pilot projects" on the Indian Ocean coast for some years. The US Agency for International Development wanted to "scale up" the impact of those projects by encouraging the development of a national coastal strategy.

In order to carry out this effort, USAID engaged the services of the very reputable Coastal Resources Center (CRC) of the University of Rhode Island. The government counterpart for CRC is the National Environmental Management Council (NEMC). Together they formed the Tanzania Coastal Management Project (TCMP). TCMP was fortunate that the government of Tanzania selected a new leader for NEMC, Dr. Magnus Ngoile, who is one of the brightest scientists in Africa and a world leader in marine science. The project developed a draft national coastal policy and became an engaged advocate for policy adoption. However, the missing link was political will.

Another USAID project, the Environmental Education and Communication Project (GreenCOM) then joined TCMP. The two paired projects had to overcome three problems to create the political will necessary to get the new policy adopted. First, TCMP and GreenCOM had to motivate uninterested policymakers to focus on a new problem (Only 13 out of nearly 100 districts in Tanzania have coasts.). Second, they had to make visible a constituency for a new coastal policy, especially in coastal districts. Third, the projects needed to create enough urgency to spur the policymakers to act. The methodology and tools for overcoming these three sets of barriers created three components for a

new communication model for policy change. This strategy engaged social marketing, a process triggering social change through individual behaviour change, social advocacy, and social advertising.

The first environmental communication tool used was a "video newsletter" for policymakers about coastal issues. It was used to generate knowledge and willingness to act. Twenty-six hours of video footage were taken of local people along the coast explaining, in their own words, destructive behaviours such as dynamite fishing, "lime mining," and burning coral. It also covered environmentally positive stories of women replanting mangroves to stop the ocean from swallowing up their village. This footage was then edited into a 16-minute "video newsletter." Entitled Voices From the Coast, the video was virtually without narration, allowing policymakers simultaneously to see the good and bad practises along the coast, to "meet" and hear from the local people, and to gather enough information to generate intelligent questions about what was needed in a new policy. The staff of TCMP then screened the video to one or two policymakers at a time, giving them a quick exposure to the issues and opportunity to get questions answered by experts, and a reason to act. This is the first tool for the advocates to trigger the political will to put a new policy in place.

Constituency Building

Political will requires that policymakers have a constituency that is behind any new policy. To generate a visible constituency, the paired USAID projects engaged local people through a coastal awards scheme. This scheme was a district-based programme to motivate local people directly to make local environmental improvements. The programme was launched in a few coastal districts, encouraging district level schools, villages, women's groups, and small businesses to compete for prizes. After the winners were selected, district-level awards ceremonies took place. These ceremonies drew, in many cases, thousands of people, which in turn, attracted the attention of policymakers. Policymakers suddenly had a political constituency for the new coastal policy that could not be ignored. This was the second critical element in creating the political will necessary to move the new policy forward.

Building a Sense of Urgency

In Tanzania, like many societies with a free press, the media can influence the political system. Elected public officials must respond to concerns voiced by their constituency and the media are often the primary vehicle for the public voice. Journalists by their very nature are "technophobic," preferring to cover the political aspects of stories because they are more comfortable with politics and also because that is where the rewards systems are within the media. They are less likely to cover stories that are technically cumbersome such as coastal and marine issues until there is a political dimension to them. The third portion of this communication model for policy is to increase the sense of urgency by helping reporters to see the political dimension of the problems and the immediate need to address them.

To make the business of covering coastal issues easier, reporters were gathered together for one day with the primary stakeholders of the coastal issues. At this one-day workshop,

reporters met "sources," saw the political dimensions of these potential stories, and grasped a basic sense of the nature of the issues. This short course helped to overcome their technophobia and made the job of covering the issues not only easier, but also much more interesting. Suddenly, coverage of coastal issues went up by about four times the level prior to the workshop. This new level of coverage created the sense of urgency necessary to help generate the political will to move this policy forward.

Conclusion

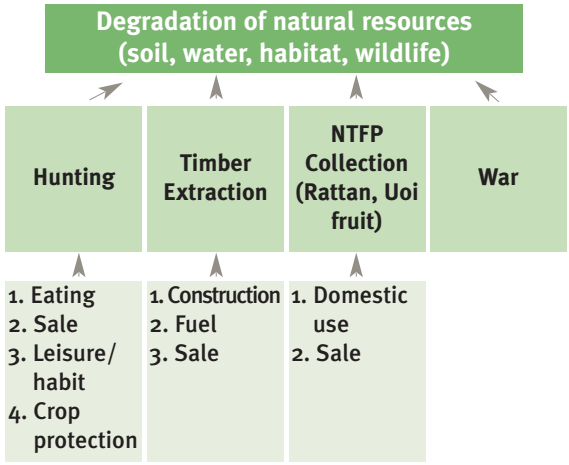
The policy system of Tanzania led, in the end, not to the creation of a new policy but instead to the modification of existing policy to include the objectives sought by a new policy. By combining advocacy, networking and the exchange of information, conservationists were able to engage policymakers, build constituency, and enable reporters to cover complex environmental issues, so that conservation objectives were met. (*Brian Day, personal communication, 2003*)

Action Plan

Once you have decided on the appropriate tools and materials to use for the CECA programme, a CECA worker should prepare an action plan that includes a logical framework and schedule (see examples below). The action plan will detail the project strategy and time frame for execution. Some basic components that should be included in any action plan include a goal, objectives, outputs, activities, and measurable indicators. For definitions of these components see below.

- **Goal:** This is the longer-term objective of the project. The problem tree developed during the assessment phase can be used to identify the goal. See the example of the problem tree below developed in Song Thanh Nature

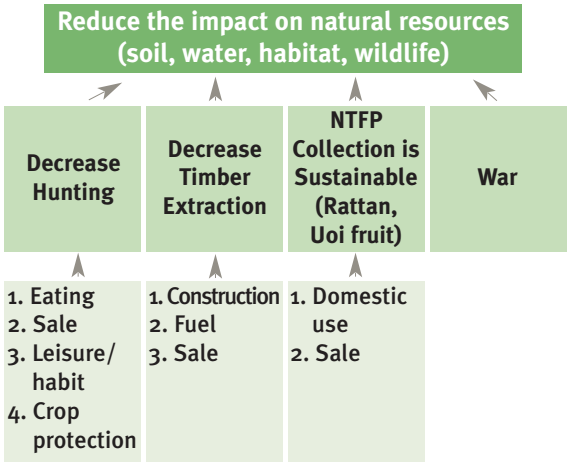
Example Problem Tree from Song Thanh Nature Reserve, Quang Nam



Example Logical Framework

Overall Goal: Reduce ecological degradation in upland communities of Vietnam by promoting training, communications and advocacy programmes based on community solutions.					
Immediate Objective 1: Conduct an awareness training module about ecology and humans.					
Output No.	**Outputs**	**Activities**	**Indicators**	**Means of Measurement**	**Assumptions**
1.1	Awareness about basic ecology and web of life researched, lesson plan designed, materials produced and module implemented.	- Carry out surveys to gauge base-line knowledge and attitudes - Develop lesson plans - Develop accompanying materials - Conduct training courses	- Surveys conducted - Messages, multipliers and methods identified - Lesson plan designed - Materials produced - # people participating	- Survey data - Survey data - Lesson plan - Materials - Attendance roster	- Information available - Communities are willing to be surveyed - Community members are interested in training - CECA team is committed and trained

Example Objective Tree based on Problem Tree from Song Thanh Nature Reserve, Quang Nam



Reserve, Quang Nam and the example objective tree developed based on it. The main problem in the problem tree is "degradation of natural resources including water, soil, habitat and wildlife". In the example objective tree the problem is changed to its opposite, "reduce the impact on natural resources including water, soil, habitat and wildlife" this reversal of the problem is now the project's goal.

- **Objectives:** The objectives are the effects or changes the project will bring about which contribute to the achievement of the goal. Similar to the goal, if the problems posted on the second level of the branches of the problem trees are made positive, these can serve as the project's objectives. For example, if one of the issues on the problem tree is hunting as seen in the example, the objective of the project may be to reduce hunting or promote sustainable hunting.

- **Outputs:** Outputs are what the project will deliver, or the tasks completed as a result of activities carried out in order to achieve the objectives.

- **Activities:** These are what the project will actually undertake in order to achieve the outputs.

- **Indicators:** These are variables that help indicate that progress is being made towards achieving the objectives. These should be both qualitative, quantitative, specific to the objective, measurable and verifiable.

- **Means of measurement:** These are the means of verifying whether the indicators are valid or not and might include surveys, interviews, tests, etc.

Example Schedule

Annual Plan	
Year 1	**Activity**
Month 1-3	Inception period (set up office, staff and programme)
Month 4&5	Research communities and appraise baseline knowledge and attitudes; identify content to be taught, key multipliers and method of disseminating and training
Month 4,5,6,7,8	Develop training module and materials
Month 8-10	Train participants
Month 10-12	Evaluation and adaptation

Budget

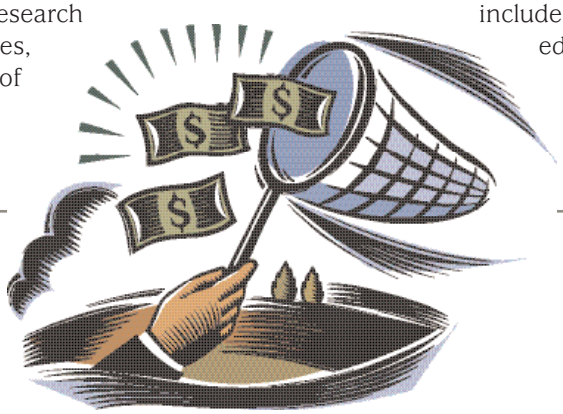
Every element of the action plan must be budgeted for. Some research needs to be done to get an idea of the accurate costs of things to include in a budget. Different components in a budget might include costs for staff, equipment, travel, meetings, training, advertising, printing, and administration. Below is an example of a budget with some of these costs included.

Budget Line Item	Unit	Cost	FY01	FY02	Total
1.1 Staff costs					
- CE manager	24 months	1000	12,000	12,000	
- Senior Project Officer					
- Project Officer					
sub-total			**12,000**	**12,000**	**24,000**
1.2 Equipment					
- Desktop PCs	2	1,500	3,000		
- Laptop PC					
- Printer					
- Camera					
sub-total			**3,000**		**3,000**
1.3 Travel					
- Programme staff (national trips)	3*3 trips	290		2,610	
sub-total				**2,610**	**2,610**
1.4 Training, Meetings, Field activities					
- Introduction and input workshop	1 Workshop	2,150	2,150		
- Field assessment					
- Skills Training					
- CE Events (campaign, advocacy, plays, puppet shows, contests)					
- Workshop					
sub-total			**2,150**		**2,150**

Budget Line Item	Unit	Cost	FY01	FY02	Total
1.5 Project Running Costs					
- Office Equipment Maintenance	24 months	300	3,600	3,600	
- Office Supplies , Stationery and other Utilities					
- Photocopies, Printing, Postage					
- Bank Charges - Phone, Email, Fax					
sub-total			**3,600**	**3,600**	**7,200**
1.6 Media Costs - Training Guide	200	10		2,000	
- Internet Design					
- Film Production					
sub-total				**2,000**	**2,000**
		Project sub-total			
		Administration Cost 15%			
		PROJECT TOTAL			

Fundraising

Once the project action plan and budget have been completed, funding should be sought to support and develop the project. Funding sources might include the organization or government agency for which you work, international bi-lateral or multi-lateral donors, foundations, or private companies. Research funding opportunities, find out what type of projects donors are interested in supporting, and obtain the relevant materials. Then begin writing the proposal, and present it to the donor before the indicated deadline. Each donor agency has its own format for proposals, so it is important to find out what it is. Some general categories of what might be included in a proposal are listed in the box below.



General categories

- **Title**
- **Summary**
- **Objectives**
- **Justification for the project**
- **Detailed description of activities**
- **Assumptions and risks**
- **Methodology**
- **Schedule for the project**
- **Expected impacts**
- **Multiplier effects**
- **Sustainability**
- **Budget**

III. Test & Revise and IV. Implement

Test and Revise

Once the plan and programme design have been completed, it is important to test the draft CECA plan, messages and materials on a sample group of your intended audience. Work with the group to find out how people react to the plan, messages and materials. Does the group feel the plan and materials are based on and reflect its input in the assessment and design process, and do people feel they are sufficient or appropriate for them to effectively adopt a new behaviour? Are the messages and materials easy enough to understand, and are any proposed training courses easy to follow and sufficient to learn appropriate skills? Does the group understand all intended messages or do people interpret the messages differently? Are the design and graphics attractive, captivating and appropriate? Once all of these questions have been answered, they should be verified and any changes or adaptations should be made and agreed upon before the final products are developed and strategy launched.

Implement

Implementation has been long awaited. The programme will be carried out according to the plan and schedule prepared in the design phase. This is the time when final materials are actually produced, partnerships and networks formed, training courses conducted, campaigns launched, events organised and monitoring and evaluation activities started. New staff may need to be hired, consultants contracted, and items purchased. Because both the environment and people's behaviour are dynamic, conservation educators must be flexible and adapt project activities according to the results of the monitoring and evaluation that are ongoing during the implementation phase. One must also monitor the budget to make sure spending is not over the expected costs, and when money is under spent that it is reallocated for appropriate activities.

New staff may need to be hired, consultants contracted, and items purchased.

V. Monitor and Evaluate

Monitoring and evaluation are integral to any project, and are vital in determining whether or not a project successfully fulfills its objectives. The information gathered should be used to make appropriate adjustments to project activities if required, so that a project effectively and efficiently achieves the desired results.

CECA as we know is a tool used to broaden the understanding of people about the environment, foster positive attitudes towards the environment, introduce sustainable options, teach skills that enable people to adopt new behaviours, encourage the continuation of traditional practises that benefit the environment, and remove barriers that restrict positive behaviours and activities from taking place. An appropriately designed system for CECA will answer three fundamental questions: Has there been any change in understanding, attitudes, skills, barriers, and behaviour that positively or negatively impact the environment? Has there been any improvement in the status of biodiversity and natural resources and the alleviation of the target problem? Are project activities creating this change?

In order to evaluate the effectiveness of CECA programmes, and to answer these questions, (this should be based on the results of the assessment of each situation) it may be necessary to measure one or all of the following: the level of knowledge of people about the environment, the attitude of people towards the environment, the skills, the alleviation of barriers, the adoption of alternative behaviours, and the change in negative targeted behaviours in relation to the environment and use of natural resources. Further to the six criteria mentioned above, a seventh criterion that needs to be evaluated is the overall macro-level management of a project, and the stakeholders' perceptions of a project.

Monitoring should be consistent; activities should be evaluated according to the same criteria over time. Therefore, the same questions should be asked in surveys, and the same indicators measured throughout the project's lifetime and beyond.

A carefully selected set of performance indicators can act as a measuring stick to verify by how much a project's activities have contributed to the achievement of its objectives. Indicators will allow project implementers to compare the current situation of the project area with conditions that existed before the project started. Indicators will also allow project implementers to compare the situation in areas where the project is being carried out with areas where project activities haven't been implemented. The indicators by which a CECA programme can be monitored and evaluated depend on the problem that has been identified, and required interventions might include: an improved level of knowledge about the environment, a positive

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change in attitude towards the environment, an enhancement of skills to participate in conservation, an adoption of alternative options, a reduction of barriers, and a decrease in performance of negative target behaviours.

Because many factors often contribute to a project's results, hypotheses formed about the relationship between cause and effect might overlook some of the most critical reasons for a project's results. In many cases, there is indeterminate evidence as to the exact cause of a given result. As much as possible, an evaluation system should be designed to determine the true correlation between a particular activity and the desired conservation result. It is important that the survey evaluator also be critical and sensitive to this issue when it comes time to analyse the data.

A monitoring and evaluation system for CECA may use both quantitative as well as qualitative methods to evaluate the selected criteria. A sample matrix with the monitoring and evaluation system's objectives and indicators is given below. The above information and following matrix are only proposals. In order to effectively evaluate any impact, it is vital for key stakeholders (as identified during the phase of the project's assessment, e.g., farmers, facilitators, forest guards, other project representatives) to meet and discuss the following issues:

- purpose of the impact assessment, and the use of the results
- overall approach and methodology intended for the impact assessment
- validity of the categories of impact to be assessed, or to suggest their own set of categories (based on assessment phase)
- identification of criteria for these categories. In this document, the suggested criteria are linked to the range of intended results in a CECA programme and associated with the agreed categories
- indicators by which the criteria can be measured
- planning of implementation of the impact assessment, including identification of responsibility for monitoring the criteria using the agreed indicators, method, location and timing.

This discussion may be achieved at a dedicated workshop, but it may also be achieved by direct discussions with individuals and groups that lead to an overall understanding and consensus about the impact evaluation system. The latter may be preferable, since it will enable less powerful individuals and groups to raise their concerns and have their voices heard. (*Taylor, 2003*)

The surveys and research in the matrix should be carried out before project activities are implemented to establish baseline data. After the initial baseline data have been collected, and after project activities have been implemented, surveys should be carried out annually. The data collected from the annual surveys should be compared with the baseline data to draw conclusions about the effectiveness of the CECA programme.

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I. Objective	Indicator	Verifier	Baseline
Target communities have a high level of environmental knowledge	Increased level of knowledge	Survey	Survey
Target communities have a positive attitude towards nature	Positive change in attitude	Survey	Survey
Target communities' skills are enhanced to participate in conservation (based on assessment phase, some examples are given on the right)	• Can implement improved fallows • Can grow and use fodder banks • Can raise bees	• Survey • Questionnaires • Discussions • Observation	• Survey • Questionnaires • Discussions • Observation
Target communities are adopting identified options and continue positive behaviours (based on assessment phase, some examples are on the right)	• Increased adoption of agro-forestry • Woodlots established • Alternative energy sources used	• Questionnaires • Discussions • Observation / field survey	• Questionnaires • Discussions • Observation / field survey
Barriers hindering target communities from adopting good environmental practises are lowered (*based on assessment phase, some examples are on the right*)	• Certain policy is removed or amended • Better infrastructure introduced • New technology becomes available	• Questionnaires • Discussions • Observation	• Questionnaires • Discussions • Observation
Target communities no longer behave negatively towards the environment (based on assessment phase, some examples are on the right)	• Decreased harvest of timber and NTFP's from the forest • Decrease in hunting	Field survey and observation	Field survey and observation

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