

**DISCOVERING  
THE NATURAL RESOURCES  
OF THE  
HINDU KUSH HIMALAYAN  
REGION**

A wonderful adventure to understand nature and the productivity of our land



## Contents of this Teacher's Guide

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# Introduction to the Comic Book and to the Teacher's Guide

## 1) Objectives of the Comic Book

- Make students aware of the importance of the Hindu Kush Himalayas natural resources.
- Develop reading, writing and comprehension skills in the students.
- Present an interesting approach to awareness about the mountain environment and stimulate the younger generation's responsibility in maintaining and preserving it.
- Share what they have learnt with their school and community.
- Provide students with an opportunity to use their imagination and plan future actions that they can share with their school and their community.
- Help them to understand and use their land in a productive and sustainable manner.

## 2) Objectives of this Teacher's Guide

- Explain how the Comic Book is organized, analysing the story and the key concepts illustrated in it.
- Help the teachers to find an attractive way to let their students learn useful information.
- Give examples of discussion, research exercises and participatory tools to motivate the students to respond and clarify their understanding of the Comic Book and the issues that it means to highlight.

### 3) List and notes about the characters of the story

#### The children

- Nenne Daughter of small farm holders
- Babuh Son of small farm holders, Nenne's brother  
(their parents are working abroad)

#### The animals

- Parapara The talking Mynah, the guide for the World of nature
- Kiu-kiu The Swan, the vehicle that transports the children

#### The technicians

- Mrs Geje A Soil Scientist
- Mr Jojo An Agronomist

#### The old farmers

- Oldmama Children's Grandmother
- Oldpapa Children's Grandfather

#### The swindlers

- Mr Gar The tall and thin one
- Mr Bage The short and fat one
- The Poor family Parents and children  
exploited by Gar & Bage

All the names used in this story have been chosen avoiding any particular reference to a singular culture. They must be considered "fantasy names".

The visual representation of natural resources in the illustrated Comic Book and the two main characters of **Nenne** and **Babuh** are deliberately chosen, to make students feel a sense of peer understanding of the issues and to make the lessons learnt attractive and interesting.

**Parapara** (the mynah), is the voice of nature who explains to the audience, and tries to encourage in them an appreciation of the natural world and warns of the destruction that can take place through the carelessness of human action as seen in the **Bald Mountain**.

**Kiu-kiu**, (the swan) is the vehicle that transports the children in their exploration of nature.

**Oldmama** and **Oldpapa** (the grandparents) represent the past, the local knowledge, and the tradition. **Mr Jojo** and **Mrs Geje** (the funny scientists), represent the constructive new technology. The bad people **Gar** and **Bage**, are the destructive elements that exploit nature and the main victims of their abuse are the **Poor family**.

All the characters are linked and each character has a purpose. At the end of the story they all work together for a better future. Nenne and Babuh are the main "facilitators" of this process (to stimulate the students to become active in the process of management of natural resources). By equally representing men's and women's different roles, perceptions and occupations, the Comic Book has attempted to address the question of gender sensitivity. Gender is taken not as the biological difference between men and women, but as a social construction that determines the position of men and women in society.

*In an approach to make the book "user friendly" care has been taken to make the language used by the characters easy to understand and culturally sensitive.*

## 4) Key concepts and Synopsis of the Comic Book

- **We must produce food**
- **We must protect the environment**
- **We must fight against degradation and exploitation without any rule**
- **We must raise the value of mountain products and genetic resources.**
- **We can plan and create a better future**

### The story

In the village of **Bhunepak** (this fantasy-name derives from the union of the names Bhutan, Nepal and Pakistan) two children called **Nenne** and **Babuh** play with a kite. Following the kite they see a landslide.

Trapped under a tree the children find a little mynah called **Parapara** (he talks a lot). The little talking bird is saved by the children and wants to give them a present. The little mynah calls Kiu-kiu (a big swan) and on it the children start to fly all around the Hindu Kush Himalayas. Parapara tells the children how the natural world works, how everything is connected and useful. In the meantime the bird is very critical about the actions of human beings.

They see from the sky a mountain without forests, an example of the bad use of the natural resources by the "Humans". They give the mountain the name the "Bald Mountain" because the soil is not covered. The little talking bird Parapara takes that mountain as an example of a terrible future. The children and the birds are worried about their future, but they feel they cannot save their land.

In the evening the children return to Bhunepak. They go to the grandparents (Oldmama and Oldpapa) because their parents are working abroad.

The morning after they meet two strange people, two scientists called Mrs. Geje and Mr. Jojo. They have been lost, they are terrorized by a couple of tigers they have seen nearby. The two scientists explain their work to the children: Mrs. Geje is a Soil scientist and Mr. Jojo is an Agronomist. Listening to the scientists and to the grandparents the children understand the importance of knowledge. They understand the new technologies as well as their cultural and natural heritage (productivity + tradition = *sustainable development* \*\*\*).

The day after the children decide to call the birds again. They fly over the "Bald Mountain" again. From the sky they see a Poor family on the exploited fields. Even the children and the elderly people are working. They want to burn the forest to have more space for crop and pasture. The children and the birds stop them.

The Poor family tells them their story: a couple of bad people (Gar & Bage) forced them to work like slaves. The way Gar & Bage manage the farm destroys the natural resources.

The Poor Family tells the children something about two tigers near there. The group fly there and they see them. But the tigers are false. Under their fur the children see Gar & Bage. The two bad people use that "disguise" to frighten the people living nearby. In this way they cover all their bad actions.

The children and the birds spy on Gar & Bage. The children want to go back to Bhunepak telling what they have seen, but Gar & Bage stop them. The birds fly away but they return just in time to save the children. With them the scientists help the group to tie Gar & Bage up.

They all decide to punish the two bad people. Nenne and Babuh use Gar & Bage to work at reforming what they have destroyed and together with the Poor family transform the Bald Mountain into a wonderful farm. After ten years the whole area is transformed, productivity has improved, nature is respected and the people are finally happy.

\*\*\* **Sustainable Development:** "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

This is the definition of the World Commission on Environment and Development.

## 5) Suggestions on how to use the Comic Book

**The Comic Book is an illustrated reading activity.** It is for use in a classroom, to orient the students to the situation of natural resources in the HKH Region.

This Comic Book is meant to be a supplementary illustrated reader to the school curriculum.

It would be better if the Comic Books are kept in the schools and used as reference books.

This is to avoid students reading it at once, without following a sequential learning pattern which is one of the main objectives of this publication. Please try also to avoid students reading the Comic Book at the first instance, without your supervision. This to help keep curiosity about the story alive, and will be very useful.

Please note that our aim is to provide the teachers with SUGGESTIONS, not instructions. We are sure that each teacher can use his or her discretion in conducting the activities. You can therefore change the order of the activities, choose the exercises you think are best, or even better, invent new ones. Please note also that we will not give any instruction related to the number of pages to read in each lesson. The only suggestion is to provide breaks and make space for related activities to be encouraged with each thematic issue.

**Please use our inputs as EXAMPLES not as a must.**

Our intention is that students might learn and at the same time enjoy themselves reading, looking at illustrations and working together.

Please try to give the students all the time they need to read and understand the story, the technical inputs and the activities.

Encourage them to enjoy the story, as well as understand the issues, the funny dialogues and situations.

**This Teacher's Guide is a teaching aid.** It provides explanatory notes about each chapter, and gives suggestions for conducting each activity.

Some activities are also explained in the Comic Book.

All the activities are meant to help the students to reflect on what has been talked about.

**Please remember to help the students to work on what they can easily understand and do.**

### The Activities

Stop the reading at the end of each chapter, but some chapters will need more than one reading session.

**Try to avoid students reading the next chapter before you do.**

Try to maintain their curiosity, it will be useful. Use it to understand the reactions of the students.

Ask the students to recap what they have read and encourage a discussion (this activity should be repeated after each session of reading).

Let the students explain in their own words what is drawn and written in the Comic Book.

They can look at the Comic Book during this activity (without looking at the next pages).

### The Certificate

Included with this Teacher's Guide and Comic Book we provide you with a *Certificate*.

It is the "Special Present" described in the first page of the Comic Book.

Give it to each student when the reading and activities of the Comic Book are completed.

Try to create "suspense" until the end. Try to organize a sort of "*prize-giving ceremony*".

They must feel the importance of their work and they must be proud of it.

Try to let them feel that the end of Nenne and Babuh's story is the beginning of their own adventure in helping preserve their land.

## 6) Introduction to the Hindu Kush Himalayas

The Hindu Kush Himalayan Region covers a wide area of many different ecosystems and economic activities.

It covers a part of eight countries (Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal and Pakistan), where more than 140 million people are dependent on agriculture.

The HKH is the largest mountain range in the world, extending over 3500 km from the east to the west, covering 3.6 million square kilometres, and with hundreds of high mountain peaks. Mt. Everest, the world's highest peak can be found in this region.

This mountain range is also the source of some of the mightiest rivers in the world, like the Ganges, Brahmaputra, Indus, Mekong, and the Yangtze.

They are the most densely populated mountain ranges in the world, with a very large percentage of the population living below the poverty line.

It is also an area with a wealth of culture and biodiversity that is under threat of extinction.



A MAP OF THE HINDU KUSH HIMALAYAN REGION

## 7) Country Profiles: a synopsis

### Bhutan

The Kingdom of Bhutan is a small landlocked country situated on the southern slopes of the Eastern Himalayas. It has an area of 40,077 sq. km.

The country covers the southern slopes of the Himalayan range. With its small population largely consisting of farmers living on their own land, Bhutan is a country that totally depends on its natural resource base. They follow a traditional system, whereby farm, forests and alpine meadows all contribute to the productivity of the farms.

### Nepal

This is situated in the central Himalayas and is a country of both physical and climatic contrasts within a relatively small area of 147,181 sq. km. The country depends largely on its natural resource base. About two thirds of the total area of the country is made up of hills and high mountains with very steep slopes. Nepal's lowland Terai is formed of rich alluvial sediments, while the middle hills are mainly erodible. Erosion has become worse in areas where agriculture is practiced, especially on the steeper slopes. The majority of the population of Nepal lives in the Middle hills. Thirty seven percent of the country is under forests, while agriculture is responsible for 20 percent of the land use. Nepal is one of the highest areas of biodiversity in the Himalayas (with over 700 species of medicinal plants, 175 species of mammals, 850 species of birds, 600 species of butterflies). Nevertheless the rising population pressures on the land and worsening of the environment are the main challenges to the country.

### Pakistan

The land in this region is used for arable farming, pasture or forestry depending upon the climate, soil moisture and other conditions. Over 90 percent of the area comprises steep slopes, having a thin or patchy soil mantle. In the higher regions there are natural coniferous forests that are a source of very good quality timber. There are also pasturelands where animals are grazed during the summer. In winter these animals are fed on hay made from the grasses cut from this area. The majority of the population is made up of subsistence farmers meeting only the barest needs of food, fodder and fibre for the households. The main cause of soil erosion is the reduction of the plant cover. A rangeland based livestock industry is the main occupation of the area. This region exports coal, gas, mutton, hides, temperate fruits and vegetables to other regions and imports staple foods and manufactured goods from the irrigated plains.

# Part TWO

## The work with students

### CHAPTER 1

### A special day for Nenne and Babuh

#### Contents of the chapter

Introduction to the village of Bhunepak, of the two children Babuh and Nenne, of the mynah Parapara and of Kiu-Kiu, the swan who will transport the children on their journey.

#### Explanatory notes

Bhunepak village is an example of a typical village that can be found in the *Hindu Kush Himalayan Region*. It is situated in hills with mountains in the distance.

The houses are small and generally composed of two or three rooms.

The family lives in the upper rooms and in some places animals are tied in the lower rooms in winter. The people are mostly farmers, with agriculture as their main occupation.

In the **UPLANDS** the people grow maize and potatoes as their main crop.

Whereas in the **LOWLANDS**, rice and wheat are the main crops.

The farmers grow vegetables in small plots of land near their houses.

In some of the areas where it is possible, the farmers may also do vegetable farming and fruit farming as one of their activities. The rivers and streams in these areas are fed by the melted snow from the mountains. The land is steep and sloping, therefore in some places the farmers cut terraces to plant their crops. The crops depend on the seasonal rains for water, but in some places the fields are irrigated by channels, where the water is diverted from either a nearby river, or spring. The forests near the villages are made up of both *deciduous* and *coniferous* trees and are a main source for *fuelwood*, *fodder* and *leaf litter* for the farms.

The land in this region is *fragile* and therefore *landslides* can take place; another cause has also been the cutting down of the forests to clear land for agriculture, which has *exposed* the surface to the *erosion* caused by wind and rain.

#### Glossary

**Hindu Kush Himalayas** → High mountain range that cuts across eight countries

**Uplands** → Area of higher elevation (height)

**Lowlands** → Area of lower elevation (height)

**Deciduous** → Trees that shed their leaves in winter and are broad leafed

**Coniferous** → Trees that do not shed their leaves in winter, are conical, and bear seeds in cones

**Fuelwood** → Wood collected from the forest to be used for fuel for daily household purposes

**Fodder** → Green leaves and grass collected from the forest to feed the animals

**Leaf litter** → Dry leaves that are collected from the forest so that they can be used as bedding for the animals

**Fragile** → Delicate

**Landslide** → When land that has been loosened by rain collapses or falls down

**Exposed** → Open to

**Erosion** → Wear and tear caused on the land surface by wind and rain



## Introduction to the Activities

Stop the reading on page 7. It is the end of the first chapter.

Try to avoid students reading the story further.

Remember to maintain their curiosity.

This first chapter is easy and short. It does not give any technical information.

Use it to understand the reactions of the students.

- **Ask the students to recap what they have read and encourage a discussion.**

(This activity will be repeated after each session of reading, giving them some “key-words” to remember the main concepts).

Let the students explain in their own words what is drawn and written in the Comic Book. They can look at the Comic Book during this activity.

- **Encourage a discussion in which the students compare their personal point of view.**

Examples of questions for discussion:

- *Have you seen landslides?*
- *Do you know what causes landslides?*
- *What do you think should be done to control landslides?*
- *Have you seen a bird like Parapara? Do you know what it is called?*
- *Have you seen a bird like Kiu-kiu? Do you know what "migratory bird" means?*

## CHAPTER 2

## Exploring nature

### Contents of the chapter

Parapara shows the children the natural world and teaches them its rules:

*"Everything in nature is connected and forms **habitats** and **ecosystems** where everything and everyone is important".*

### Explanatory Notes

The natural world means all that is to be found around us. That which has been created by nature and is not artificial. It includes mountains, rivers, trees, land, air and all the plant and animal life that is to be found here.

In the natural world we have many types of **living organisms** like animals plants and trees. We also have **non-living elements** like air, water and soil. But only when these are together, does it make the natural world. When each kind of plant and each kind of animal live in a certain environment where they can get shelter, food and reproduce themselves then it is called their natural **HABITAT**. This natural habitat is made up of different **ECOSYSTEMS**. That means that each plant and animal life has a purpose and there is a cyclic connection. Like for instance the "little worms eat the rest of a dead tiger, it will become food for the plants, and plants will become food for deer that will be eaten by another tiger... This is the cycle of life".

They become part of the *food chain*. This food chain is also important to maintain the balance of nature.

### Glossary

**Habitat** → Natural place for plants and animal to live

**Ecosystem** → Plants and animal life living in connected cycle of life

**Food chain** → When species provide food for other species. E.g. grass > deer > tiger... etc.

## Activity ONE (page 12 of the Comic Book)

### ☉ Ask the students to recap what they have read and encourage a discussion

Initiate a discussion in which the students compare their personal point of view.

Examples of questions for discussion:

- *What do you understand by the natural world?*
- *What is meant by habitat?*
- *What do you understand by the food chain?*

### ☉ Ask the students to describe themselves

Ask the students to write a short paragraph introducing themselves starting with:

*My name is.....*

Encourage some students to introduce themselves. You can help them to compare their life with the life of Nenne and Babuh (e. g. : - *Nenne is playing a flute, Babuh is playing with a kite. What do you do when you are not at school or you are not helping your family?*)

### ☉ Ask the students to draw a map of their village

- 1) Clear a space in the classroom and spread a large sheet of paper (or use the black board).
- 2) Explain to the class that they will be drawing a map of their village.
- 3) Look at the symbols on the next page (page 12). Change them or create other symbols of your own.
- 4) Explain that detail, scale and artistry are not important. The point of the activity is to make the students visualize their community and the surroundings, **like a view from the sky**.
- 5) Begin with the school as a starting point.
- 6) Guide the group to mark important landmarks and points. (e. g. : *there may be an important tree under which the village people gather to have a discussion, or a water source that supplies water to the village*).
- 7) Once the students have an outline of their community, ask them to mark on the map areas that are forested, areas that are used for agriculture, rivers, water sources, places that are landslide areas. They can fill in details of crops, degraded lands, depleted forests, natural forests, roads, etc.

#### NOTE

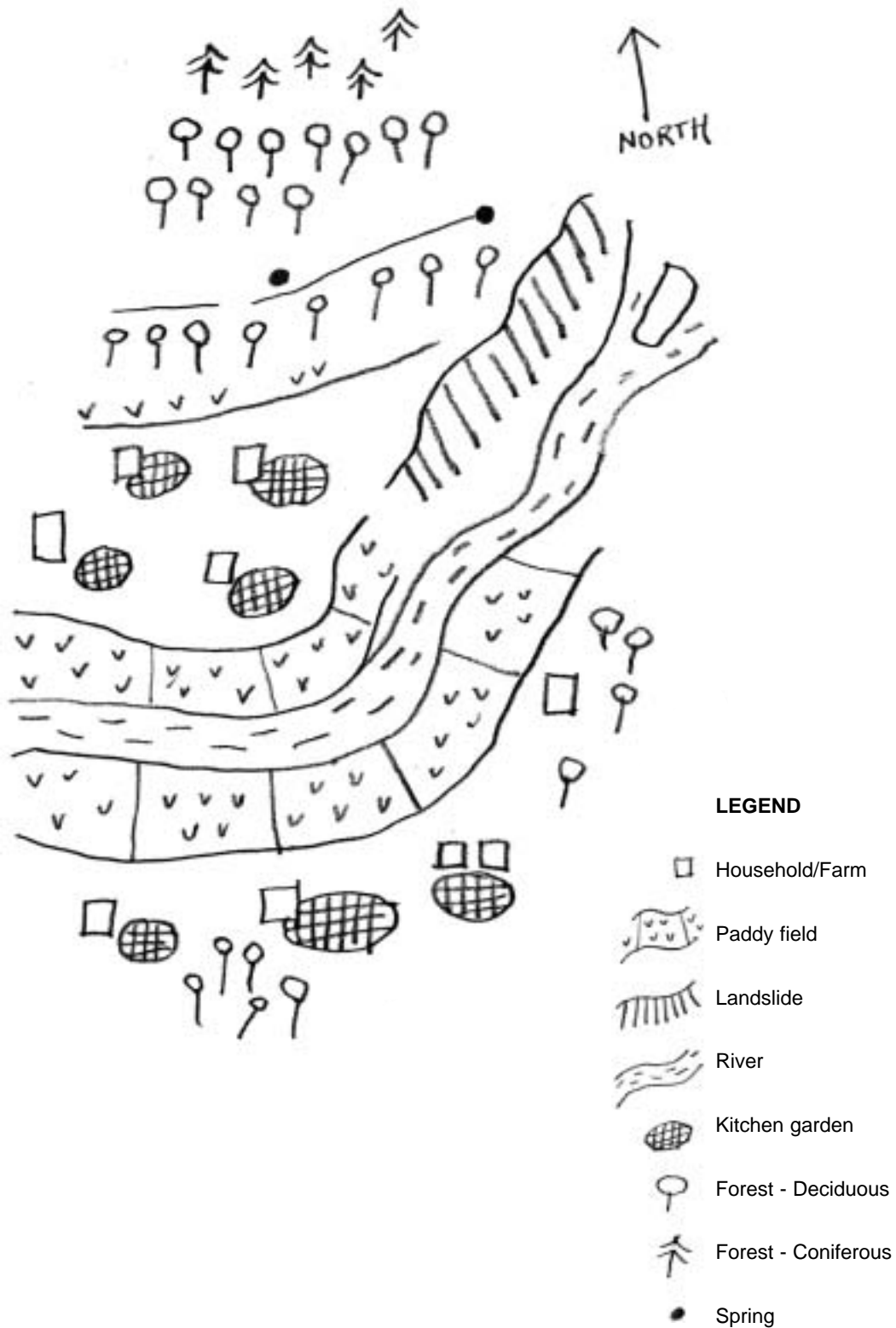
The symbol ☉ near the titles of activities means that the activity is written in the Comic Book also. The other activities marked with the symbol ● will just be explained by you.

## Example of map for Activity ONE, chapter 2

Note that the legend is not the same as the one in the Comic Book.

The drawings on the Comic Book are “more realistic” than these.

They are just examples, please feel free to choose the best method for your students.



## Activity TWO (page 17. End of chapter 2 of the Comic Book)

### ● Ask the students to recap what they have read and encourage a discussion

Encourage a discussion in which the students compare their personal point of view.

Examples of questions for discussion:

- *What is meant by ecosystems?*
- *What do you understand by the food chain?*

### ● Ask the students to conduct a Role Playing session

1) Ask students in the classroom to opt to become animals / insects / plants.

2) Then ask them to organize themselves into groups trying to define a food chain.

3) Ask them to speak about themselves as for example:

*"I am a grain of corn, I am eaten by the mouse. Then the mouse gets up and says, I am the mouse, I eat the corn, but I am eaten by the cat..."*

and so on, till students are actually able to form a food chain that ends in the same way it has begun.

### ● Write on the blackboard and ask them to DEFINE these food chains (or others)

EAGLE, GRAIN, MOUSE

GOAT, HUMANS, GRASS

CHICKEN, FOX, GRAIN

MAIZE, RAT, CAT

(etc.)


### ● Ask the students to visit the plants/gardens around their house and look at some of the leaves that have been eaten by insects

1) Try to find out the types of insects that eat the leaves. If the insects are too small, use a magnifying glass (if you can) to see them.

2) Ask help from your elders to identify the insects.

3) Ask help from them to know which animals then eat these insects

4) Write down the information in your notebooks using the given table

Name of the leaf-eating insect	Drawing of the leaf & insect	Name of the plant	Name of the insect-eating animal
Caterpillar		Leaf (or petals) of the rose plant	Sparrow

5) Compare the tables to find and comment on the differences.

## CHAPTER 3

## The Adventure in nature continues

## Contents of the chapter

The Hindu Kush Himalayas again (with a small map). The Atmosphere. Photosynthesis. "Everything comes from nature". The Water Cycle. The Limitation of Natural Resources.

## Explanatory Notes (see also pages 6 and 7 of this guide)

The Hindu Kush Himalayas is a mountain chain of young fold mountains that spread over eight countries. They are Afghanistan, the northern part of Pakistan, the northern part of India, Nepal, Bhutan, Myanmar and the southern part of China and some parts of Bangladesh. They have some of the highest mountain peaks in the world. The most famous among them is Mt. Everest in Nepal.

The **ATMOSPHERE** means the air around us. The atmosphere is important for all living beings, without it the earth would become cold and lifeless as the surface of the moon. The atmosphere is approximately 78% Nitrogen (N), 21% Oxygen (O<sub>2</sub>), 1% Carbon Dioxide (CO<sub>2</sub>). We require oxygen to breathe. We breathe in oxygen and breathe out carbon dioxide. But plants do the opposite, they take in carbon dioxide and breathe out oxygen, this action is called **PHOTOSYNTHESIS**. That is the reason that plants and trees are so important to us. They maintain the balance in nature. The air gets thinner as we go farther away from the earth's surface. The oxygen in the air becomes less and therefore it becomes difficult to breathe. The smoke that comes out from the factories, the cars and houses, also pollutes the air. Nevertheless the trees and plants which are more numerous in the rural areas help to clean this air. So there is connection between the urban and rural areas. Also the rural areas supply all the food grains, the fresh vegetables and meat for the cities. Without the farmer growing all these things, life in the cities would become difficult. Then in the atmosphere we also have water. But how does this water come in the atmosphere? This is through a cycle of *evaporation* and *condensation*, which is called **THE WATER CYCLE**. The rivers, ponds and seas are large masses of water. When the sun's rays fall on them they are heated. Water vapour is formed and begins to rise. As the vapour rises it is cooled (or condensed) and eventually forms clouds of water droplets (or even ice particles). If the droplets become heavy (large) enough they may fall as rain (or even snow or ice). This condensation may come down to the surface of the earth in the form of rain, hail, sleet or snow. Some of the water gets absorbed in the ground and may run as underground streams, some runs off the surface as rivers and some falls on the mountains as snow. When this snow melts in summer it again feeds our mighty rivers that come down to the plains from the Hindu Kush Himalayas. Some of Asia's biggest rivers have *originated* from the HKH, like the Brahmaputra, and the Indus. But we should be careful, because nothing is everlasting. It has to be maintained. Even **NATURE HAS ITS LIMIT**. Nature has to be looked after and preserved; only then can there be forests, land and people. If we finish all our natural resources and disturb the ecosystems then we (the humans) are the sufferers.

## Glossary

**Photosynthesis** → The way in which the leaves absorb the sun's light, water, carbon dioxide in the air and turn it into food for the plant

**Evaporation** → When water is heated it turns into gas or water vapour

**Condensation** → When water vapour becomes cool it turns back into droplets of water

**Originated** → The source

### Activity THREE

(page 21 of the Comic Book)

#### ● Ask the students to recap what they have read and encourage a discussion

Examples of questions for discussion:

- What is photosynthesis?
- What would happen if there was pollution in the air and/or in the water?
- How can we preserve/conservate these natural resources?

#### ● Organize a game called "The story of things"

- Someone can start by talking about an artificial object.
- The others must try to find its origin, the object or the material that has produced it.
- Try to continue as far as you can finding the natural origins of the objects.

e.g.: **A PEN** - comes from plastic - that comes from petroleum - that comes from the dead animals of the past - etc.

**A DESK** - that is made of wood - that comes from a tree - that comes from a seed - that comes from a fruit - that comes from a flower - etc.

After a few examples the children easily understand that everything comes from nature.

### Activity FOUR

(pages 24+25 of the Comic Book)

#### ● Encourage a discussion in which the students compare their personal point of view

Examples of questions for discussion:

- What is the water cycle?
- What happens to the rain water?
- How are rivers formed?

#### ● Ask the students to write a short story or tale

Imagine you are a drop of water and begin like "I am a drop of water....."

#### ● Organize an Observation trip (Let's observe our natural World)

- Ask the class to form three groups.
- Ask them to choose one area/s each around their village of a water source, a forest area and a land sample which they had drawn on their village maps.
- Ask them to walk around the area and observe, take down notes, talk to the people around the area and come back to the classroom and prepare a group report for discussion and sharing with the other groups.
- Ask them to look at the map that they had made of their village, locate the sample on the map and fill in details. They could write on the map itself.
- Ask the students to draw the following table to structure their information

What we have seen	What we have noted	Any problem?	Why?	What can we do?
A well	Smelly water	The water is dirty. There are too many bushes around it.	The well is uncovered.	Cover the well. Clear the bushes.

## CHAPTER 4

## The Bald Mountain

## Contents of the chapter

Deforestation. Agricultural systems. Soil and land degradation.

## Explanatory Notes

Forests are one of the most important natural resources. When forests are cut down, people are indirectly destroying the environment. Forests help to maintain the flow of oxygen in the atmosphere. The roots of the trees bind the soil and keep it from being washed away. The trees are home to many animals and birds, and the fruits and leaves provide food for many.

In the HKH region the forests are a very important part of the livelihoods of the people. They are closely linked to their agricultural systems. Both men and women contribute labour to the farming systems. The forest is a source of fuelwood, fodder and leaf litter for the animals. But in many areas the forests have disappeared because of the traditional **slash and burn** cultivation. In this type of farming system, large parts of the forests were cut and burnt to make room for agriculture (or pasture). This system traditionally was regulated and the trees allowed to grow back naturally, when the land was left *fallow*. Generally the cleared forest land was left fallow for seven to eight years. But due to the growing population and the need for more land for agriculture, people do not now allow the land to *regenerate* anymore. With this cutting down of more forests the “Bald Mountain” was exposed to the rains and fertile top soil was washed away. The situation became worse, when repeated rainfall cut furrows and gullies, widening the erosion areas and thus leading to large landslides.

In some places, the forests were cut down for their timber. This also has led to erosion and degradation of forest lands in the mountains. The soil that is washed away comes down to the clean streams making the water muddy and useless for consumption. There are places in these remote mountains, where sometimes the villagers do not have clean water to drink for days. Especially in the *monsoons* when the rains wash the mud into the rivers, the houses and villages that depend on the fresh river water have a tough time. They have to collect the water, and let the mud settle down before they can either drink it or use it for household purposes.

## Glossary

**Slash and Burn** → "Jhum", "Khorla" or "swidden" agriculture

**Fallow** → Land left to recover after one crop has been harvested

**Regenerate** → Allowed to grow back

**Monsoon** → Tropical rains



⊙ **Ask the students to recap what they have read and encourage a discussion**

Examples of questions for discussion:

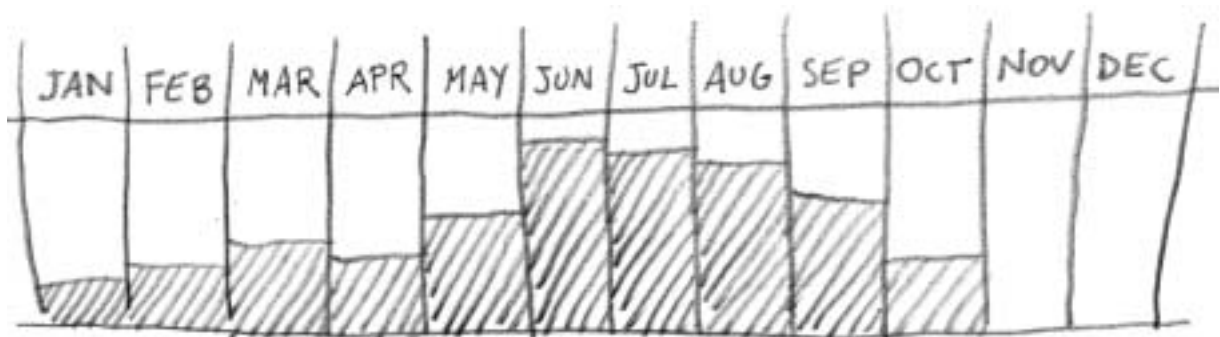
- *What is the "Bald Mountain"?*
- *Why do our friends Nenne and Babuh call it that?*
- *Is there a "bald" mountain near our school? If so, why do you think it happened?*
- *Have you seen somebody doing slash and burn cultivation?*
- *Do we have erosion near our school or village? If so, why do you think it happened?*
- *Can we recognize differences between WIND and WATER erosion?*
- *How do we plough our fields? Do we do contour ploughing?*

⊙ **Ask the students to draw a Seasonal Calendar for rainfall**

They could continue to do this as piece of homework, and by asking their parents or elders questions.

- 1) Ask them to draw a table with 12 columns, for the twelve months of the year.
- 2) Then write down the name of the first month of the year. Here the first month of the year may vary by country. In Nepal, April may be the first month, whereas in Bhutan, February may be the first month. Do not insist that they start the year with the month of January.
- 3) Encourage the students to write notes along with their calendar.
- 4) Then begin by marking the months with the heaviest rainfall and by months with the lowest rainfall. Help them to ask questions and fill in the gaps, like indicating the months and following it with a question like:
  - *How many days of rain do you have in month.....?*
  - or do you have rain for the full month?*
- 5) Indicate the rainfall on the table. Days do not have to be exact, but one could use indicators like full month, half month, a few days, none.

Use the example given below.





Ask the children to do this as a homework exercise.

They could do this as piece of homework, and by asking their parents or elders questions.

- 1) Ask them to draw a table with 12 columns like they did for the rainfall calendar, for the twelve months of the year.
- 2) Encourage the children to write notes along with their calendar.
- 3) Now ask them to fill in the cropping patterns. Begin by asking questions such as:
  - *What crops are grown in your village?*
- 4) After they have named the crops, begin by asking questions about one crop. For example:
  - *In which months do you have wheat?*
  - *In which months do you have maize?*
- 5) Continue in the same way so that they have the whole crop calendar filled out.

[illegible]

They could draw pictures of the crops on their calendars (if needed).

- **Encourage a discussion on the rain fall and crop calendars**

Example of questions for discussion:

- Which crops depend upon the seasonal rain?
- Which crops do not depend on the seasonal rains?
- How do you water your fields when there is no rain?
- What do you do in times of no rain?
- How many types of crops do you get in one season?
- Which crops are grown together and which are grown as a single crop?

## Activity SIX

(pages 34+35 of the Comic Book)

⊙ **Ask the students to recap what they have read and encourage a discussion**

⊙ **Ask the students to write a letter called "Our life without plants"**

Through this letter they could imagine an abnormal and/or frightening daily life.

Its use is to prove how everything is connected and how the absence of plants could destroy people's lives.

⊙ **Can we help our friends to find the "4W" of knowledge?**

- WHAT can they do to avoid the destruction of the mountains around their village Bhunepak?
- WHERE can they collect fodder for their cattle and firewood for their houses without destroying the forest?
- WHEN will Mother nature have a rest?
- WHO can help them?


⊙ **Homework: Find diverse types of soil**

The student can collect different soil samples and write in their notebooks about them.

They can also compare their work with other students in their class.

Through this activity they understand the relation between soil and plants or between soil and animals.

Here we can see an example of table that they can prepare.

DESCRIPTION OF THE SOIL	WHERE THE SOIL IS	ANIMALS IN OR ON IT (IF ANY)	PLANTS ON IT (IF ANY)	DRAWING OF THE SOIL (IF POSSIBLE)
GREY, WITH SAND, MOIST, SMOOTH ROCKS IN IT	NEAR THE RIVER	LITTLE WORMS	- NO -	

## CHAPTER 5

## A Weird Pair

## Contents of the chapter

The importance of soil. The nutrients of the soil. The use of organic manure, pesticides and the little helpful insects. Introduction of the two scientists Mr. Jojo, the Agronomist and Mrs. Geje, the Soil Scientist.

## Explanatory Notes

We get our food from the different plants. But do you know where the plants get their food? It is from the soil. Without the *nutrients* in the soil the plants cannot grow and make food for us. So you see there is a connection here too. The soil is made up of many **different elements**. The soil gives support to the plant. The soil is of many colours and kinds. Sometimes it has a lot of water in it and becomes clay, sometimes with large grains, then it is called "sandy soil". The soil is mostly composed of small granules, big stones, and sometimes the dead remains of plants and animals. Such a soil that has organic material in it is the best type of soil for supporting plants. The soil also contains nutrients that we cannot see, like Phosphorus, Nitrogen and Potassium. The soil also is home to small insects and animals (the most helpful is the earthworm, "the little farmer"). The earthworm *burrows* into the soil and makes a way for the air to reach the soil. It also acts like a hoe and helps to loosen the soil, so that the roots of the plants can spread easily and absorb essential water and nutrients from the soil.

So do you see that even though the soil may not look moving to you, there is so much happening within it! When we use pesticides or fertilizers, we destroy the ability of the soil to remain fertile. Too much use of *fertilizers*, makes the soil hard and acidic and therefore after some time the soil becomes dead. It cannot make its own food and neither can it support plant and animal life. To understand the scientific nature of things and to find solutions for the problems that the farmers face with their crops and fields we need the help of people like Mr. Jojo (the *Agronomist*) and Mrs. Geje (the *Soil Scientist*).

The farmers need to make *organic* manure for their farms. But to make organic manure you require leaf litter in large amounts. With the cutting down of forests leaf litter is becoming more and more difficult to collect. Women have to travel long distances to collect the forest produce and therefore the farmers have to take the help of fertilizers to provide food for their crops. Though it may give you good crop for a year, it slowly destroys the natural capacity of the soil. Each area has its speciality. There are local conditions that shape the environment (like climate, elevation, soil and the vegetation). This combination of plant and animal life is what is called **BIODIVERSITY**. In the Hindu Kush Himalayas, there are some of the most important areas of biodiversity in the world. But they are fast disappearing. We must help and preserve these areas, because as the old papa says "**every land is special**".

## Glossary

**Nutrients** → Essential elements that provide food for the plants

**Burrows** → To dig deep into the ground

**Fertilizers** → Artificial manure

**Agronomist** → A specialist who can help the farmers to grow better crops

**Soil Scientist** → A specialist who can help the farmers to deal with the problems related to the soil

**Organic** → Made from natural things

## Activity SEVEN

(page 42 of the Comic Book)

- **Ask the students to recap what they have read and encourage a discussion**
- **Encourage a discussion and create a story about the Essential Nutrients**
  - Do you remember their names? - What is their use? - etc.
  - Help them to create a story with the three characters (Mr. Nitrogen, Mr. Phosphorus and Mrs. Potassium)
- **Encourage a discussion on the importance and the use of manure**
  - What manure do the farmers use in your village? Do you know their names?
  - Do they use organic manure? For which crops?
  - Do you know how organic manure is prepared?
  - Where do you get the material to prepare it?
  - How far do you have to go to collect your material (ask questions for both organic and chemical fertilizers)
  - Who goes to collect or buy the material?

- **Ask the students to make a “Crop-Table” like this and attach it to the crop calendar**

Crop	Type of Manure used	Why (what is the use)
Wheat		
Maize		
Paddy		
Potatoes		
Cauliflowers		
Others		

## Activity EIGHT

(page 47 of the Comic Book)

- **Help the students to make a “scrap-book”**
  - Ask them to take any area near their house. Collect leaves of the different plants and trees that they see around it.
  - Press and paste them or draw in their scrapbook.
  - Write down the local names and their uses.
  - Repeat the same exercise with another area further away from their house.
  - Compare and see if they can find any common plants.
  - Write down the names of the common plants and of those that are not common.
  - Compile this information and share with their friends in class.
- **Encourage a discussion about useful plants**
  - Which kind of plants are used for medicines? - For what kind of illness?
  - Which kinds of wild plants are used for food?

You can ask them to talk to their parents and add other questions about the other useful plants (for fuelwood, for timber, for animals, etc.).

## CHAPTER 6

## Past and present for the future

## Contents of the chapter

The changes in village life and the conditions for change. Migration that most areas in the HKH are facing. Traditional ways of seed management practices. Property rights of genetic resources. Hybrid varieties. The importance of knowledge.

## Explanatory Notes

The village has changed. The old practices are being replaced by new. But people are still finding it harder to survive. The younger generation all want to go to the towns to look for jobs. There is a problem of *migration*, where people leave the country seasonally to work as labour in another country. They do this because the land is unable to support the growing population. The old traditional practices of leaving the land fallow and of selecting the best seed of local varieties are giving way to intensive cultivation using fertilizers and pesticides, and to the use of *hybrid seeds*. They are highly productive but must be replaced yearly. The result is more production but at high environmental costs. International organizations and farmers are working together to reduce needs of fertilizers and pesticides and also to assure that farmers receive benefits for their work of selection and maintenance of local varieties. Local varieties have specific characteristics like resistance to pest, drought, low temperatures, that could be highly desirable outside the centre of maintenance and therefore have a high economic value. Lamentably increased production is still insufficient to meet the need for more land and more food, therefore more people have to leave their villages in search of occupation other than farming. But there are solutions. We can help to conserve our land. A balanced and sustainable use of natural resources can be maintained. The rural and the urban must live in relation to each other, as stated earlier. Each type of life supports the other. If there are no farmlands, there is no food production. If there are no cities, there are no markets for the produce. So therefore there has to be careful balance in all activities.

As Mr. Jojo says:

- WE study nature to understand its limits. If we need something more we must look for other ways to have it. WE cannot ask everything from nature. WE must look for diverse solutions. Meaning that the natural world needs to maintain its biodiversity.

Another scientific way of looking at things is possibly being able to combine products and invent something new that can be marketed. Like making yogurt mixed with fruit<sup>(1)</sup>. This is an example of "*processed food*".

We could say that:

- The grandparents (Oldmama and Oldpapa) are the **past** knowledge.
- The scientists (Mrs. Geje and Mr. Jojo) are the **present** knowledge.
- The children (Nenne and Babuh) are the **future** in which these two kinds of knowledge will be synthesized.

## Glossary

**Migration** → To leave one place for another

**Hybrid seeds** → Artificially selected to be very productive and pest resistant. But not good for reproduction in the second year for planting

**Processed food (or products)** → transformation of food from its natural state

<sup>(1)</sup> Maybe your school is located in an area where the temperature is too high to conserve this kind of product. It is left to the discretion of the teacher to give other examples of products that are locally viable.

## Activity NINE

(page 53 of the Comic Book)

### ● Ask the students to recap what they have read and encourage a discussion

### ● Ask the students to write a letter

- Ask the students to visualize their future
- Ask them to write letters to each other from some time in the future
- Ask everyone to imagine that 20-30 years have passed and they are living in the future.
- Then ask everyone to write letters to their partners describing their lives since they last saw each other.

- Encourage the students to be creative and include in their letter:

*the date and where they are living*

*how they make their living*

*what kind of a family they have*

*what they eat each day*

*how products from the natural resources play a part in their lives*

## Activity TEN

(page 57 of the Comic Book)

### ● Homework: Ask and write

Tell the students to meet with their elders to ask them for information about the old practices in agriculture.

Ask the students to write about the old seed management and storage practices, making a table like this:

TYPE OF SEED	Stored and/or preserved	Description of the container (or method)

### ● Encourage a discussion on processed products

Define/explain processed food/products

- Do you eat processed food?
- What does it come from (what is its natural state or main ingredients)?
- Other questions

Try to invent a new processed product starting from natural/basic elements

## CHAPTER 7 The Poor family

## Contents of the chapter:

A sort of synthesis of lessons learnt. Resource degradation. Exploitation of natural resources. The concept of LIMIT. Introduction of the "Poor family".

## Explanatory Notes

Not all is bad with modern science. It has its "plus" (positive) points too.

As Nenne and Babuh say: - Not all the humans destroy the ecosystem.

Science has its uses like when Mr. Jojo and Mrs Geje, the Agronomist and Soil Scientist are analyzing the soil and trying to find better ways for the farmers to increase productivity and improve the quality of the soil in their fields. New varieties are good, but they must not be used at the cost of the local varieties. In the same way chemical fertilizers too can be used, but in moderation, **WITHIN LIMITS**.

We must pay attention to the state of health of our natural resources. Scientific knowledge is one of the tools that we can use to understand this.

A balanced use of chemical and organic fertilizers can be the best combination for the crops and plants. Each character has its own place and use that adds to the whole idea of connection in nature!

From Parapara the children learn about nature, from the grandparents they learn to be proud of their traditional culture, from the scientists they learn of the *progressive* ways of science and how it can help them to better their lives.

Nenne and Babuh have learnt that for progress to take place there has to be a combination of both old and new ways. For instance, the new seeds and breeds are good because they are more productive, but the local seeds and breeds also have to be stored as they are naturally adapted to their habitats. In the same way, chemical fertilizers can also improve the productivity of the soil, but they must be used in *moderation* and not at the cost of organic manure, which does not harm the soil, or make it acidic. And last but not least, using natural resources like land, soil and water, for production of more crops is not the solution for sustaining livelihoods. One must look for other *income generating opportunities* that can be an option whereby people can sustain themselves.

Whereas on the other side of the picture, we have the story of the "Poor family" under the direction of Gar and Bage. Their crazy orders have destroyed plants and animal life which they have used for their own benefit. They have destroyed the forests to cut timber for *commercial* use, without regard for the quality of human life. In the search for "quantity" the fields have become acidic, the water is polluted, the pastures have disappeared...

## Glossary

**Progressive** → New

**Moderation** → Within limits

**Income generating opportunities** → Different ways to make money

**Commercial** → Selling products to make money



- **Ask the students to recap what they have read and encourage a discussion**

- **Constructing a “Garden Plot”**

Starting a “Garden Plot” is a good way for students to learn about the different plants, trees, soil types and the environment in general in their area. Such an activity is simple and can be done near the school on a plot of land, with a water source nearby. Students can bring seeds from their homes and have plots that they can take turns in looking after. Some seeds and plants can also be got from the local agricultural office, farm or the forest office.

- Assist the students in planning, dividing the responsibilities and monitoring progress.
- Prepare a simple system of recording findings and progress for every activity that the group undertakes.
- Share the findings with others in the school, community or local district line agencies.
- Encourage the community to support the students' efforts.
- Identify the challenges to completing the activity and work with the students to overcome them.

## CHAPTER 8

## Looking for tigers

### Contents of the chapter

Nenne and Babuh find Gar and Bage. The concepts of Quality and Quantity. The children's work. The respect for girls' opinions. The fight against exploitation of natural resources.

*This chapter is the main action-chapter. Its use is to stimulate and keep the attention of the students before the last part of the Comic Book.*

### Explanatory notes

Our friends find the tigers but they understand they are two bad people.

We introduce Gar and Bage (their names together form "Garbage", litter).

They are symbols of some people who have no regard for nature and its productive uses. They are only concerned with the exploitation of nature and are always looking for ways and means by which they can gain the maximum benefit. They sacrifice quality for the sake of quantity. (See example of harvest during flowering).

They don't care about *threatened species*. They have killed tigers just to use their furs to keep away the people living around the Bald Mountain.

They don't care about the future of the land and about the people living on it.

The children of the Poor family (dominated by Gar and Bage) are working along with their parents to support the needs of the family. There is no time for them to attend school.

Note also Gar talking to Bage, pointing at the girl with the rifle:

- Look, Bage! Now it is time for the hens to crow!!!!

A typical expression *offensive* to the role of women taking part in a discussion.

At the end the scientists and the children beat Gar and Bage.

Therefore this chapter is important because it represents getting back at the uncalled - for exploitation of natural resources.

The efforts of the good characters open the door to a better future...

Please note also that at the end of the chapter nature will save Gar who has been hurt as he falls on a broken bottle. Nenne will use the old knowledge of the grandparents to cure him with medicinal herbs.

### Glossary

**Threatened species** (in this case tigers) → Species that must be protected

**Offensive** → Not likeable

**Medicinal herbs** → Those plants that are used to cure illness and wounds

## Activity TWELVE

(page 73 of the Comic Book)

🕒 **Ask the students to recap what they have read and encourage a discussion**

- **Encourage a discussion on quality and quantity**

- Why do the farmers of the Poor family want to harvest during the flowering?
- What is the difference between quality and quantity?

🕒 **Ask the students to make a catalogue of the plants and animals that they have seen in their village**

Ask them to talk with their elders and find out which animals and plants have disappeared over a period of time, or are to be found less in number.

Suggest they could try to locate the areas where this has happened.

Ask the students to draw a table like the one given below and write down ways to improve the situation.

Plant / Animal	Area where last seen	Reasons for extinction
Tiger	In the forest	Hunting

## CHAPTER 9

## A new kind of farm

### Contents of the last chapter

A sort of synthesis of lessons learnt. The ideal environment made sustainable through the efforts of everyone. The children are adults. An introduction to markets for the products. Animals and humans live in harmony.

### Explanatory Notes

The preservation of the natural resources like land, water and forests is of the utmost importance. They are linked to people's lives in many ways. Our *dependence* on them, puts a pressure on them, we therefore have to think of ways in which we can also give back something, not always take from nature. The environment must be healthy if it is to *supply* the resources that we need. The link between land, forests and water affects plant and human life. Natural resources create habitats and ecosystems, and therefore everyone should be responsible for maintaining this **BALANCE**.

People have different needs of natural resources. They need to work together to balance this need, through *Teamwork*. Local knowledge and local people are important for planning and making *decisions* on how they use these natural resources for their lives. Everyone has a part in planning for the future. This is illustrated in the Poor family's decision to better their village. Markets are important because whether it is the local market or the market in the far cities, the farmers should be able to sell their produce. By being able to sell they can earn some extra income for their families. Another way of marketing their farm produce is by either converting or transforming them into byproducts (like butter and cheese) or by drying them (like cardamom, prunes, apricots and grapes).

**Note:** as we said for chapter 6, in the story we give examples of income generation that could change with the peculiarities of the regions in which the students are.

### Glossary

**Dependence** → To rely on

**Supply** → To give

**Teamwork** → People working together for the same result

**Decisions** → To make up one's mind to do something

## Activity THIRTEEN

(page 77 of the Comic Book)

- Ask the students to recap what they have read and encourage a discussion

⦿ Try to imagine what farm products can be transformed into something new  
(like the yogurt and fruit Nenne starts to produce for the market)

⦿ Organize an "action plan" (project work)

- Sit with your students and discuss an ACTION PLAN that you would like to do for your school.
- The demonstration garden could be one of your activities.
- You also could ask the help of your parents/local leaders, and other non-formal organizations
- Consider the 4 "W"s - WHAT, WHEN, WHERE and WHO - as in the Comic Book.
- Add another "W" for your own information. The fifth and last "W" is for the question "Why should we do it?"
- Draw a table like this

WHAT to do	WHEN to do it	WHERE to do it	WHO does it	WHY to do it
Tree planting	July-August	Around the school or in a certain patch of land that you have identified in the area	Students, teacher and local people or organization	Cover barren ground, create shade, protect top soil from erosion, etc.
Poster competition		In the school	Students, school teachers	To learn from a fun school activity about our natural resources, or only about trees, plant life, etc.
Any other activity				

### Notes

This activity is meant to teach the students to assimilate their previous information and to make an Action Plan for the future. Any number of activities can be planned and invented by the class. Please remember to help the students to plan activities they can easily understand and do.

## HYPOTHESIS FOR A FINAL DISCUSSION

- Ask the students to discuss the entire Comic Book
  - Ask them what they have liked best about the story and characters,
  - or maybe what they have not liked.
  - In both cases, help them to explain why.
  - Ask them what they have learnt from the book.
  - What they did not understand.

*Maybe you could find another ending for the story that is more adapted to your local situation...*

REMEMBER TO GIVE THE STUDENTS THEIR CERTIFICATE!

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