POU and Miri
learn about greenhouse gases

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Miri lives here
Big forest
the mangroves
Papa Ropate's house
Itenitown
Uncle Vili's farm
Pou and Miri meet Mumoo
Iteni
Island
Pou and Miri see all the carbon dioxide producers
Follow Pou's journey
Pou lives here

learn about greenhouse gases

Hello, boys and girls!

This story is about greenhouse gases. Greenhouse gases are gases that trap heat in the atmosphere and keep our planet Earth warm. For the last hundred years or so, we have been releasing more and more greenhouse gases. This is because we are using more fuel like petrol, diesel and oil for our machines, factories and cars and we are cutting down more forests. These activities release greenhouse gases.

As we release more greenhouse gases, our atmosphere gets warmer. This can cause a rise in sea level, long droughts, and extra heavy rainfall. So it is important to know about greenhouse gases and how to reduce the release of them into our atmosphere.

I hope this book will help you understand our situation.

Happy reading!

Dr Wulf Killmann, Programme Director, SPC/GIZ Coping with Climate Change in the Pacific Island Region Programme

On the beautiful island of Iteni live Pou and his friend Miri, a fruit bat.

Pou and Miri have lots of fun and adventures together.

Iteni is blessed with lots of sunshine and rain. And everything grows well.

Pou and Miri like to go fishing early in the morning. Pou knows his Ta loves fish for breakfast. "Fish keeps you strong, healthy and smart," Ta would say.

But one morning, catching fish took longer than usual, and there were not many big fish, only small ones.

Pou wondered why. . .

"I must try and find out what's happening," he said to himself.

Eventually Pou caught three fish. One for Ta, one for Mama and one for himself. He never caught more than he needed.

"Would you like me to catch one for you, Miri?" asked Pou, laughing.

"Oh Pou! You are funny," Miri giggled. "You know I only eat fruit."

"Oh, three lovely fish," said Pou's Mama when he got home. "I'll cook them for breakfast."

"I'll do it," said Pou. "I love cooking."

Mama lit the kerosene stove.

"What's the black stuff on the bottom of the pan, Mama?" asked Pou.

Mama explained that the black stuff is called soot. When you burn kerosene, a gas called carbon dioxide is released, and some of the carbon in it doesn't burn; it ends up as powdery black soot on the bottom of your pots and pans.

"Oh!" said Pou. "My teacher told me all about this. Carbon dioxide is also released when you use petrol, oil and diesel for cars and generators."

"You are such a clever boy Pou," said Miri admiringly.

Carbon dioxide (CO_2) - a greenhouse gas

Carbon dioxide is a greenhouse gas. Greenhouse gases occur naturally in our atmosphere. The gases capture heat in our atmosphere and send it back to earth. These gases are important because they stop our planet Earth freezing. Can you imagine your island being frozen and the sea turning to ice? So we need these greenhouse gases to keep our planet alive.

Unfortunately, we humans are adding more and more greenhouse gases into our atmosphere. As a result, more heat is captured and our planet Earth is getting warmer and warmer! This warming of our planet is known as "global warming". One thing we can do to stop our planet getting too warm is to stop producing so much carbon dioxide.

How can we do that?

We need to try and use less fossil fuel, as burning or using fossil fuels releases carbon dioxide (see next page for information on fossil fuels). Another thing we can do is look after our trees and forests better. Trees store a lot of carbon, and when we cut down trees and clear forests, we release a lot of carbon dioxide.

What are fossil fuels?

Fossil fuels include oil, petrol, diesel, coal and gas. Fossils are the remains of ancient organisms (like plants and animals) that have been buried and pressed under the earth and ocean floor for millions of years. Fossils are made mostly of carbon and when you burn these fuels, the carbon is released into the air as carbon dioxide.

While they were having breakfast, Pou's mother said, "I need you to go and see your grandfather. I have his new reading glasses. Can you take them to him?"

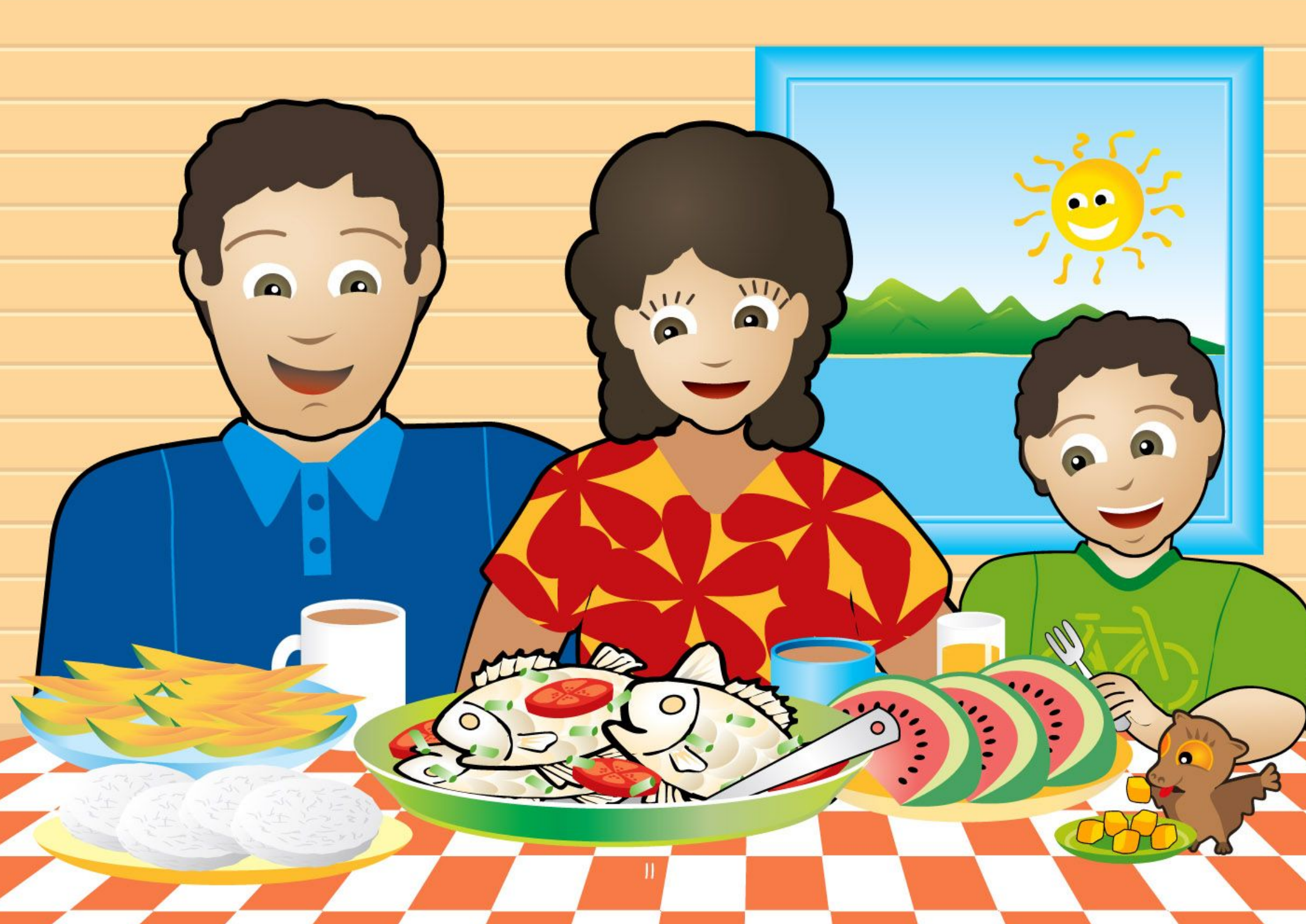
Pou was overjoyed. He loved Papa Ropate and would spend hours listening to his stories. "Come on, Miri, let's go," he said.

Papa Ropate lived on the western side of Iteni. Pou decided to take the track along the coast. He knew the way, as he had been there many times.

"Come on Miri," he said. "We can ride my bike. I will also ask Papa Ropate why I didn't catch a lot of fish today."

"Look after Papa's glasses; they are very valuable," his mother said, as she put them into their case.

"I will Mama," replied Pou, carefully putting the case into his pocket.



PETROL
OIL GAS
ITEM BUS CO.

Pou and Miri set off on their journey, riding Pou's bike. They noticed lots of things that use fossil fuels.

"Oh!" exclaimed Miri. "Just look at all the things that produce carbon dioxide!"

"Yes, and some of them make a lot of smoke," agreed Pou.. He laughed. "Lucky our bicycle is not one of them!"

How many things can you see that produce carbon dioxide?

(Hint: carbon dioxide is released when you use fossil fuels like oil, petrol, diesel and kerosene and when you cut down trees.)

BURP!

Further along the road they heard a long burp: "Oooouuurp . . . oops . . . excuse me," said a voice.

Pou and Miri turned to see a cow.

"Hello, I'm Mumoo," said the cow. "Sorry about that." Pou and Miri giggled and Pou said, "That's okay. That was a very big burp."

"It must be hard eating all that grass," said Miri. "I only eat soft juicy fruit. Don't you get a stomach-ache?"

"No, because my stomach has four sections. This makes sure I digest my food properly," Mumoo said proudly.

"Grass is tough and difficult to digest," she explained, "but my stomach has bacteria to help break it down and then I bring it back up and chew it some more. I'm always burping and belching because digesting my food releases a lot of gas," she said, with another long burp.

"Hey, I know this gas. It's called methane gas," said Pou.

"Well Mumoo, we must be going now. It's been nice talking to you," said Miri.

"Ride carefully," said Mumoo, and carried on happily chewing the cud.

Methane (CH_4) - a greenhouse gas

Methane is released from natural sources such as wetlands and swamps, and it is also released when animals and insects - especially termites and tiny marine organisms - digest the plants and woody material they eat.

Methane is also released when we extract oil, gas and coal from the ground, when rice is grown in flooded soil, when rubbish and organic waste decompose, and when there are wild fires. There is also some methane in waste produced from factories.

More than 50 per cent of methane emissions in the world come from things that we humans do.

We can reduce the amount of methane gas we release by having proper rubbish dumps and landfills, by feeding our cattle, sheep and goats the right food, and by ensuring that we do not disturb our swamplands.

As Pou and Miri cycled along the track, they saw Uncle Vili in his field.
"Hello, Uncle Vili," called Pou. "What are you doing?"
"Hello, young Pou. Hello, Miri," said Uncle Vili.
"I'm putting fertiliser on my crops to help them grow."

"How does it help them grow?" asked Miri.

"Well, plants need food just like us," explained Uncle Vili.
"Fertilisers contain nutrients so that plants can be healthy.
But we should be careful to use the right amount.
Too much is not good for the plants
or the environment," he added.

"Your crops look very healthy," said Pou.
"Sorry, Uncle, but we can't stay any longer.
We're on our way to visit Papa Ropate."

Uncle Vili gave them lots of vegetables to take to Papa Ropate and some for Mama. "Goodbye, Pou. Bye, Miri," he said. "Ride safely."

Nitrous oxide - a greenhouse gas

Nitrous oxide (N_2O) is another greenhouse gas. The main source of nitrous oxide produced by humans is from fertilisers used in agriculture. Plants need nitrogen to help them grow. When fertilisers containing nitrogen are added in large amounts to the soil, nitrous oxide is released. Nitrous oxide is released faster when the soil is wet or washed away by rain. We need to be careful of the amount of fertiliser we add to the soil, especially if it is wet or we expect heavy rain. Burning fossil fuels also releases nitrous oxide.

The sun was getting hot so Pou covered his head with a light cloth. "It feels nice and cool under the shade of this cloth," he told Miri.

"What if you add more cloth?" asked Miri.

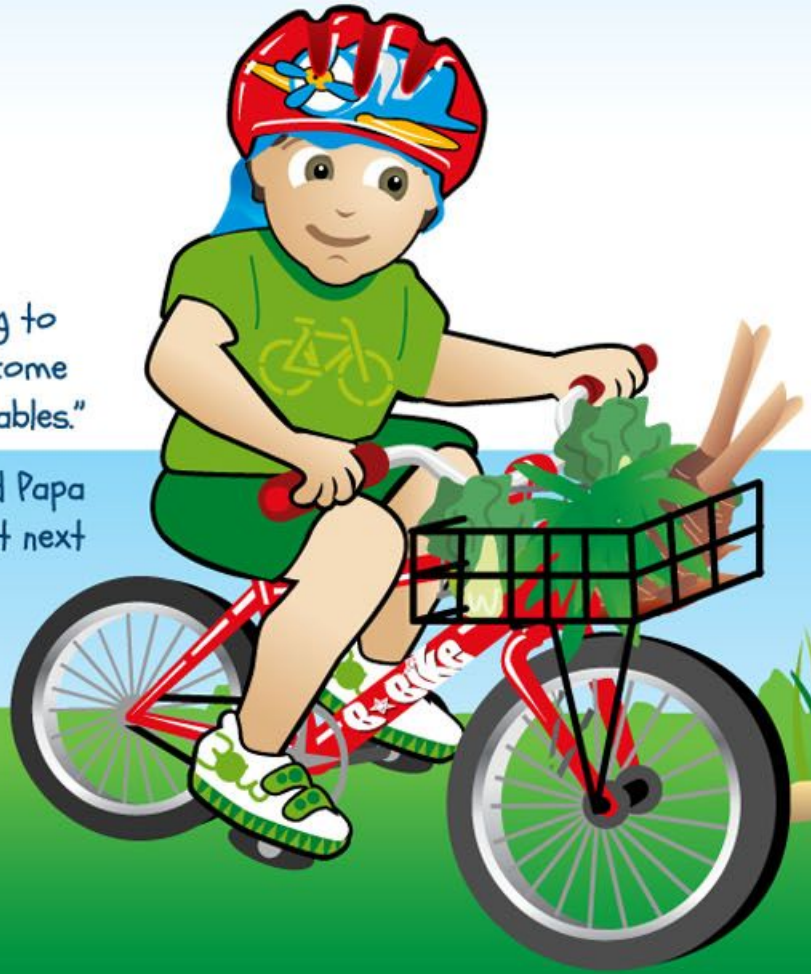
"That would make me VERY hot!" replied Pou.

"It's the same with the Earth. If we add more and more greenhouse gases to the atmosphere, the planet heats up," he said. "We need to reduce greenhouse gases.

That's why I like to cycle. My bicycle produces no greenhouse gases," he said proudly.

They found Papa Ropate sitting outside his house, trying to read the newspaper. "Hello, Papa!" shouted Pou. "We've come to give you your new glasses and Uncle Vili sent some vegetables."

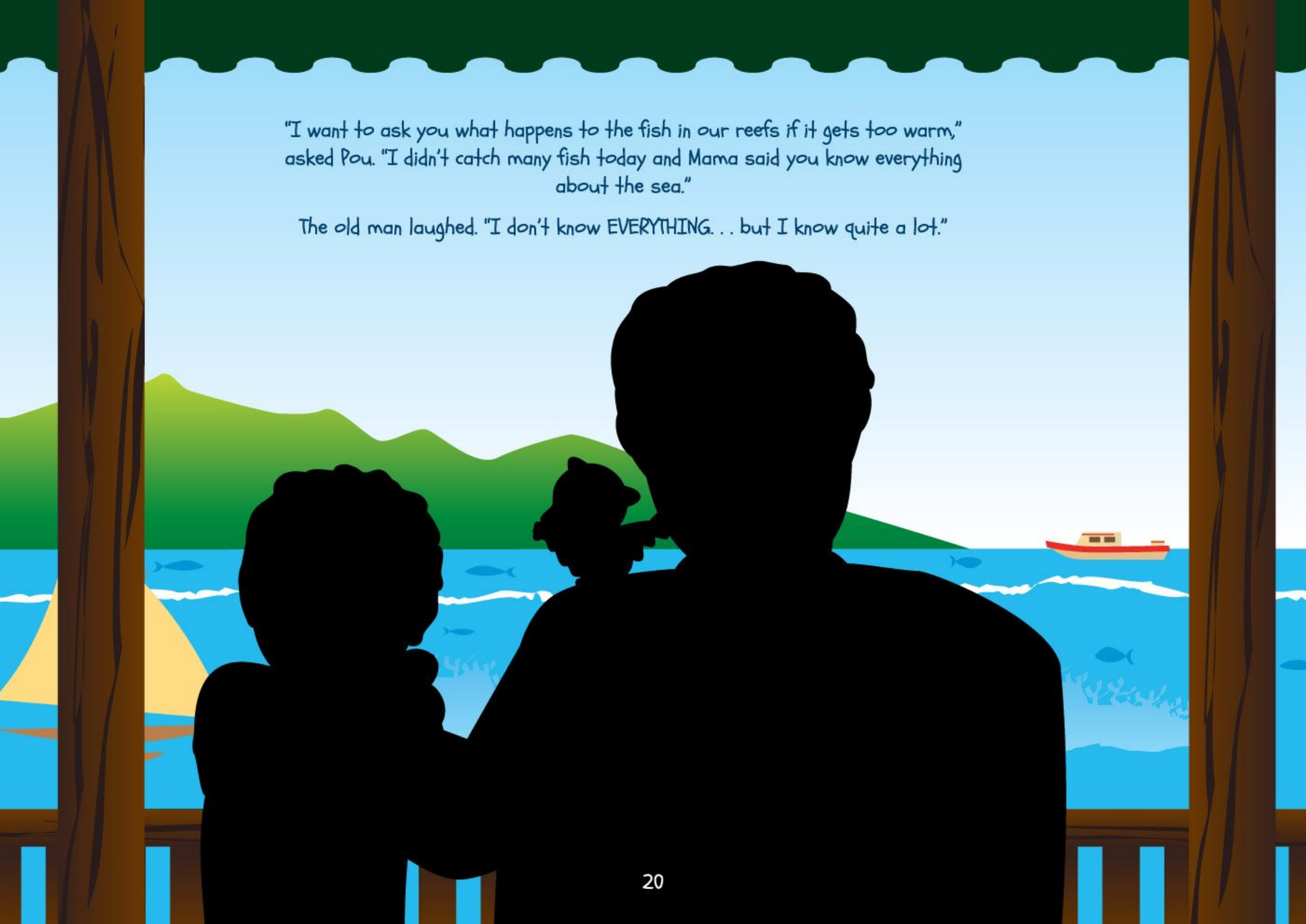
"Oh, Pou, you are a good boy. . . and who is this?" asked Papa Ropate, pointing to Miri. Pou introduced Miri and they sat next to Papa.



Iteni Times
Sports News
Iteni wins Pacific Cup
Iteni Times
Record High Temperatures recorded in Itenitown.

"I want to ask you what happens to the fish in our reefs if it gets too warm," asked Pou. "I didn't catch many fish today and Mama said you know everything about the sea."

The old man laughed. "I don't know EVERYTHING. . . but I know quite a lot."



"Fish like to live in an environment that is not too hot or too cold for them. So when their ocean home gets too hot or too cold they move to another place," he said.

"It's not like they can just put on a jacket if it gets too cold or sit under a fan if it gets too hot!" he added.

"Oh, poor fish! I hope the sea won't get too hot for them," said Miri.

"We also need to think of their reef homes. If the sea gets too warm, our beautiful coral reefs will die and the fish that live there will go somewhere else," warned Papa.

"Everyone on Iteni should take care of our reefs as well," Pou said.

"Exactly!" Papa said. "You'd better go now before it gets dark. Take this fish I caught. I know you and Ta like fish and this will be more that enough for you all."

Pou took the big fish. He knew his Mama and Ta would be pleased. "Thank you, Papa." Pou smiled as he hugged his grandfather. "We'll come and see you again soon. Take care of your glasses!"

That evening Pou and his parents ate the fish Papa had given him. Mama served it with the fresh vegetables Uncle Vili had given them and made a delicious pineapple pie as a special treat for Pou. "Yum," said Pou.

Pou's tips for reducing greenhouse gases

You can cut down on the use of fossil fuels by doing the following:

1 Walk or cycle instead of taking a car. Not only will you reduce greenhouse gases emitted from cars, but walking and cycling keep you fit and healthy and they are free!

2 Instead of riding alone in your car, try to take the bus or organise car pools with your friends where you all share a ride in one car. You will reduce the number of cars on the road.

3 At home, switch on only the lights that you need and turn off your TV and other electrical equipment at the power point when you are not using them.

4 Have your fridge in a cool spot away from the sun, the stove and the oven. This way your fridge does not use extra energy to keep cool.

5 When cooking, keep the lids on your pots and boil only as much water as you need in a kettle.

You can also reduce greenhouse gases by doing the following things:

1 Avoid cutting down forests and plant more trees.

2 Practise farming that does not use too much fertiliser.

Here are some questions on greenhouse gases.

You will find all the answers in the story!

1. Name the main greenhouse gases in the story.
2. What is the special property of greenhouse gases?
3. How are we humans releasing more carbon dioxide into the atmosphere?
4. What happens if we keep releasing more and more greenhouse gases into our atmosphere?

List here other ways you can reduce the release of greenhouse gases in your home, in your community and in your country:

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