

I am the Change in Climate Change

Alyssa M. Peleo-Alampay, Ph.D.
with Ang INK



This book belongs to:

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An Activity Book for Children

I am the CHANGE in Climate Change

Alyssa M. Peleo-Alampay, Ph.D.
with Ang Ilustrador ng Kabataan (Ang INK)





Climate Change.

Scientists have been studying and telling us about climate change for decades. World leaders now recognize the need to address the challenges that it poses.

The earth's temperature is rising. Snow caps are melting. Sea level is rising. Weather has become more extreme as different countries now experience stronger typhoons, more floods, droughts, and wildfires, harming hundreds of millions of people all over the world.

What exactly is climate change?

Why is it happening?

What are its effects?

And most importantly, what can we do?

What's the weather like today?

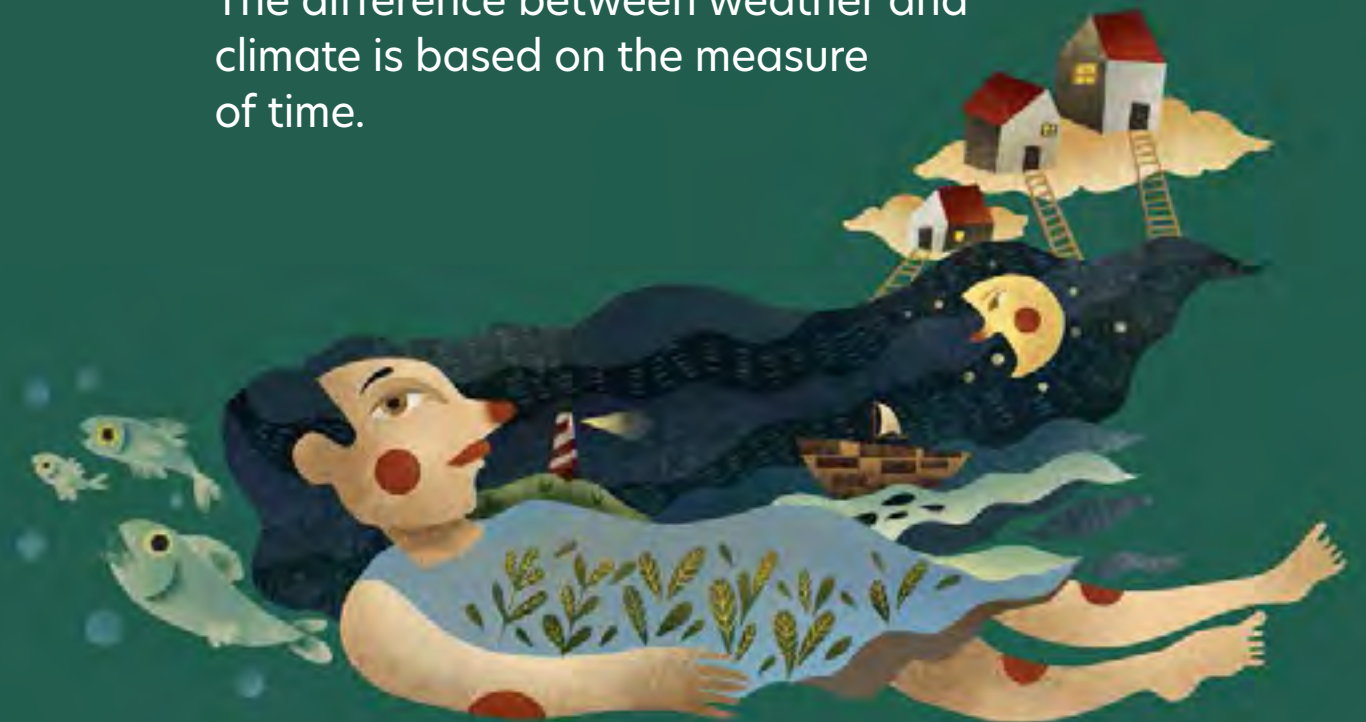
Draw what you see outside your window.



Weather vs Climate

Weather and climate are not the same things.

The difference between weather and climate is based on the measure of time.



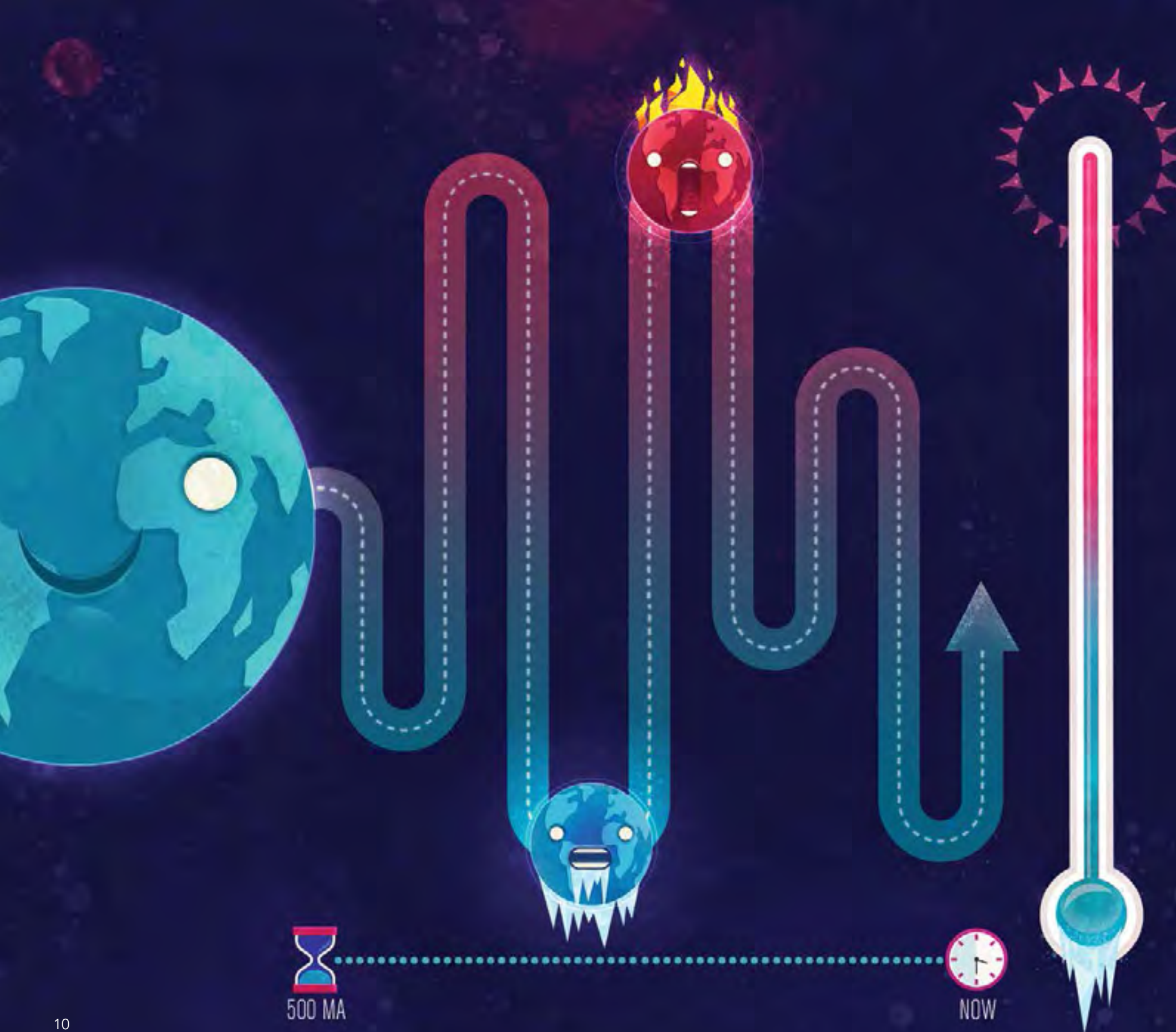


Weather changes all the time.

It is the minute-by-minute, day-to-day, observable changes in the atmosphere. Weather can change in a matter of hours.

**Climate is the average of
the weather in an area
over a long period of time.**
(About 30 years!)





Climate change is not a new thing.

Extreme climate changes have happened on earth since its beginnings billions of years ago.

The earth has, by turns, grown warm and cool, with each episode running from thousands to millions of years.

EXTREME COLD

Snowball Earth

About 700 million years ago, the Earth's surface—from North Pole to South Pole—was almost completely frozen and covered with ice! The ice-covered supercontinent Rodinia caused an increase in "albedo" or reflectivity of the surface. The high albedo surface of Rodinia reflected more of the sun's rays, causing temperatures on the surface of the earth to drop. This extreme glaciation event occurred in two stages within a 100-million-year period. Scientists are still looking into the extent and causes of this cold time in earth history.





EXTREME WARMTH **Greenhouse Earth**

During the Cretaceous Period, some 65 to 145 million years ago, a period of extreme warmth occurred. Caused by large-scale volcanism, no ice formed on the surface of the Earth—not even at the North and South Poles.

The warm climate was ideal for dinosaurs and allowed them to flourish during this period.

It was also during this time that Gondwanaland, the southern part of the supercontinent Pangea, began to break up and drift apart to form the continents and ocean basins we know today.

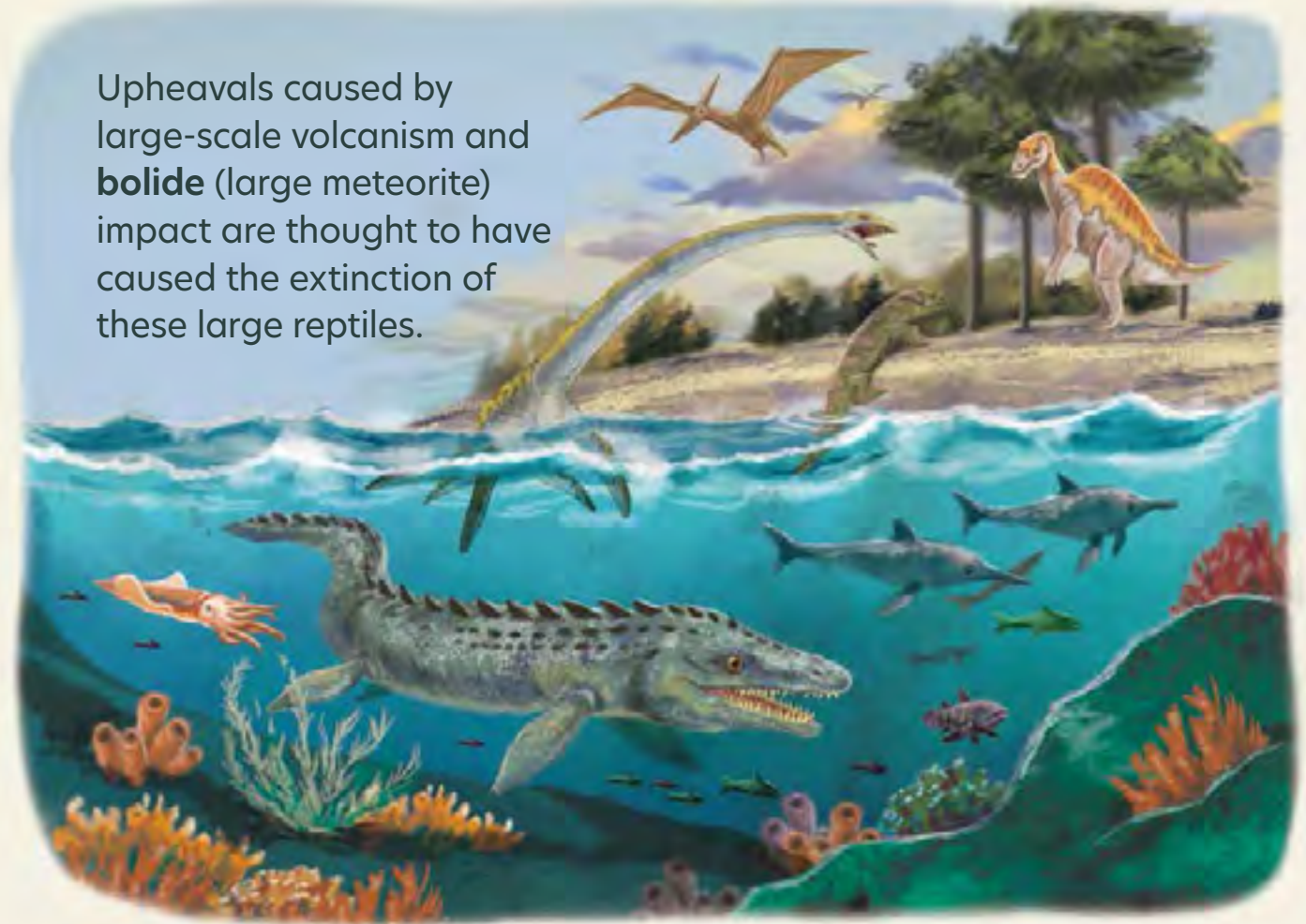
**Climate change events can cause mass extinctions.
But it can also lead to emergence of new forms of life.**

It is important to remember that climate change was critical in the evolution of life. After the extreme cold event of Snowball Earth, multicellular organisms appeared and thrived.

The warm episode that accompanied the Cretaceous Period set the stage for the emergence of dinosaurs, pterosaurs, and large marine reptiles.



Upheavals caused by large-scale volcanism and **bolide** (large meteorite) impact are thought to have caused the extinction of these large reptiles.



Their disappearance allowed mammals and, later, humans to emerge and flourish.



The rise and fall of civilizations are also linked to climate change.

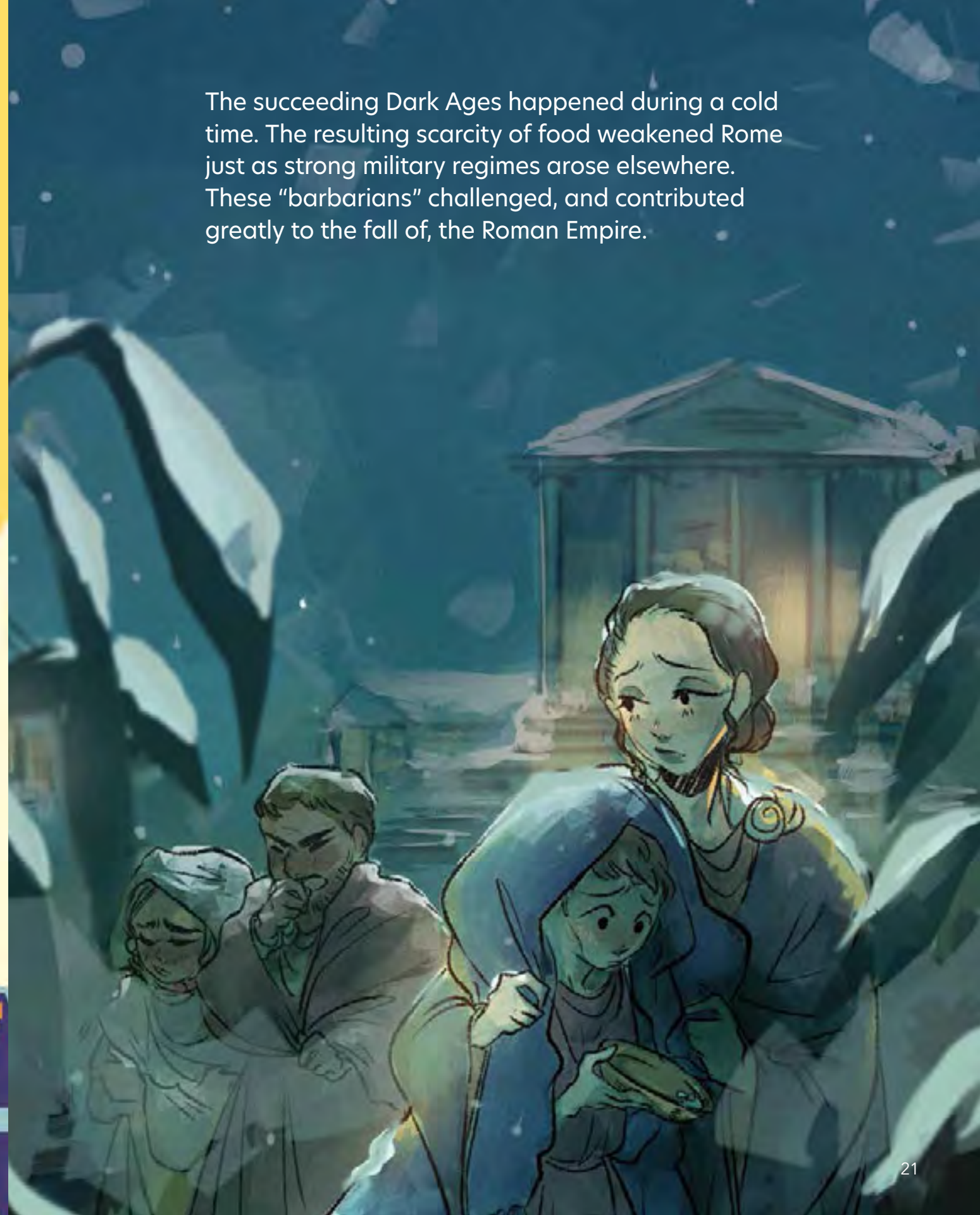
The Tigris, Euphrates, and Nile Rivers flowed during warm times in Earth's history. This made great strides in agriculture possible, and eventually led to the rise of the Egyptian and Mesopotamian empires.



Warm climate made the Earth conducive to human migration, which enabled the widespread expansion of the Roman Empire to Europe, Asia, Africa, and the Middle East.



The succeeding Dark Ages happened during a cold time. The resulting scarcity of food weakened Rome just as strong military regimes arose elsewhere. These “barbarians” challenged, and contributed greatly to the fall of, the Roman Empire.



**Today, global warming
is caused largely
by human activity.**

Human activity, starting with the Industrial Revolution and continuing to the present, is responsible for today's climate change.

The use of fossil fuels rose dramatically to respond to the needs of industry and everyday life, resulting in a massive increase in harmful emissions.

Let's color!

22

23

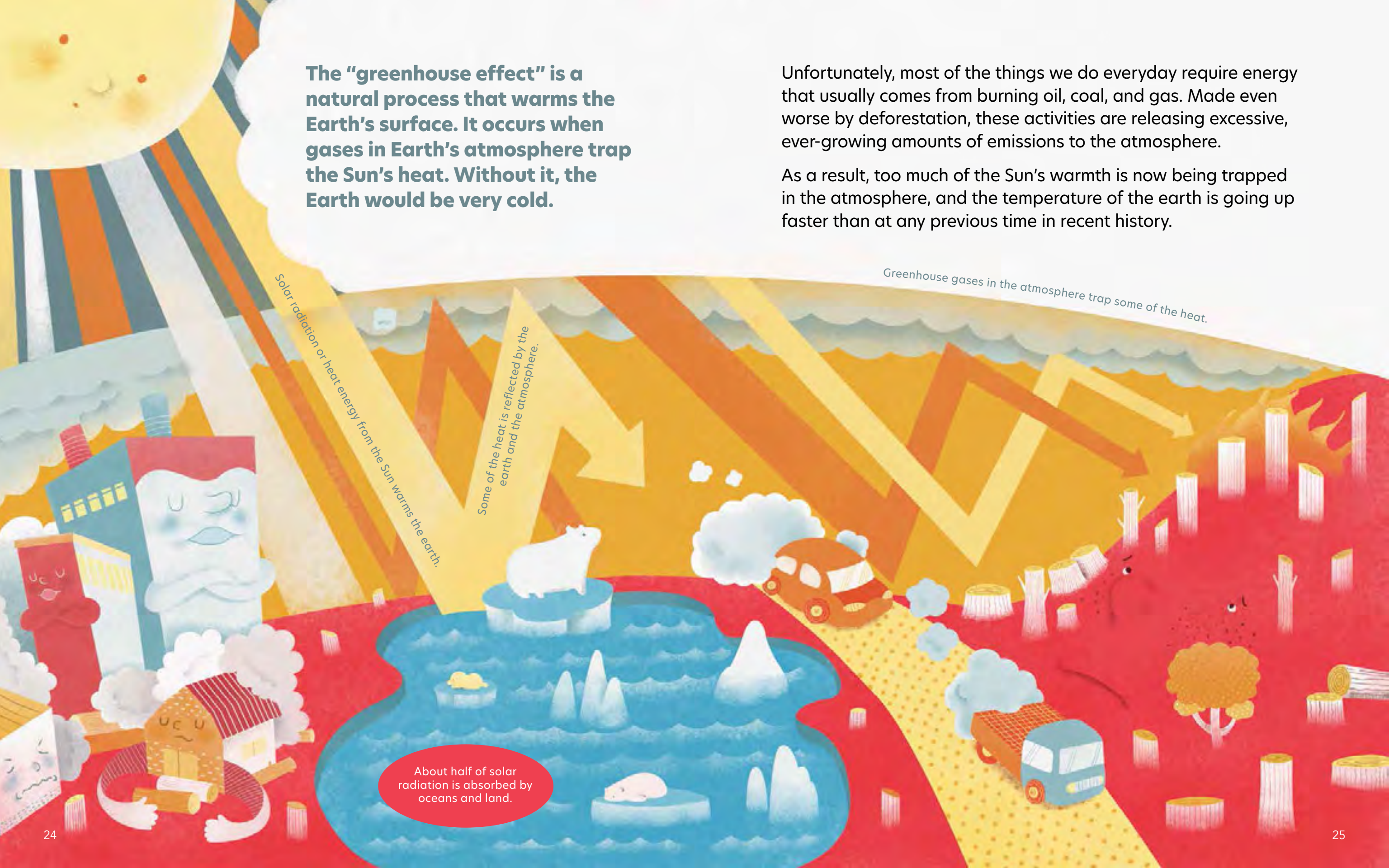
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Let's color!

The “greenhouse effect” is a natural process that warms the Earth’s surface. It occurs when gases in Earth’s atmosphere trap the Sun’s heat. Without it, the Earth would be very cold.

Unfortunately, most of the things we do everyday require energy that usually comes from burning oil, coal, and gas. Made even worse by deforestation, these activities are releasing excessive, ever-growing amounts of emissions to the atmosphere.

As a result, too much of the Sun’s warmth is now being trapped in the atmosphere, and the temperature of the earth is going up faster than at any previous time in recent history.



Changing the use of land—for example by clearing forests or destroying mangroves and grasslands in order to build residential, business, or leisure areas—radically diminishes plant cover that is vital to the absorption of carbon dioxide in the atmosphere.





Even the seemingly harmless activity of raising livestock to feed a growing population has a great impact on climate. Methane, a by-product of animal digestion, is a powerful greenhouse gas that traps heat far more effectively than carbon dioxide.

Imagine almost one billion cows in the world releasing methane each time they belch or let out phoots!





Word Search!

Find the following products that use fossil fuels.
Do you know that all of these use fossil fuels?

Artificial limbs	Clothes	Gasoline	Paint	Refrigerator
Aspirin	Crayons	Helmets	Pen	Surf boards
Basketball	Chewing gum	Lipstick	Parachutes	Shampoo
Bread	Dentures	Motor oil	Pencil	Tires
Candle	Diesel fuel	Nail polish		

N A R T I F I C I A L L I M B S R

C L O T H E S D E N T U R E S W P

J A R A O P P A R A C H U T E S E

S H E L M E T S J I M I N C A T D

D A F I N N I P U L O N E W G M A

R B R P O C R I N P C A T C C O E

A A I S O I E R G O D O A L R T R

O S G T J L S I K L I S R O A O B

B K E I M W U N O I A P M A Y R C

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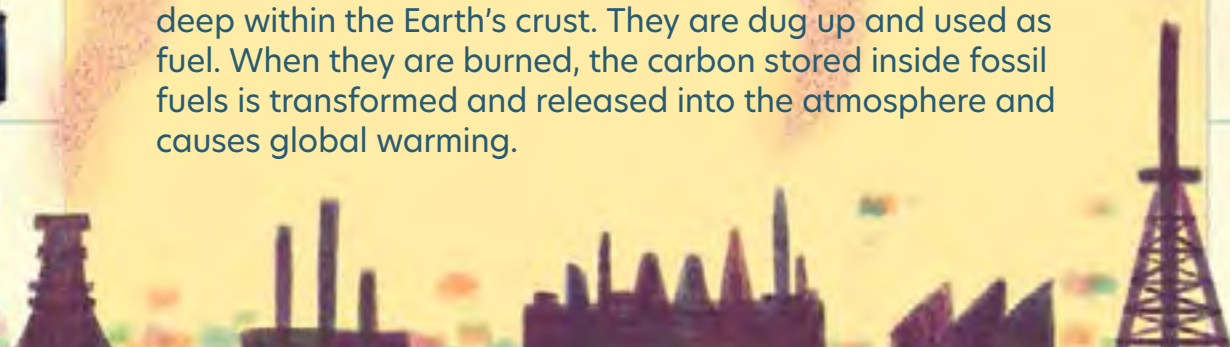
S A O U S T D U T E R T E N A A I

I L R A L E U F L E S E I D X Y J

K L C H E W I N G G U M N L O L D

C P E N E J G A S O L I N E W V K

Fossil fuels such as oil, coal, and gas are formed and stored deep within the Earth's crust. They are dug up and used as fuel. When they are burned, the carbon stored inside fossil fuels is transformed and released into the atmosphere and causes global warming.



My Eco-friendly Beach Trip

BONUS!
Look for renewable energy sources & clean fuel.

START!

FIND A WAY TO THE BEACH!
Avoid using fossil fuels and other sources of greenhouse gases.

CH₄
CO₂
LANDFILL GAS from decomposing organic wastes is mostly methane and carbon dioxide.

landfill (garbage dump)

CO₂

MANUFACTURING & INDUSTRY PROCESSES use and burn fossil fuels for energy. Processing requires chemical reactions in the production of goods from raw materials.

factory

HFC
O₃
AIR POLLUTION includes smog from cities, homes, and other human activities, plus transportation exhaust.

CH₄

CO₂

N₂O

CO₂
COAL is a fossil fuel burned to provide heat, energy, fuel, and electricity for homes, cities, industries, and transportation —releasing tons of carbon dioxide into the atmosphere.

coal mine

wind turbines

hydroelectric dam

transmission towers

flooding

CO₂
N₂O

SHIPPING releases carbon dioxide and nitrous oxide.

END!

Good job!
You helped save Mother Earth!

electric vehicle

taxi

recharge

charging station

bus

gas station

CH₄
cow belching (burps)

cow flatulence (farts)

N₂O
NITROUS OXIDE from agricultural soil, fertilizers, and livestock manure

CH₄
METHANE from agriculture, livestock, and waste management

Effects of climate change today

Spot 13 differences!



Extreme typhoons



Climate change will drive humans to move to higher ground.

Constant flooding due to increased sea levels will render coastal cities and towns uninhabitable.



Global warming is making megacities less disaster-resilient.

For example, increased rainfall and flooding, coupled with unchecked population density, create more breeding sites for mosquitos, and make it easier for vector-borne diseases like dengue and malaria to spread.



Make an Eco-friendly Mosquito Trap!



Warmer temperatures are putting people, particularly the elderly and children, at increased risk for diseases like strokes and gastroenteritis.

Failing ecosystems threaten our marine food supply.

Coral bleaching is occurring in reefs around the planet because of rising ocean temperatures. Unless more drastic steps are taken to help mitigate environmental stress, the damage to the coral ecosystems will become irreversible.



HEEELP!
Mr. Ocean's corals
are bleaching!

FIND 32 FISHES that live in the coral reef.
Then color the corals so they will be lively again.



- SURGEONFISH
- CLOWNFISH
- BUTTERFLY FISH
- ROYAL BLUE TANG FISH
- BARCHEEK CORAL TROUT
- MOORISH IDOL
- PARROT FISH
- BEAKED CORALFISH



Rising temperatures can cause droughts and increase the likelihood of brushfires. These can render large tracts of land inhospitable to plants and animals, including humans.



Global warming is already here and it will take hundreds, maybe even thousands, of years to stop or reverse the change.

No. We can still take action and change our ways. By being aware of the ways that we can potentially harm the environment, we can take steps and help each other to adapt and to slow down the damaging effects of climate change.

What can we do?!

We can start in the place we know best—our homes.

you!

FINISH



12

Used a broom instead of a vacuum cleaner.
Move ahead 2 steps.

11

10

Left the faucet running while brushing teeth.
Go back 2 steps.

9

8

21

7

Opened a window instead of an electric fan.
Move ahead 2 steps.

20

26

27

28

Took shorter showers.
Move ahead 4 steps.

19

18

Defrosted freezer.
Move ahead 3 steps.

29

17

30

16

15

35

34

33

Cultivated plants in the garden.
Move ahead 3 steps.

32

31

HOW TO PLAY!

Get a small stone, decorate it, and use it as your token. Place it on "WHAT CAN WE DO?!".
You will also need a die.
Throw the die and move your token along the path. Follow the instructions as you go along.



13

14

Reduce. Reuse. Recycle.

Which items can you reduce, reuse, or recycle?



Use reusable bags. Buy food items with little or no packaging.
Say NO to bottled water and bring your own reusable bottle.

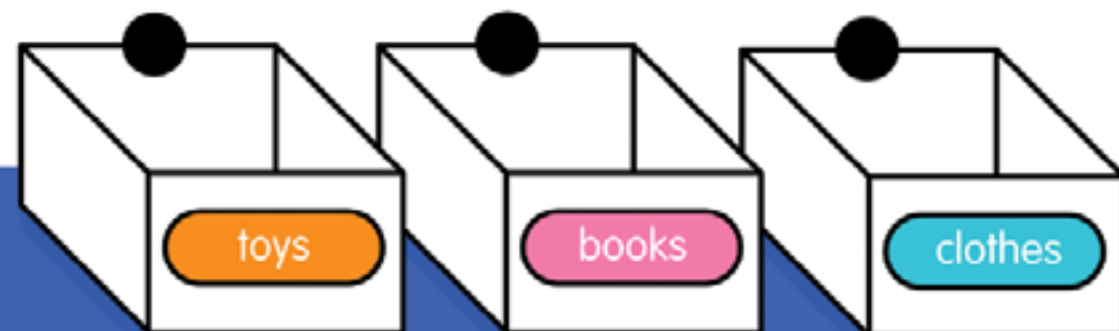
Share games, books, clothes, and toys with other kids!
Sort the items below by connecting the dots. Color them, too!



Buy less.

Share more.

Swap more.



Use less plastic.

Avoid plastic containers.

Say NO to disposable straws.

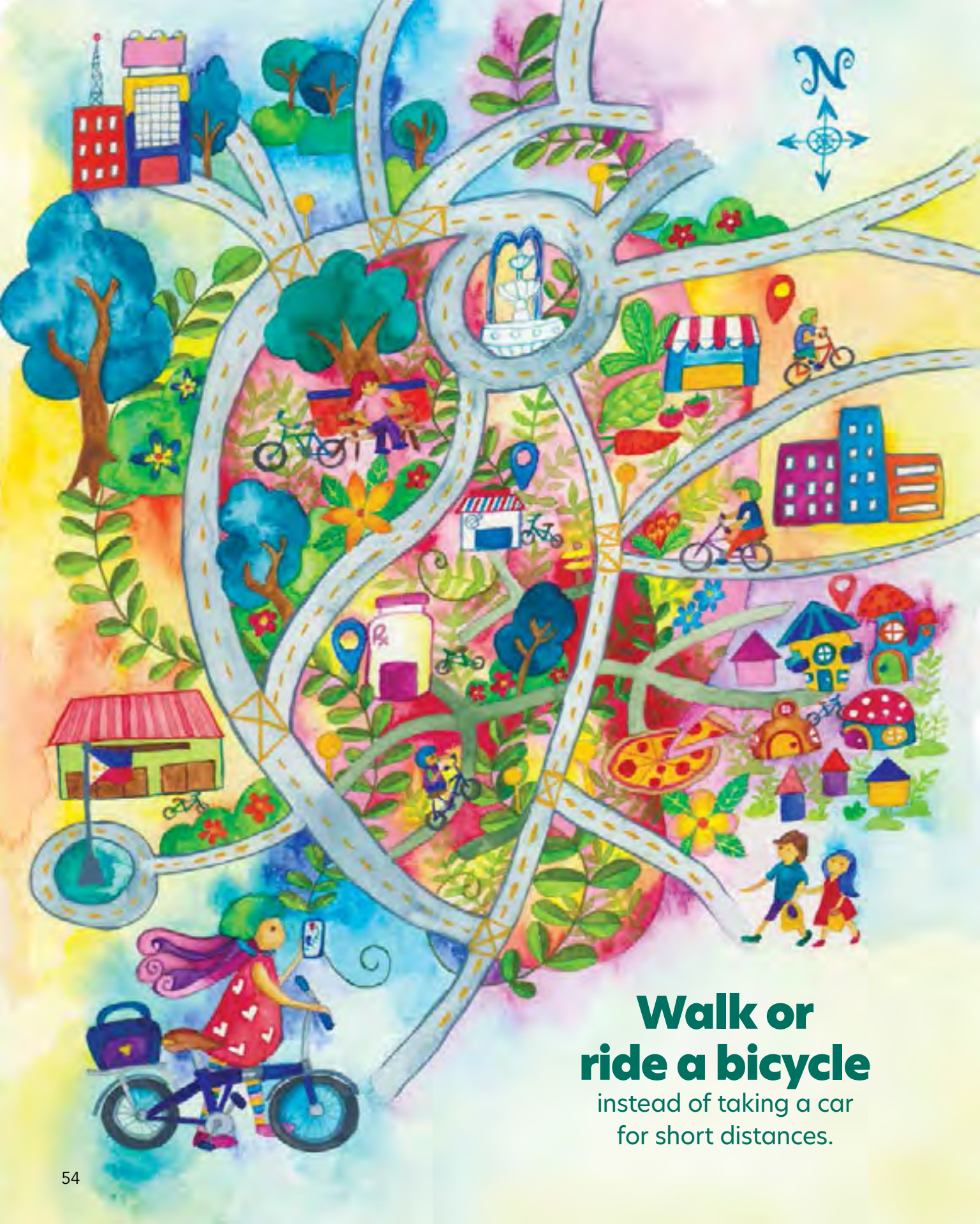
Say NO to plastic spoons & forks.



**Grow and tend
a garden.**



Complete the picture.
Add flowers to the plants.



**Walk or
ride a bicycle**

instead of taking a car
for short distances.



Use public transport.

Support local suppliers.

Buying from community growers and producers of food products and consumer goods will cut travel between destinations and reduce need for fuel both in sourcing and transporting goods.



Conserve energy.



Use natural light.



Use LED lights.



Live small.

You need less resources
to maintain a smaller
home or living space.

Draw one continuous line from start to finish, passing through all the eco-friendly steps!



Use natural light.



Walk!

Plant fruits & veggies.



Ask a grownup to unplug unused appliances.

Turn off unused lights.



Recycle

Make your own toys!



Use both sides of the paper.



Reuse

Hand-me-downs!



Finish your food.



Reduce waste

Bring your own bag when shopping.



Bring your own water.



Ride your bike!



You did it!



What we do today has a huge impact. It affects all of us and all the other living beings that share our planet. It will determine whether we will leave a better world for the future.



**Let's all be kind to
Mother Earth!**

Answers!

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PAGE 41

PAGES 32-33



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This book was a product
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CANVAS, a nonprofit organization, believes that Philippine art can create possibilities, open conversations, and inspire meaningful change. Since 2005, CANVAS has been working with the creative community to promote children’s literacy, explore national identity, and broaden public awareness of Philippine art, culture, and the environment.

www.lookingforjuan.com



Ang INK is the first and only organization of children’s book illustrators in the Philippines. Founded in 1991, Ang INK’s primary objective is to encourage the creation, proliferation, and appreciation of illustrations for children. Its body of work represents an extensively diverse portfolio of quality and award-winning illustrations for children in the nation today.

www.ang-ink.org

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She spearheaded the creation of the NIGS-UPGAA Geology Museum at UP Diliman which showcases Earth science exhibits and interactive displays. The Museum complements the teaching and public service mandates of the University and has been visited by students of all ages.

Dr. Peleo-Alampay was a Balik Scientist Awardee of the Department of Science and Technology and was awarded as one of The Nation’s Outstanding Women in the Nation’s Service (TOWNS) in 2007. She was recognized as Outstanding Professional of the Year in Geology by the Professional Regulations Commission in 2020.

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What is climate change?
Why is it happening? What are its effects?
And most importantly, what can we do?



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A child with art and stories can change the world.



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UBS

