Bush Telegraph
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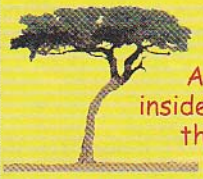
ENERGY & ENVIRONMENT

YOU CANNOT SEE, TOUCH OR HOLD IT!

Energy is the ability to do work. It cannot be destroyed, it can only change its form. Energy is used for everything that we do.

Humans and energy have a long history. Our earliest ancestors (like all animals today) only used their bodies' energy (obtained from food) to live. As our technology has developed, we learned to obtain energy from other things. One of the most important discoveries was fire.



THE ENERGY CHANGE through FIRE

A tree has chemical energy stored inside the molecules of its wood. When the wood is burned:

chemical energy → converts into → heat & light energy

But where does the chemical energy originally come from?

The sun! Through the process of photosynthesis, the tree's leaves captured the sun's energy. It made this into food (chemical energy) for the tree to grow bigger.

Sound simple? Keep on reading! When wood burns smoke is created. Smoke is a "by-product" of this energy change. Can smoke be dangerous to your health and the environment? Yes. In large amounts and in closed spaces, smoke is a pollutant. What happens when you breathe this smoke into your lungs? Try out the following experiment.

Smoke Experiment

In this experiment, the glass of the lamp represents your lungs and the flame a wood fire.

Materials

- Paraffin lamp
- Paraffin
- Matches

1) Fill the lamp with paraffin. Make sure that the lamp is clean.

2) Light the lamp. Be careful not to burn yourself!

3) Turn the wick up so the lamp makes a big flame. Wait a few minutes.

4) What colour has the lamp become? What do you think will happened to your lungs? To the environment?

Domestic Energy Use

Everyone has energy needs and demands. For example, you need to eat food for your own energy. To cook food you also need heat energy. Our lifestyles today demand energy for many activities.

Where does all this energy come from?

Most people know that they can fill their car at the petrol station and get electricity by turning on the switch. But where does this energy originate from? Let's investigate some typical household energy requirements and sources.

Hello, I'm Angelo.
I live in Khomasdal.

SYMBOLS KEY	
Cooking	
Lights	
Heating	
Cooling	
Transport	
Entertainment	

ANGELO'S ENERGY FACT TABLE		
DEMANDS	TYPE	SOURCE
	Stove	NamPower
	Light bulbs	NamPower
	Electric Geyser	NamPower
	Refrigerator	NamPower
	Taxi	Petrol
	TV / Radio	NamPower

ELISABETH'S ENERGY FACT TABLE		
DEMANDS	TYPE	SOURCE
	Fire	Tree
	Candles	Wax
	Fire	Tree
	Clay Pot	Water (evaporation)
	Walk	Food
	TV / Radio	Solar Panel & Battery

Hi! I live with my family in Kabe in the Caprivi. My name is Elisabeth.

Good day. My name is Nico and I live on a farm near Kamanjab.

NICO'S ENERGY FACT TABLE		
DEMANDS	TYPE	SOURCE
	Gas stove	Gas
	Light bulbs	Diesel generator
	Solar hot-box	Solar
	Refrigerator	Gas
	Bakkie	Petrol
	TV / Radio	Diesel generator

Namibian Energy Sources

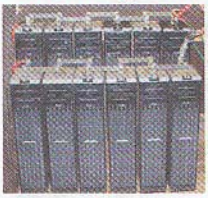
From the Energy Fact Tables, you can see that we get our energy from a variety of sources. We can divide these sources into two main groups: renewable and non-renewable energy. Read the Energy Fact Files to discover **what these sources really are** and **where they come from.**

Renewable energy - Energy sources that can be used without being used up because it is replaceable.

Non-renewable energy - Energy sources that cannot be replaced and eventually will be used up.

ENERGY FACT FILE: Solar

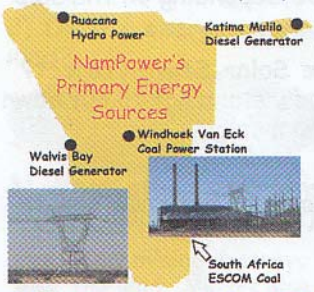
Solar is light and heat energy from the sun. The sun provides us with daylight and warmth. People have developed equipment to further use the sun's energy for electrical energy. These



"solar panels" have cells that change light energy into electrical energy. They can also change the light energy into chemical energy when it is stored in a battery for later use.

ENERGY FACT FILE: NamPower

NamPower is a company that provides



electrical energy to households via electrical power lines. This electrical energy is produced from several different energy sources: coal, diesel and hydropower (water).

ENERGY FACT FILE: Fossil Fuels

Over millions of years, energy sources like coal, oil and natural gas were created by the Earth. Under high pressure, decomposed plant and/or marine life were preserved and compressed. Although this process is on-going, fossil fuels are limited in supply for our foreseeable future. Oil can be made into petrol, diesel, paraffin

and wax. Some countries have a large supply of oil, for example Nigeria and Angola, while others have none. So far only a few fossil fuels, like the Kudu Gas Fields, have been found in Namibia. Currently we must import all of our fossil fuels.

ENERGY FACT FILE: Trees

Trees provide us with many resources including wood. Wood when burned gives heat and light energy. Although it is possible to use wood from a tree without killing it, many people cut down the whole tree. Trees need time to grow to provide us with its resources.

or : Can you determine which energy sources are renewable and which ones are non-renewable?

People and Personalities in Conservation

Photos: E. Mbamanovandu

Name: Kristine Hishidimbwa
Organisation: Solar Stove Project Valombola
Job Title: Project coordinator
No of years on the job: 5 years

What is the Solar Stove Project at Valombola?
We are producing solar stoves that are working with the sun.

THE SOLAR STOVE PROJECT
- Valombola -

What do you do as project coordinator?
I am working mostly in production. I also work a bit in the office, but I prefer to work with my hands. I like to construct things.

Are people interested in the solar stoves?
Yes, in the North we have deforestation where the people are cutting down trees and drying cow dung for cooking. With a solar stove, you do not have to look for fuel, you just prepare the food.

How many solar stoves do you sell?
On average we sell about seventy solar stoves per year. Both men and women are buying the solar stoves. The men do not want their wives to collect wood and the women do not want their children to collect wood.

Do you think that all people can afford to buy a solar stove?
Yes, the solar stoves cost between N$490 and N$700 depending on the size. If you cannot pay in cash then you can do lay-bye.

What do you think is the biggest challenge for the Solar Stove Project?
Marketing and Education. We need to make people understand not to cut down trees. By using a solar stove, they can save energy and money.

Is it easy to cook with a solar stove?
At the beginning it is difficult. I say this because people do not know how to use it. But, if you have used it twice it is very easy.

Kristine's Message to Namibia's Youth:
Do not go and sit down at home. Try to construct something. We have lots of resources. Don't wait for someone to bring you a job, set up your own.

The Solar Stove Project Valombola is located at the Valombola Vocational Training Centre in Ongwediva. Phone/fax: 065-231463

The other side of energy

Angelo, Nico and Elisabeth recently met at a Youth Discussion Forum in Otjiwarongo. They talked about their interests and hobbies and about their lifestyles at home. They discovered that although they have a lot in common, they get their energy from very different sources (See page 3). Mrs. Shikongo, the Youth Forum coordinator, overheard their discussion and gave them the following task. Can you help them?

Think back to what we have already learned about energy. Energy is much more complicated than you may think. Although energy can give us many things we want, it also has negative effects. I want you to compare the various energy sources you use for heating water.

REVIEW:
- Energy has different forms.
- Domestic energy demands are met with different sources.

Energy resources used for heating water from pg 2-3:

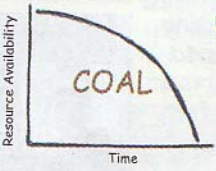

Coal


Wood

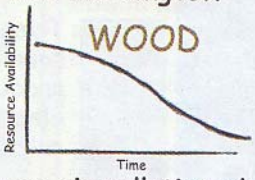

Sun

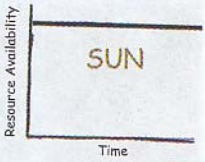
DIRECTIONS: Read each question. Look at the diagram and/or chart for each answer given by Angelo, Elisabeth and Nico. Can you think of other questions Mrs. Shikongo should ask them?

1) Which energy resource will last the longest? *

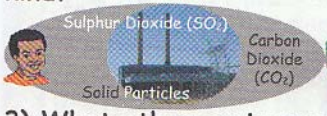



*at current and increased use





2) Do the energy resources cause air pollution when they are used? What kind?



3) What other environmental problems occur when people acquire (get) and/or dispose (remove) the energy resource?

"Coal mining destroys the land. Miners also often develop health problems, especially with their lungs. Power lines which transport energy can also be deadly to birds".

"If we didn't use so many trees so quickly, there would be time for them to regrow. Today I can already see that the land is deforested and there is soil erosion."

"Using the sun for heating but also for electricity has problems. For example, a battery is needed to store the sun's energy. It has chemicals in it that are dangerous for the soil when thrown away."

The BIGGER Picture

"the Stone Age came to an end not for a lack of stones, and the oil age will end, but not for a lack of oil..." - Sheik Yamani

Why should we change from energy sources like coal, oil and wood to renewable energy sources like the sun and wind? Is it an easy answer? No. People all over the world disagree about the good and the bad of these energy sources. Let us explore some of the things that influence the energy that we use.

ECONOMY

Industry energy demands are very high.

High initial cost vs. low cost.

Technology based on fossil fuels.

POLITICS

Few laws exist to promote alternative energy use. No tax for pollution!

The demand for fossil fuels influences world politics.

SOCIETY

People are still trying to get their basic needs.

People like and know their traditional way of life.

NAMIBIANS THINKING FOR THE FUTURE

WIND ENERGY

Using windpumps to get underground water has been done for a long time.

Wind-generators use this resource to create electricity.

SUN ENERGY

Telecom is using solar panels to produce electricity for telephones.

Some lodges are using solar hot-water heaters for their guests.

Do you know someone who solar cooks?

There are very many aspects to energy that you can learn about. Go to your library, ask your parents, teacher and youth officers where you can find out more.

Chinga's & Nzovu's Corner

Thank you to all for sending your questions to us. It is wonderful to see our readers asking so many questions about the world around them. If you have any questions for Chinga and Nzovu, please write to:

Chinga & Nzovu, NaDEET, P.O. Box 31017, Pioneers Park, Windhoek

Dear Chinga and Nzovu,
How does the snake give birth?

Ronnie in Opuwo

Dear Ronnie,
All snakes are reptiles. Producing offspring ("giving birth") is different than in mammals. Snakes are either oviviparous (lay eggs) or viviparous (live birth).

The Cape Cobra is an example of a snake that is oviviparous. It can lay between 8-20 eggs in a burrow (hole) in December to January.

The Puff Adder is viviparous. This means that the Puff Adder's eggs remain inside her body until they have hatched. At that time, a litter of 20-40 young are released from the body. By keeping the eggs inside her body, the Puff Adder can better protect her offspring. All snakes are independent from their mothers once they have hatched.

Chinga and Nzovu

Dear Chinga and Nzovu,
People have accidents with wild animals on the road. I would like the government to produce more fences to keep wild animals off the roads. Some people also kill wild animals. I hope it is not allowed in Namibia because I want us to be the best. What is the Nature Conservation doing about it?

From Princess in Khorixas

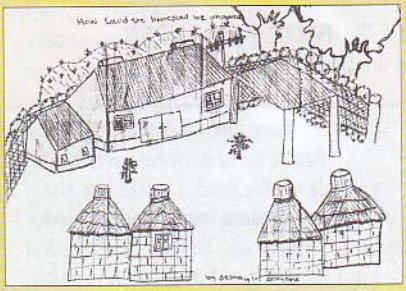
Dear Princess,
Thank you for your concern for wild animals like us. When travelling through Namibia some places have fences on the side of the road and others do not. These fences are designed and built to keep in domestic animals. There is no fence (that is affordable) that will keep all wild animals off the road. Some wild animals, like kudu will jump over fences while warthogs will dig underneath fences. Your second point is also true. There are people who kill wild animals on the side of the road. There is a law, the Nature Ordinance 4 (1975), that protects wild animals. It states that hunting on the side of the road between fences is not allowed. It also states that you are not permitted to take dead animals from the road. We think it is important to drive slowly and carefully especially at night to protect animals as well as humans.

Chinga and Nzovu

Update from the last edition...

Pg.2 CODED WORD GAME "Add compost to your garden"

Pg 6: "The Eroded Homestead" Thank you Selma from Onayena for sending in your improved homestead!



Is it always true? Mini-contest. Congratulations to Pena-Ehafo in Oshakati who gave the right answer: a sociable weaver bird. She was one of seven who entered. The true nature of the relationship between the tree and a sociable weaver can be debated. Because the sociable weaver builds such a large heavy nest, the tree branch often breaks over time. But, with so many birds living in the nest, the soil around the tree is well fertilised.

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Thank you to the British High Commission for your support for 2003!

The **Bush Telegraph** is written by Viktoria Paulick.