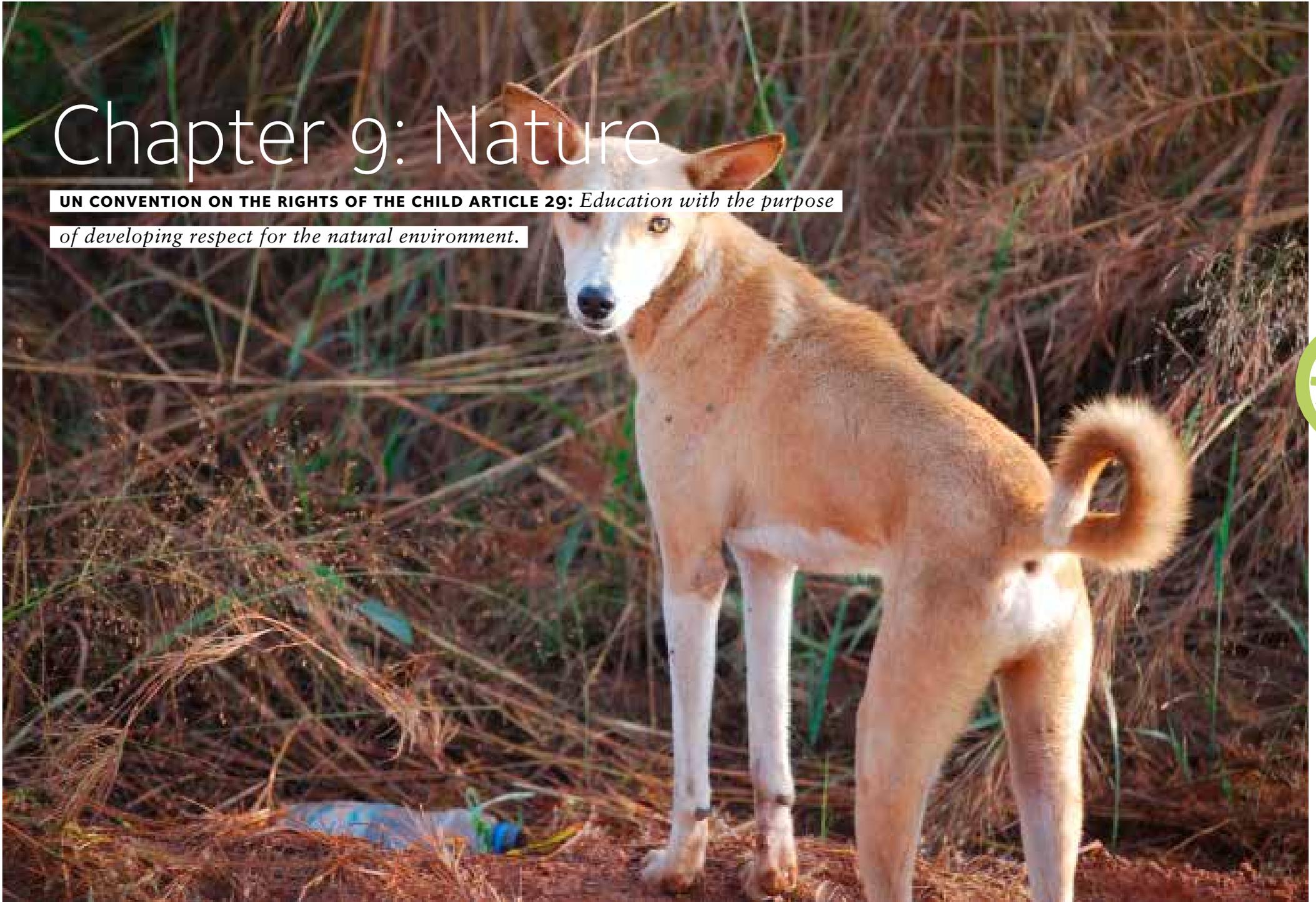


Chapter 9: Nature

UN CONVENTION ON THE RIGHTS OF THE CHILD ARTICLE 29: *Education with the purpose of developing respect for the natural environment.*



9: Nature

ARTICLE 29 *Education with the purpose of developing respect for the natural environment.*

BUKALA, 6 YEARS OLD SAYS:

“ Today I, my brother Taban and his friend Lilibeth are going to pick grass. It may sound strange that we are going to pick grass, but we make bundles of it and bring them to school. The grass in our area can grow to be almost two metres (7 ft) high. The roofs on our huts are made of grass. To get some extra money to our school, we pick grass in bundles and sell them at school.

Now Lilibeth is coming and we can leave. Lilibeth says that she is worried there may be dangerous animals in the bush. We have been taught there may be wild animals like lions and leopards that may hurt us. Really we know there are none, but it is somewhat uncomfortable anyway. Snakes, scorpions and spiders we know there are, and that they can easily hide in the grass, so we must check very carefully. During the war all the animals disappeared, but now they are coming back again and we are actually very happy about that. The birds are already back. And we have heard that a hippopotamus has been seen in the river. So you never know what can happen.

Sniff, sniff. I smell fire. I hope it is not a fire that has spread! We find a man burning grass. It is called burn-beating. It is done to make the earth better for growing. Luckily the man is watching the fire.

Suddenly something is rustling in a fruit-tree. We jump because we are scared, but then we

see the monkeys. We get very happy to see them, but the monkeys get scared and run away. How lucky it was a mango-tree. We can see that the mangos are ripe, so we climb up the tree. On the top of the tree we sit and enjoy one mango each. Mmmm, it tastes really good! Lilibeth says that sitting this high up in a tree reminds her of when her family had to escape during the war. The whole family ran through the woods and high up on to the mountains. She says that they had to stay there for several weeks. It is not nice for Lilibeth to remember how scared she was, so we decide to climb down the tree and keep walking to the grass.

Eventually we reach the place where the grass grows high. We gather the grass in bundles and on our way back home, Lilibeth shows which trees are good for fire-wood. Her mum has taught her that.

When we come back to



Lui, we pass the durra fields. Durra is the most common plant here. Earlier there were peanuts in this field. We harvested them a while ago. My mum made peanut butter to sell in the market. That tastes very good.

When we come home our dog barks, he has waited for us. We put the bundles of grass by the hen-house. The dog and the hens are our domestic animals. Tomorrow we will bring the bundles of grass to school.





TYPES OF NATURE

South Sudan is a flat land with higher mountains in the south eastern part of the country.

The environment consists mainly of grass land, high-situated plateaus and slopes, wood-covered and grass-grown savannahs, river plains and wetlands.

White Nile is a big river flows through South Sudan. In Sudan it merges with the Blue Nile and becomes the Nile. Along the White Nile there are river plains. South Sudan includes one of the biggest wetlands in the world, the Sudd.

The White Nile, one of the main arms of the longest river in the world, flows through South Sudan from the south to the north. It enters South Sudan from Uganda in the south. North of the capital of South Sudan, Juba, which is quite far south, the White Nile spreads into an enormously big papyrus-swamp, the Sudd.

The Sudd (Arabic for obstacle) is a big swamp in South Sudan. The swamp consists of thick loads of grass, half-grass and floating water-plants. The river Nile flows through the Sudd. When flooded, islands of vegetation can be pulled loose and hinder the traffic on the river. Evaporation is considerable in

the Sudd and the White Nile loses much water in that way.

The savannah, a type of vegetation in tropical and subtropical areas with distinct dry and rainy seasons. Grass savannah usually consists of high growing grass and areas sparsely covered with bushes and trees, in Africa mainly acacia, and here and there baobab trees. In South America the trees are often palms and cactuses and in Australia different kinds of eucalyptus. If the vegetation is more like a forest, like in the miomb (dry wood) in Africa you usually talk about tree- or sometimes bush-savannah. Towards drier areas the savannah turns into bush-steppe and towards more rainy areas into rainforest. Along the rivers through the savannah there are evergreen forests. During the dry season when the trees in the savannah lose their leaves and the grass withers, fires often occur, sometimes started by the people with the purpose of getting better pasture.

The steppe, landscape with grass and no trees in rather dry areas on earth. The steppe is the original type of vegetation on approx. one fifth of the mainland on the earth with different names like the puszta in Hungary, the prairie in

North America and the pampas in South America. The vegetation is dominated by perennial grass, but also onion- and tuber-plants and annual herbs. In the past the steppes were grazed by enormous herds of animals, for example, buffalo and antelope, but nowadays big areas are cultivated and are among the most important areas on earth for producing food.

HUTS AND GRASS

See Fact in chapter 2, *At home*.

To get extra income for the school, the pupils can be asked during a period of 2 – 3 weeks to pick the long grass and collect it in bundles. Each bundle is sold for 5 SSP. The grass is used to build and mend roofs.

COMMON PLANTS AND FRUITS

Durra (Arabic for grain of corn) is a kind of grass, sometimes called sorghum. Durra is a 1 – 5 metre high annual grass, usually with a very big and voluminous panicle with a variety of shapes and colours like yellow, red, brown and black. The small ears grow in pairs: one with no stem and a bisexual flower, the other one with a stem and a male flower. Self-pollination and self-fertilization is the most

common. In a young stage durra is poisonous.

Durra can grow on quite meagre soil and can stand quite high temperatures, but is sensitive to frost.

The plant can stand floods. Cultivation of durra is work-consuming. A lot of weeding is demanded in the beginning of the growing season and when the seed is mature, it must be protected against birds. The small seeds are picked and ground into flour used for porridge and bread. Durra is sown in May and harvested in January. Some kinds can be harvested twice a year. The seeds for sowing are dried in a special basket (mundro). One kind of durra is called Njarangu.

Cassava, actually manioc, is a half-bush in the family of spurge-plants and the root-tuber belongs to the most important basic food on earth. The plant can become up to 5 metres high and it blooms in September – November with small pink-red flowers. Each plant develops several spool-shaped root-tubers, which can become 20 to 60 centimetres (8 – 24 inches) long with a weight up to 10 kg (20 lb). They are rich in starch





but poor in protein. They are very starch-rich and are poisonous when fresh, depending of its content of a glycoside producing prussic acid. That can however be removed through grating, boiling or roasting after which they are edible. The root-tubers can, through washing, be processed into flour or grain. The starch-rich cassava can be used for thickening in different dishes. It is often sold in the shape of round grains with the same use as sago.

Okra is probably a word of West-African origin and a plant in the mallow family. It is an annual herb from tropical Africa and is grown in the tropics and in some subtropical areas. The fruit is a capsule approx. 8 cm (3 in) long, light green with five cells and many seeds. It is called Lady's fingernail because it is long and bent like a claw. The whole plant contains mucus secretion, which can be used for thickening sauces and for medical purposes. Okra is often cut into pieces. You can eat okra as a vegetable in three different ways:

1. Raw
2. Boiled with some salt. When it is soft it is ready
3. Salted and sundried to be boiled later

Corn (maize) is a plant in the grass family. It is an annual, up to 6 metres (20 ft) high straw plant with pith filled straw and wide lancet-like and often shining leaves. The flowers are unisexual with male and female flowers on the same plant. The male flowers are placed in spikes on the top, gathered in a panicle, and the female flowers are placed in thick spikes, called a spadix in the lower leaf-fold.

There are many different kinds of corn. It can stand dryness pretty well. It is popular because it is resistant to diseases, it is hardly ever attacked by birds, it is easy to transport and it needs less soil preparation than other kinds of corn. In South Sudan corn is harvested in September.

Peanut (called earthnut in South Sudan) is a plant in the pea family. It is an annual, approx. 50 cm (20 in) high herb with a stem in several branches often lying down. The leaves are pair-bladed with few pair-leaves and one single-leaf. Leaves and stem are hairy. The yellow pea-flowers are placed one by one in the leaf-folds on long stems. After blooming the stem bends down, the flower-bottom between calyx and pistil grows and

thus the fruits are pushed down into the earth, where they mature. The fruit is yellow-gray, rounded, net-veined and pulled together in the middle. It usually contains two cylindrical red or brown seeds. It is eaten roasted or salted and is an important raw material for producing peanut-oil and peanut-paste.

Sweet-potato or batat has its origin in South America and is despite the name not related to potato, it is bindweed. The tubers are oval and irregularly shaped like baking potatoes but much bigger. The skin is light brown or red. There are two kinds of sweet-potatoes. The most common has yellow-orange pulp, moist after boiling. The other kind has light-coloured, mealy pulp. Sweet-potato has a somewhat shorter boiling-time than potato. Since it is sweet it is used both together with other vegetables and in desserts.

Young plants are edible. Recently plants for decoration have been cultivated because of the beautiful leaves. Sweet-potato is a perennial plant, but the stems are annual and the plant continues to grow through its tubers. The leaves are green, widely egg-shaped to

round. The flowers are bell-shaped to funnel-shaped, white to pink or purple.

LEGUMINOUS

Beans occur in two main kinds, called bush-beans or pole-beans depending on the way they grow. There are also many different groups with different look and for different use. All kinds have green or purple leaves, parted into three oval small leaves. They have white, pink or purple, approx. 1 cm (0,4 in) long. The bean pods are 8-20 cm (3-8 in) long and green, yellow, black or purple. Each bean pod contains 4-6 beans. The beans are approx. 1 ½ cm (6/10 in) long and have many different colours and colour combinations.

Beans are very rich in protein, especially soybeans. The protein is also of good quality, almost comparable with animal protein. Most beans need to be boiled carefully or they will cause indigestion. Beans also contain vitamin B and minerals like calcium and iron.

Soybeans are rich in polyunsaturated fat. Dried beans kept cool and dry keep almost indefinitely.



Facts



Peas, dried yellow and green peas have some protein, minerals and vitamin B. Yellow peas are most common. Chick-peas look like yellow peas, but are bigger and somewhat tuberous with a nutty taste. They do not mush when boiled. They are used in salads, casseroles and soups.

Broad bean is part in the pea-family. It does not exist wild, but is one of the oldest plants that has been cultivated in north Africa, eastern Mediterranean and southwest Asia. It is grown in many places today. The broad bean is a standing annual herb with pinnate leaves. The flowers grow in clusters from the leaf-fold and are white with black spots. When raw, broad beans are poisonous like many wild beans. The poison disappears when boiled carefully, but not when dried. Boiled broad beans are nourishing; only the seeds in the pod are to be used.

SUGAR CANE

is a perennial straw herb in the grass family. How it looks and how it grows is similar to reeds, often 3-4 meters (10-13 ft) high with sharp leaf-edges and a meter-long panicle. Cultivated plants do not bloom, but are multiplied through

cutting. After harvesting new shoots can put forth up to eight times before a replant is needed. From the woody stem sugary juice is pressed out, boiled and crystallised. In South Sudan you often bring a piece of sugar cane for packed lunch. Increasingly sugar cane is used to produce ethanol for fuel.

MANGO

belongs to the sumac family and there are approx. 35 different kinds. The fruits are 3-30 cm (1-12 in) long, egg- heart or kidney-shaped, always with a skewed top. The peel is thin and pretty leathery, green, yellow or reddish, sometimes towards purple. Every fruit has a big flat seed stuck in the pulp. The pulp is yellow, juicy and sweet with a rich peach-like aroma together with a weak smell of turpentine.

Mango is a powerful tree with small single- or bi-sexual flowers and a big branchy crown. The leaves are single, narrow lancet-like. You find them wild in parts of south Asia. With the help of people, the cultivated kind has spread to most of the warm and tropical regions in the world. In Lui you can see them everywhere. It is said that the cultivation of mango was started 4000 years ago.

Mango is rich of carotene, which is good for the sight, the skin and the skeleton. Mango contains enzymes good for the digestion.

Mango is eaten fresh or prepared in many different ways, like chutney or juice and in casseroles. Dried mango is excellent for supplies or for a snack.

PAPAYA

is a tree-shaped herb. It can grow up to 10 metres (32 ft) high and blooms in April through August. The stem is never totally woody. On the top of the stem there is a rosette with hand-lobated leaves on long stalks. Male and female flowers grow on different plants. The male flower is long-stalked and the female flower is short-stalked. The fruits hang in bundles under the leaf-crown. The fruits are formed like balls, cylinders, eggs or pears and sometimes with five clearly marked longitudinal rounded ridges. There is a big variety and the size can vary between 7 and 30 cm (3-12 in).

The thin peel is shiny, yellow or green, rarely two-coloured. In a hollow in the middle of the fruit there are lots of small greyish seeds that have to be removed. The pulp is salmon-coloured, almost

like butter and without thread-structure. The taste is sweet with a weak aroma reminding of melon. The fruit is rich in vitamin A and C and is often seen on breakfast-trays around the world.

Papaya is an ancient culture plant grown by the Indians long before the arrival of the Europeans. It is not known growing wild, but there are similar plants growing in Central and South America. Nowadays papaya is cultivated in warmer areas and is an important food. Dried juice from the fruit is called papain and is extracted by a cutting immature fruits and collecting what wells up in the cut.

Papain contains a protein-splitting enzyme and is used among other things to tenderize meat and as medicine for indigestion. In industry papain is used to prevent shrinking of silk and wool.

BANANA

is a family of monocotyledonous plants. The fruits are of different size, colour and firmness, but they are often long, thin and bent. The pulp is soft and starch-rich covered with a peel that can be yellow, purple or red, when the fruit is ripe. The fruits grow in clusters hanging down from the top of the plant.





The banana is classified as a berry and the cultivated kinds contain no seeds but only black rudiments from ovules. There are however kinds containing black seeds, big as peppercorns embedded in the pulp. Some bananas are so full of seeds that they are difficult to eat.

The banana family was first described by the botanist Georg Eberhard Rumphius but accepted formally in Linné's *Spices Plantarum* in 1753. Linné knew only one kind of banana and that was growing in a greenhouse in the Netherlands. Linné called them *Musa Paradisiaca* and for a long time it was considered to be a wild plant. Later it turned out to be a hybrid, a cooking plantain.

The plant is grown in two main categories, the ordinary banana, sometimes called the desert banana and the cooking plantain. The latter is used as a vegetable; it is especially rich on starch and is boiled or fried.

The most common kind, the one bought in Europe is the dessert banana and is eaten fresh, but can also be prepared in many different ways. The flowers can be used as vegetable.

HOW YOU LEARN ABOUT WOOD AND PLANTS

When the children are 9-11 years old, the father brings the sons to the woods and explains which plants are good, and for what, and which ones are poisonous.

The children also are taught which plants can be used for making ropes and building houses and which ones become rotten.

ANIMALS BEFORE AND AFTER THE WAR

Before the civil war in 1983, Sudan/South Sudan supported some of the most spectacular and important wild populations in Africa and hosted the second largest migration of animals in the world. Investigations showed that Boma National Park, west of the Ethiopian border as well as the Sudd, the big swamp and the southern national park, close to the Congo border were good environments for big populations of kob, topi and hartebeest (three kinds of antelope), buffalo, elephant, giraffe, lion and monkey.

The president announced in 2006 that South Sudan should do everything they could to protect and spread the flora and the fauna and to strive to reduce the effects

of forest fires, dumping waste and water pollution in the region. That was good news. The bad news is that big international companies are ready to extract natural resources (oil) in South Sudan to an extent which causes a threat to the wild life in the region and to the environment.

During the war most of the wild animals disappeared from Lui and South Sudan. The first animals that came back were the birds and nowadays you can see kites, vultures and glossy-starlings among others in Lui.

In Lui we are told that antelope, buffalo, lion, hippopotamus and monkey are back.

WILD ANIMALS

There are many typical mammals in South Sudan, especially in the Sudd, the biggest swamp in Africa and on the savannahs nearby. Some examples are bushbuck, Nile lechwe, hartebeest, eland, topi, african buffalo, elephant, giraffe, lion, serval (wild cat) and spotted hyena and among the monkeys: anubis baboon, patas monkey and green guenon. The Nile crocodile and the Nile lizard are in the Sudd but can hardly be seen further north.

The animals people are most afraid of are leopard, lion and snakes of all kinds. Scorpions also can be found in Lui. In the night after the sunset you need to bring a torch to be safe if you go for a walk.

DOMESTIC ANIMALS

Hens, sheep and goats are the most common animals in the household. The hens give eggs to the family. Egg from birds, especially from hens are considered to be a nutritious food, since it contains much protein. From the goats you get milk. The goat milk is as close to human breast milk as you can come.

More goat milk than cows milk is drunk in the world. Goat milk contains 13 times as much taurin as cow milk; taurin is the active substance in many energy drinks. The cholesterol is lower because the goat milk is richer in short and medium long fatty acids.

Thanks to the low amount of the protein casein alpha S-1 goat milk is suitable for people intolerant to cows milk. In goat milk there is lactose, but since it passes through the bowels much faster than the cows milk lactose, it causes fewer or no problems. Goat milk is



Facts



excellent for sportspeople and everybody who exercises thanks to the high amount of minerals and vitamins.

In the country-side there are tribes who herd cows. In South Sudan cows are white with long horns and in Moru language cow is called ti. There are quite a lot of dogs but very few cats in Lui.

BURN-BEATING

A type of agriculture where wood- or steppe-land is cleared by burning every two to three years in order to cultivate in the layer of ashes. Since no new manure is added, the land is soon impoverished. The land is left to grow new grass for pasture and eventually new trees.

Burn-beating is a very old kind of agriculture, and is still used in many parts of the world. In Britain the stubble from crops used to be burned but this has effectively been forbidden since 1993.

THE WAR

See facts about the war in chapter 1, *The move*.





SUGGESTION 1
Conversation

CHILD RIGHTS CONVENTION
Talk about article 29, Education with the purpose of developing respect for the natural environment. In South Sudan they are very proud of the wild animals and very happy that they are returning after the war ended. Do we have the same pride for our wild animals and which ones would that be?

BASIC FEELINGS
Talk about the feelings in the story. What can make you scared? The children in the story are afraid of meeting wild animals. Are there any animals you are afraid of?



SUGGESTION 2
Prayers

BIBLE WORD
The creation (Genesis 1:1-25)

SONGS
Farmer, farmer, why do you plough? (CAHON 796)
.....
It takes an almighty hand to make your harvest grow (KS 176)
.....
If I were a butterfly (KS 128)
.....
Push little seed (CAHON 881)
.....
There are hundreds of sparrows (KS 320)

PRAYER
Thank you, God for your creation of beautiful nature with many different kinds of plants and animals. Help us, God to take care of it all. Amen



SUGGESTION 3
Exotic fruit-salad

Make a fruit-salad with exotic fruits like mango, banana, orange, papaya and melon.



SUGGESTION 4
African animals

Present some African animals. Borrow books from the library or search on the web. Make collages, reports, power point presentations etc.





SUGGESTION 5

Egg experiments

SPIN AN EGG

Spin a hard-boiled and a soft-boiled egg. Which one spins the longest time?

The soft-boiled egg stops spinning pretty soon, but the hard-boiled keeps spinning, since there is no liquid inside that moves around.

MAKE AN EGG FLOAT

Show that an egg cannot float in water by putting it in a glass of water. Take it out and put salt in the water. Stir. The egg will float, since the water gets heavier when salt is added and so the egg floats.

EGG IN A BOTTLE

Peel a boiled egg. Take out a bottle and show that the egg cannot come down into the bottle. Light some matches and put them in the bottle. Then put the egg on the opening of the bottle and the egg will go down into the bottle. When you put the egg on the bottle-opening the first time, the air-pressure is the same outside as well as inside the bottle. To pull the egg down into the bottle can only be done through the force of gravity, but it was not strong enough to pull the egg down through the bottle-opening. But when you change the temperature inside the bottle, you also change the air-pressure. If you diminish the pressure enough inside the bottle, the pressure outside will push the egg down through the opening. If you use a soft-boiled egg the experiment will be stickier, but it will be easier to get the pieces of the egg out of the bottle than if you use a hard-boiled egg.

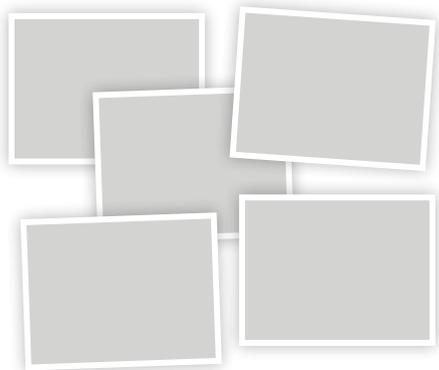
A TRANSPARENT EGG

Put an un-boiled egg in a glass and pour vinegar over it until the egg is covered. Put cling film over the glass and wait one to two days to see what happened. The egg-shell will dissolve and only the thin skin will stay. The egg will look transparent.

A SUPER-STRONG EGG

Wash four half egg-shells carefully so that the edges are as clean as possible. Put them on a table with the round side up. Then put books on top. How many books can you put there until the egg-shells break? It can be a surprisingly number. The egg-shell halves are strong, but if you pick an egg-shell from the inside it will break at once.

Resources



PICTURES

The nature

Nature

Nature with a road

Old road

White Nile

River

Mountain with fire

Children with grass

Boys by grass

Grass gathered at school

Burn-beating

Fruit and eatable herbs

Blooming mango

Mango, the fruit

Banana-plant

Banana with fruit and flower

Papaya

Durra-field

Cows with durra-field in the background

Small durra, close-up

Ready durra-panicle

Cassava-field

Earthnuts and cassava

Sweet-potato

Sugar-cane

Blooming okra

Okra, the fruit

Lentils

Animals

Monkey

Kite

Vulture

Glossy-starling

Crow

Butterfly

Lizard

Scorpion

Cock

Hen with chicken

Herd with sheep

Goat

Cat

Dog

Cows

