

1 Environment & sustainability

*We spread out the earth and set upon it immovable mountains. We brought forth from it all kinds of delectable plants. A lesson and an **admonition** to penitent men. We send down blessed water from the sky with which we bring forth gardens and the harvest grain, and tall palm-trees laden with clusters of dates, a sustenance for men; thereby giving new life to a dead land. (Qur'an 50:7-11)*

Once, there was an island

*Many years ago, when your grandparents were young, there was an island between Pemba and the mainland called Maziwe. Maziwe was covered in **lush** mangrove and coral rag forest, and surrounded by a beautiful **coral reef teeming** with fish. It was famous for turtles: hundreds of green, hawksbill and Olive Ridley's turtles nested on Maziwe's sandy beaches every year. It was such a beautiful island and so rich in wildlife that it was made a Marine Protected Area in 1975.*

Nobody lived there all the time, but, though it was a protected area, it was used by many fishers as a camp. They collected firewood from the forest to cook their food, and built shelters from mangrove poles and palm thatch. This continued for hundreds of years. But slowly, without anyone realising, the forest was disappearing. At first there were just a few fishers, but over the centuries more and more came. Each time they visited, each person would just burn a few branches and sticks. But day after day, year after year, this added up, and by the 1970s there were no trees left on the island. Maziwe was nothing but sand.

*For a few years, fishers still used Maziwe, but they could no longer make fires and there was no shelter from bad weather. Then in 1978, disaster struck. During the monsoon, a big **storm** hit the island. Without trees to protect it, the strong waves washed over the top of the island and swept all the sand into the sea, and all over the **coral reef**. Now, all that remains of the island is a sandbank that can only be seen during the lowest **tides**. The turtles have nowhere to lay their eggs, and there is nothing left on the island for people. The whole island of Maziwe has been washed away.*



Maziwe Island today: this small sandbank is covered by the sea at high tide © Luca Belis
www.trekearth.com/members/Mistral/

Could this happen to islands in Zanzibar?

This is a true story of what happens when we don't take care of our environment. Each person probably thought they were only taking a few sticks – but if a lot of people each damage wildlife just a little bit, it adds up to a lot of destruction. As we will see, the natural environment supports our lives and livelihoods in hundreds of ways, and if we continue to allow it to be destroyed, we will struggle in the future. What would your family do without fish to eat, wood to cook on or water to drink?

How can we protect it?

We don't have to let this happen. We can change the way we interact with nature. It is not too late to protect Zanzibar's **precious** environment from destructive activities, and our coastline does not need to follow Maziwe into the sea. Firstly, we have to find out about our environment, and discover how the natural world provides us with everything we need. Secondly we must find out how our activities can harm the environment, threatening our way of life and our future. Thirdly, we must take action to change how we use natural resources so they are not destroyed by what we do.

This book will show you how we can achieve this. It will introduce you to the environment of Zanzibar and tell you about all the ways our environment provides us with the things we need to live healthy, happy, prosperous lives. It will also tell you about how our activities are damaging our environment. Finally, you will learn about ways to take action: there are many easy things we can all do to make sure our environment continues to support us into the future. Read on to find out how!

Environment

What is the environment?

The environment is all the living and non-living things around us – both natural and man-made things. It includes all the non-living things such as the air we breathe, the water we drink, roads and houses, oceans and beaches, even the sun, moon and stars! It also includes all the living things such as plants: the wild forests and plantations, baobabs, bushes and grasses, mangroves, seaweed, seagrass, coral reefs and crops, and animals including wild animals, fish, butterflies, birds, bees, livestock and people. Every single thing around you that you can see, touch, feel, smell or hear is part of the environment.

What does the environment provide for us?

Food and water – In Zanzibar, all our freshwater comes from rainwater that soaks into the ground. It filters through the limestone rock, and we dig wells to get water to drink, cook and wash with. All the fish we eat are wild animals caught in the sea, and our livestock also depend on food to eat and water to drink. Crops such as rice, fruits and vegetables need good fertile soils, plenty of rainfall, and bees, birds and bats to fertilise them. Without our environment, what would we eat and drink?

Good health – Vegetation (plants) slows down water flowing over the ground, so it soaks into the ground where it is filtered by rocks, making it safer to drink. The oxygen in the air we breathe that gives us life is produced by plants, and plants take up and use carbon dioxide from the air. We use many plants growing in Zanzibar to treat diseases from malaria to flu: they help keep us healthy.

A place to live – If you look out to sea on the east coast, you can see where the fringing coral reef is, because of the big waves beyond it. If those big waves hit the shore, they would wash the beach away. Coral reefs, seagrass and mangroves all protect the coast from erosion. On land, trees and grass do the same thing, stopping the soil from being washed into the sea when it rains. Without them, the land beneath our homes would be washed away and our houses could be damaged or even washed into the sea. Trees provide us with shade and protect our houses from strong winds. Our homes are built from palm thatch, coral rag, sand, cement and mangrove poles: these materials all come from the environment.

Livelihoods and financial prosperity – Most jobs in Zanzibar depend on the environment. 39% of people are employed in the service sector, (largely tourism), and 37% in agriculture, forestry and fisheries. The whole economy of Zanzibar depends on a healthy environment.

Natural resources

The environment provides us with everything we need to live. We call things we use and need 'resources'. Resources can be physical things, like oxygen or water, or sources of energy such as sunlight or the wind. All man-made things are made using resources that ultimately come from the natural environment, known as 'natural resources'. For example, cement is made by burning limestone, plastic is made from oil, and glass is made from sand.

But where do natural resources come from? Often, people behave as if all resources will last for ever, but as the number of people increases, some natural resources have become very scarce. We now need to be thoughtful when we use things: what are they made of? Where does the natural material come from? How much of it do people use? Could it run out?

Sustainability

What is sustainability?

Sustainability means the ability to continue to exist. We depend on natural resources, so we need them to still be around in the future for us and for our children. In the context of natural resources, sustainability means using resources no faster than they can naturally recover. We need to use natural resources sustainably now, or there won't be any left in the future.

Ulikua unajua...?

- During the 2011 Pacific Ocean tsunami, a whole beach ended up in a hotel dining room because they had cut down the mangrove protecting them from storms.
- Both people and wild animals find their way at night by using the stars!

Renewable and non-renewable resources

Renewal times for natural resources used in Zanzibar

Now	Sunlight Wind Air	Renewable
Months	Rice Cassava Fresh water Bananas	
Years	Palm thatch Clove tree Mangrove forest	
Decades	Coconut wood Grouper Mango tree Dolphin Shark Turtle	
Centuries	Baobab Whale Rainforest	Non-renewable
> 1000 years	Sand	
> 10,000 years	Coral reef	
> 100,000 years		
> Million years	Coral rag	
> 100 million years	Fossil fuels	

Different natural resources are made by natural processes at very different speeds and in different quantities. For example sunlight is made all day every day, but giant baobab trees take hundreds of years to grow so big. When we use resources, we need to consider how long natural processes will take to replace what we have taken. If we use resources more quickly than they can recover, then they may run out. This is not sustainable. To be sure of having the resources we need in the future, we must all live more sustainably, using resources no faster than they are being replaced.

We consider the rate of replacement of natural resources in the time frame of a human lifetime. If nature replaces things within a human lifetime we call them **renewable**. Renewable means that nature can replace the resources that we use. This includes freshwater, which is replaced when it rains, wood, replaced when new trees grow, fish, replaced by new baby fish, and energy from the sun or the wind. But things that take longer than a lifetime are called **non-renewable**.

Renewable resources – Some resources are effectively unlimited. So much is made that there will always be more than we can possibly use – for example, however much sunlight or wind energy we use today (e.g. by heating water in the sun or sailing a dhow), it won't stop the sun shining or the wind blowing tomorrow. This means we can use as much of these resources as we like and it will still be sustainable! Other resources take longer to be replaced naturally, taking months, years, or even decades before they are replaced naturally. This category includes many living resources – such as fish and wood – and also fresh water, replenished during the rainy season. We can use these resources, but to live sustainably, we must not use them up more quickly than they can recover. If we cut down trees, we must plant new ones. If we go fishing we must leave some behind to breed a new generation. But if we cut down *all* the trees and catch *all* the fish, or pump out *all* the freshwater from the ground, then there will not be any left for the future.

Non-renewable resources – Other resources that we use took thousands or millions of years to be made, often in environmental conditions different from those of today. So from a human perspective these resources are **irreplaceable**. Once we have used up what exists now, there will never be any more. Non-renewable resources include **fossil fuels** – coal, oil, gas, and things made from them, including plastic. Others are mineral resources – rocks, metals and **precious** stones. **Quarrying** or mining for these resources has other environmental costs. We need to find more sustainable alternatives to these resources so we don't need to use them so much.

Why is sustainability important?

We depend on the environment in countless ways for our livelihoods, but if we do not allow natural resources to recover from exploitation then the fish we eat will die out, we will have no wood to cook on, and no freshwater to drink. Just as we depend on the environment, it depends on us too – to look after it, and use it wisely.

But we are not using resources sustainably. Forest cover in Zanzibar is declining rapidly. Fish stocks are declining. The water table (level of water underground) is falling and coastal wells are becoming salty and undrinkable. Resources are being depleted, and if we do not take action – all of us – starting now – we will be in big trouble in future. This is the future the young people of Zanzibar will inherit.

So, what can we do? We are at a point in history where there are still natural resources left, we are aware of the impact we are having, and we still have time to take action. It is down to us to change the ways we use natural resources, and to use them sustainably, starting now. It is fine to catch fish, but not so many that there are none left for the future. Fish need time to grow up, find a mate and reproduce, just like people and domestic animals do. Trees, too, need time to grow – we must not cut forests down faster than they can grow back and recover.

What will we gain from living more sustainably?

Sustain our way of life – Protecting natural resources for the future will help us to preserve our social and cultural traditions. We will improve the standard of living for our families by ensuring they have enough food, clean water, a nice, safe place to live, and an income to live on.

Pride in Zanzibar and in our communities – Zanzibar is very special. It is world-famous for its beautiful beaches, lush forests, historical towns and villages, and its warm and friendly people. It is a beautiful place we are fortunate to call home – tourists can only come for a week or two! We have much to be proud of if we can look after it well.

Incredible natural neighbours – The natural world is amazing and it has been given to us to take care of. The variety of life around us is spectacular. Respect the wonder and beauty of nature for its own sake and revel in learning about the amazing creatures that live in our forests and oceans. It has so much to teach us, and enriches our lives in many ways we do not notice, but would miss so much if it were gone. Make a new effort to notice the different kinds of plants, birds and insects around you. Take time to sit and watch how they behave, and notice how they change as seasons pass. We are wealthy when our environment is healthy.

Who needs to act?

All of us can see places where the environment is being harmed, and feel as though ‘someone’ should do something about it? But who is someone? The answer of course, is you and me, and everyone around us. Whether you are a government minister, a parent, a teacher or a school child, we can, and must, all take action and work together to protect our environment for the future.

How can we live more sustainable lives?

Now, we understand that the environment benefits us in everything we do. We know how to think about the ways we depend on the ocean, forests, and other natural resources. We know how to ask ourselves if the things we use every day are made of renewable or non-renewable resources. The next step is to change our habits. Choose products made from renewable

resources, such as baskets instead of plastic bags. Help the natural world replace the materials we use up, by planting trees, and choosing fish that breed quickly. To learn more about all these issues, and how we can all help make sure we keep the environmental benefits in the future: read on!

Tembea ujionee!

- Take a walk outside and write down all the things you can see or feel that are part of the environment. Which are living and which non-living? How do they benefit us? Do this in different areas – urban, farmland, beach or forest – and compare.
- Which natural things do we use? Choose five things you use in your home. What are they made of? Are they made of renewable or non-renewable materials?
- How many different kinds of bird, insect, and plant can you find growing in your community?

Kitunze kidumu!

- Choose products made from renewable resources.
- Replant mangroves and trees when you collect firewood and building poles.
- Get involved in cleaning up your community.
- Learn new things about the environment and share them with your friends and family.