

## THE GAME: THE SEA IS RISING



All players start on the ice floe. It is getting warmer, and the ice is melting! The goal is to get to the Smurf village as quickly as possible to save it from the rising sea.

If you land on an 'action' field on the way, it may either slow you down (red hand), or allow you to move along quicker (green hand).

### ACTION FIELDS



Helping hand



Obstacle

### COLLABORATION VERSIONS

If we all work together, we can diminish the impact of climate change!

The CO<sub>2</sub> surplus in the atmosphere and in the ocean is responsible for climate change. We must therefore remove it, and everybody must do their bit.



### CO<sub>2</sub> FIELD



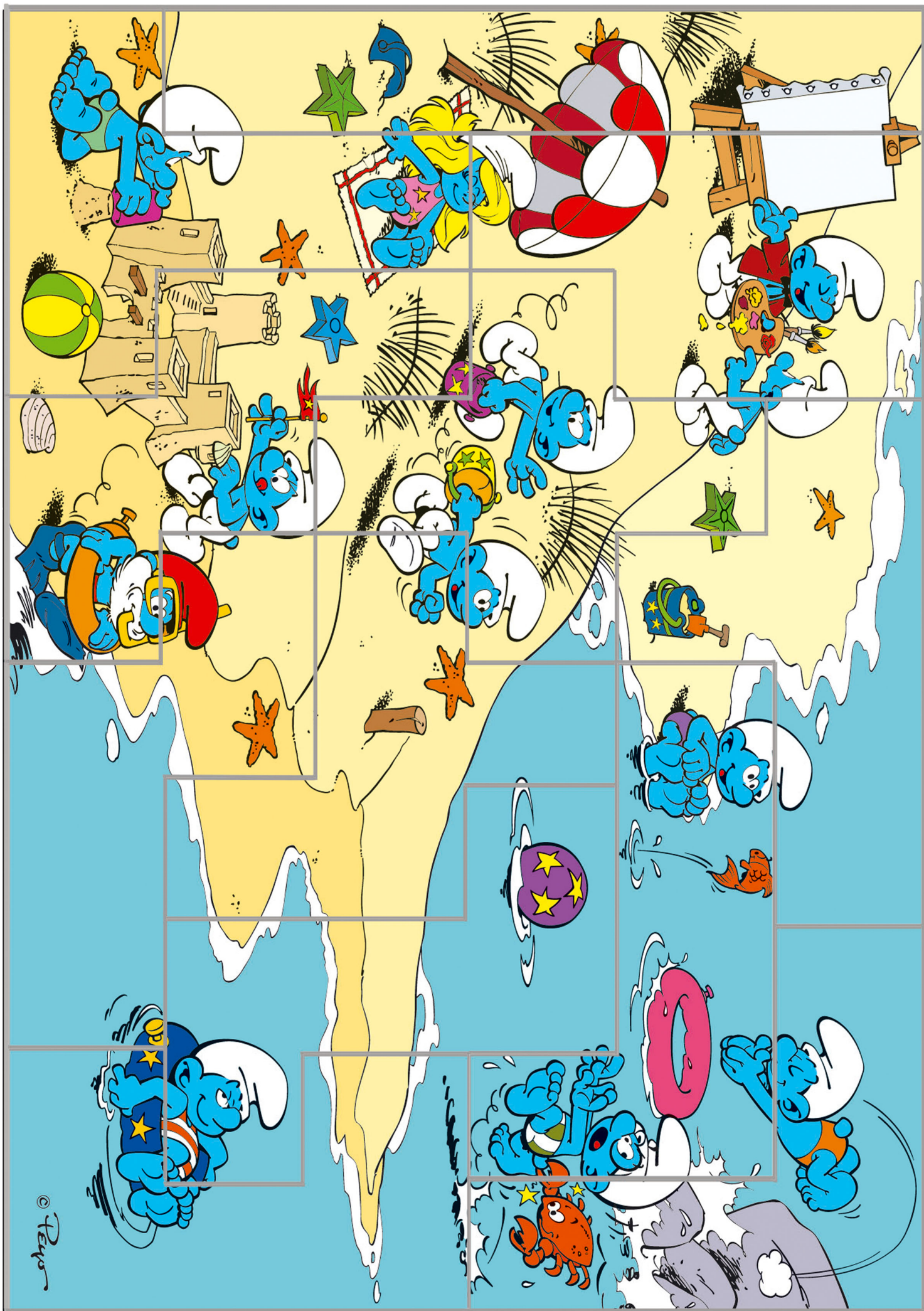
### COLLABORATION VERSION WITHOUT QUIZ

The pieces of the puzzle are distributed on air and water with the CO<sub>2</sub> side upwards. Every time a player lands on a CO<sub>2</sub> field (coughing Papa Smurf) they can take a puzzle piece from either the water or the air. Turn the pieces around to build the Smurf's beach, which is printed on the reverse. The puzzle must be completed before all players finish the round. Otherwise, everyone loses!

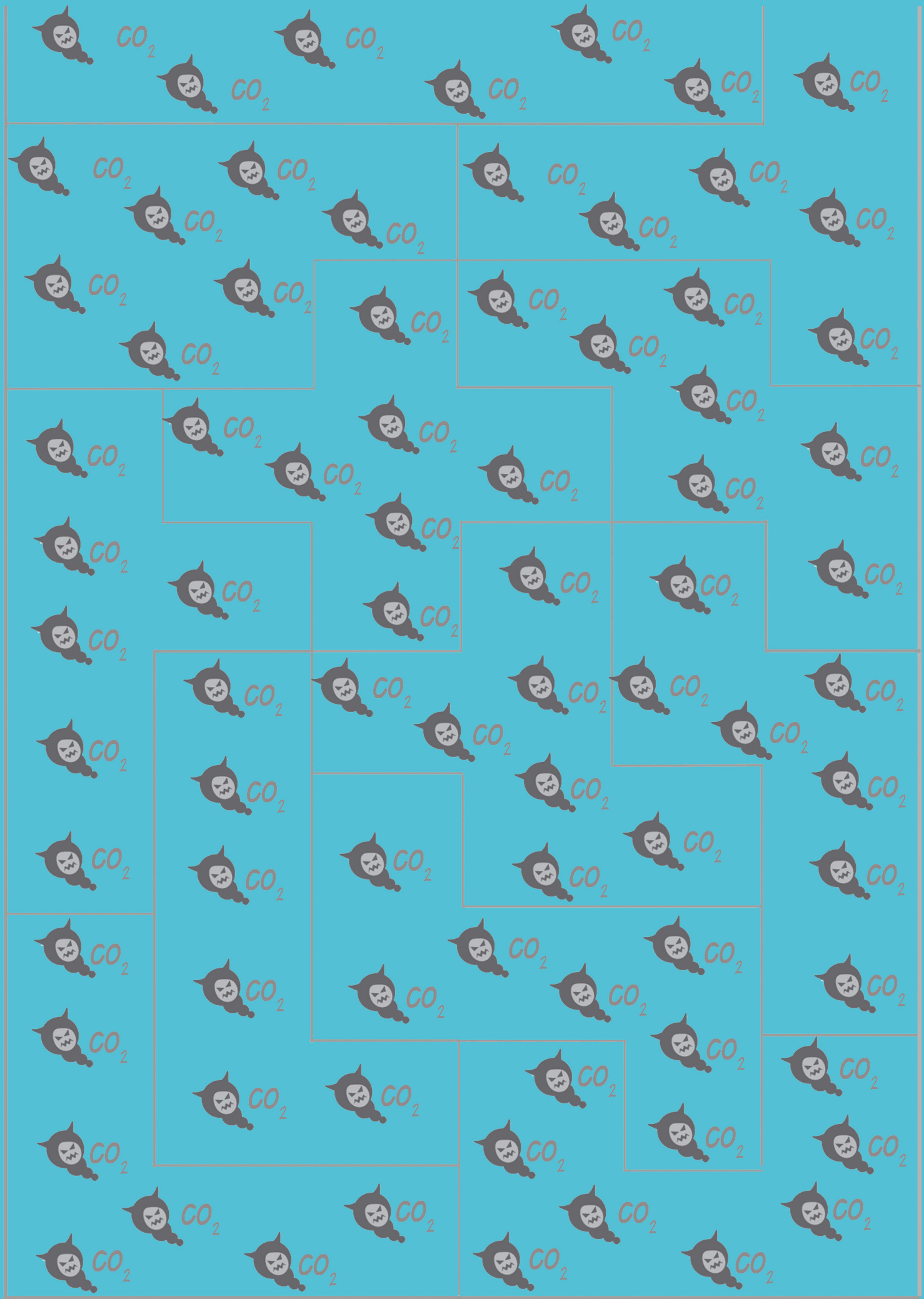
### COLLABORATION VERSION WITH QUIZ

You have to answer a question before you are allowed to take away a CO<sub>2</sub> piece from the board. If the player whose turn it is answers the question correctly, they can take a puzzle piece. If not, the CO<sub>2</sub> remains in the game. The answers to the questions for Level 1 can be found in the 'Let's Smurf the Climate' booklet. Level 2 requires players to have a general understanding of climate issues.











## Quiz "The Sea Is Rising"

Easy Level

- ⇒ Print the Quiz
- ⇒ Stick it on a piece of cardboard.
- ⇒ Cut out all the different cards



**When ocean water evaporates, it:**

- A. Disappears
- B. Escapes into space
- C. **Forms clouds**

*Under the effect of heat, sea water evaporates. The water vapour rises into the atmosphere where it forms clouds.*



**How do ocean currents get warmer?**

- A. **Through the sun**
- B. Through the wind
- C. Through the rain

*Sea water heats up faster in areas around the equator because this is where the sun's rays are the strongest.*



**Without the Greenhouse Effect, what temperature would it be on Earth?**

- A. **-18°C**
- B. 0°C
- C. 100°C

*Greenhouse gases trap the heat from the Sun in the Earth's atmosphere. Without them, all the heat would escape into space.*



**What is weather?**

- A. The same as climate
- B. **The day-to-day meteorological conditions in a particular place**
- C. The meteorological conditions everywhere on Earth

*By observing wind direction and speed, cloud cover, precipitation, and temperature.*



**Why are global temperatures rising?**

- A. Because the Sun is getting bigger
- B. Because the Earth is getting closer to the Sun
- C. **Because of gases emitted by human activities**

*Human activities produce greenhouse gases which trap heat in the Earth's atmosphere.*



**Which is the biggest greenhouse gas emitted by human activity?**

- A. Oxygen (O<sub>2</sub>)
- B. Carbon Dioxide (CO<sub>2</sub>)
- C. Methane (CH<sub>4</sub>)

*Through the burning of oil, gas, and coal, human activities emit large quantities of CO<sub>2</sub> into the atmosphere.*



**What is the name of the ocean current that flows along the Western European coast?**

- A. Sub-European Current
- B. **Gulf Stream**
- C. North-western Atlantic Current

*The Gulf Stream is a warm ocean current that crosses the North Atlantic Ocean from west to east.*



**How do trees contribute to the slowing of global warming?**

- A. The shadow they provide protects us from the heat
- B. **They capture CO<sub>2</sub>**
- C. The save water

*Trees extract CO<sub>2</sub> from the air. Put simply, they inspire CO<sub>2</sub> and expire O<sub>2</sub> (oxygen).*



**What happens when the ice caps melt?**

- A. Sea levels decrease
- B. There will be no more cold water
- C. **Sea levels rise**

*Global ice melt is responsible for 50% of sea level rise. The other half is due to the expansion of the sea water as it gets warmer.*







### What will be the impacts from sea level rise?

- A. It will not rise enough to affect humans
- B. **Islands and coastal towns are at risk of disappearing**
- C. There will be no more land left

*Certain insular States, particularly in the Pacific, are already at risk of disappearing. This will most likely lead to increasing numbers of climate refugees*



### To slow global warming, we must:

- A. **Act now and reduce our use of fossil fuels**
- B. Do nothing
- C. Leave it to the scientists

*Everyone has a share in the responsibility and must contribute to the reduction of greenhouse gas emissions by reducing their individual*



### To reduce your emissions from transport, it is best to use:

- A. The car
- B. **The bicycle**
- C. The train

*Bicycles do not burn fossil fuels and thus do not emit greenhouse gases. More and more towns are introducing bike share systems.*



### What do you do when you feel cold in the winter?

- A. You turn up the heating
- B. **You put on a warm jumper**
- C. You go on holiday to a tropical island

*Every time you turn up the heating by one degree, you consume 7% more energy.*



### What is renewable energy?

- A. Power derived from a source of energy that can be recycled, like a battery.
- B. **Power derived from a source of natural energy**
- C. Power derived from a source of energy that has

*Renewable energy is derived from inexhaustible natural sources such as the oceans, wind, or solar.*



### To reduce CO2 emissions from transport, you should:

- A. Buy your vegetables at the supermarket
- B. Stop eating vegetables
- C. **Buy local produce**

*By choosing to buy local produce, you reduce the need for long-distance haulage and excessive packaging.*



### What is the advantage of renewable energies?

- A. They only produce small amounts of CO<sub>2</sub>
- B. They are inexhaustible
- C. **Both are true: They are inexhaustible and they produce little CO<sub>2</sub>**

*Unlike fossil fuels, the Sun, wind and oceans are inexhaustible energy sources and produce little CO<sub>2</sub>.*



### How many major climates are there on Earth?

- A. **3**
- B. 5
- C. 7

*There are three major climates: polar, temperate, and tropical. Within those large climate zones, there are a number of more specific climates, like for example the continental climate, the oceanic climate, and the Mediter-*



### Which climate zone does Europe belong to?

- A. Polar climate
- B. **Temperate climate**
- C. Hot climate

*The temperate climate is characterised by temperature variations throughout the year, which create the four seasons.*









### Why are the oceans essential for our breathing?

- A. They supply oxygen (O<sub>2</sub>)
- B. They supply iodine
- C. They supply carbon dioxide (CO<sub>2</sub>)

*We owe every second breath we take to the oceans.*



### Why is the Sun important for the climate?

- A. It provides light
- B. It heats up the Earth
- C. It plays an essential role for the existence of life on Earth

*The Sun provides heat for the Earth. The position and angle of its rays determine our climates.*



### Where does the notion 'greenhouse effect' come from?

- A. Because green houses are warmer than white ones
- B. Because there are lots of plants in greenhouses
- C. **Because horticultural greenhouses trap warm air to foster plant growth**

*The greenhouse effect traps warm air in the Earth's atmosphere in the same way the glass walls of a horticultural greenhouse trap warm air to encourage plant growth.*



### What is a marine current?

- A. It is like a great river within the ocean
- B. It is a source of renewable energy
- C. It is a fishing marathon

*Ocean currents are great rivers that traverse all of the Earth's oceans.*



### What are the characteristics of the polar climate?

- A. It is very cold all year round
- B. Temperatures vary throughout the year
- C. It is very hot all year round

*The Polar Regions receive little radiation from the sun. In the winter, the sun does not rise at all for several long months. Minimal temperatures are extremely low.*



### What are the characteristics of the hot climate?

- A. It is very cold all year round
- B. Temperatures vary strongly throughout the year
- C. **It is very hot all year round**

*In hot regions, the sun is always high in the sky and temperatures are raised all year round.*



### The oceans have an influence on:

- A. The size of the fish
- B. **The climates**
- C. The size of the mountains

*The ocean is a thermal buffer. It stores heat from the Sun and redistributes it around the Earth, thus influencing the climate.*



### What are the likely impacts from global warming on animals and plants?

- A. **Some of them will be come extinct**
- B. It is not going to affect them
- C. They will change

*Animals and plants will be forced to adapt to climate change. Those species that are unable to adapt are in danger of becoming extinct.*



### What can the oceans provide to facilitate our daily tasks?

- A. Salt
- B. Fish
- C. **Energy**

*The ocean is a huge source of renewable energy.*









## Quiz « The Sea is Rising »

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Difficult level



**How many oceans are there on Earth?**

- A. 3
- B. 5
- C. 7

*The Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Antarctic Ocean, and the Arctic Ocean.*



**How much of the Earth's surface is covered by the oceans?**

- A. 39 %
- B. 53%
- C. **71 %**

*The oceans cover 71% of the planet's surface. This is why the Earth is also known as the 'Blue Planet'.*



**What is the average global temperature on Earth?**

- A. **15°C**
- B. 25°C
- C. 35°C

*Without greenhouse gases, and especially water vapour, the average global temperature would be – 18°C .*



**The greenhouse effect is:**

- A. **Natural**
- B. Chemical
- C. A human creation

*The greenhouse effect has always been around. It is a natural phenomenon. However, it has been intensifying in recent decades due to human activities.*



**Clouds are made from:**

- A. Gas and electricity
- B. **Water droplets and ice crystals**
- C. Dust displaced by the wind

*Clouds form due to evaporation from the world's surface water. Once it has risen into the atmosphere, the water vapour condensates into droplets or tiny ice crystals that form clouds.*



**What is the percentage of oxygen in the Earth's atmosphere?**

- A. 5%
- B. **21%**
- C. 81%

*Oxygen makes up 21% of the atmosphere. It is only a relatively small percentage, but this is what makes life on Earth possible.*



**How long does it take for a water droplet to complete the entire 'ocean conveyor belt'?**

- A. Between 10 and 50 years
- B. Between 100 and 200 years
- C. **Between 500 and 1000 years**

*Most ocean currents are very slow. This allows them to store large quantities of heat: 1,000 times more than the atmosphere.*



**Replacing a conventional light bulb with an energy-saving light bulb means:**

- A. **You use five times less energy**
- B. You get more light
- C. You get a 'warmer' light

*Energy-saving light bulbs use five times less energy and live up to ten times longer than conventional light bulbs.*



**The sea floor is:**

- A. Flat
- B. **Made up of mountains, plains, crevices, etc.**
- C. Made of sand

*Some areas of the sea floor are mountainous, and some crevices are so deep that you could fit Mount Everest into them (8,848m).*









**Where does the salt in the ocean come from?**

- A. From volcanic eruptions
- B. Rainwater dissolves salt from rocks and soils**
- C. From meteorites

*Rainwater washes away salts and minerals that naturally occur in rocks and soils. The water then flows into mountain streams and rivers, and eventually into the ocean*



**How many different forms can water take on Earth?**

- A. 3**
- B. 4
- C. 5

⇒ Liquid  
⇒ Gas (water vapour)  
⇒ Solid (ice, snow)



**The tides are caused by:**

- A. The Earth's rotation
- B. The gravitational pull of the Sun and Moon**
- C. The waves

*The water on Earth is pulled towards the Moon and the Sun due to their gravitational forces. Depending on their position, they can cause more or less strong tides.*



**In which climate zone can a night last for up to six months?**

- A. In the Polar climate**
- B. In the temperate climate
- C. In the hot climate

*The Polar Regions receive little sunlight. In the winter, the sun does not rise at all for several long months.*



**What is the 'ocean conveyor belt'?**

- A. L'ensemble des océans
- B. L'ensemble des courants marins**
- C. L'ensemble des espèces marines

*The great ocean currents ('thermohaline circulation') traverse all of the Earth's oceans.*



**What are the consequences of the melting of Arctic ice on Polar Bears?**

- A. They can hunt more easily
- B. They become more vulnerable to their natural predators
- C. It represents the disappearance of their habitat**

*Polar Bears need the Arctic ice pack to hunt and reproduce. Global warming is causing the ice to melt, thus destroying their habi-*



**If the water warms, how will the fish react?**

- A. They will enjoy the warmer water
- B. They will be able to find more food
- C. They will migrate north into colder waters**

*Most of them will follow their food, which is more abundant in colder waters.*



**What will happen to the jellyfish when the water gets warmer?**

- A. They will disappear
- B. Their numbers will increase**
- C. They will change

*Warmer water will encourage the proliferation of jellyfish. This is likely to have repercussions on the food chain.*



**To save energy when you read a book, you:**

- A. Turn on all the lights in the room to see better
- B. Use a reading lamp
- C. Take advantage of daylight**

*Natural light is free and can be used in abundance.*







**How will humans have to adapt to rising sea levels?**

- A. They will have to withdraw from the coasts and move further inland
- B. They must build higher sea walls
- C. There is no need for adaptation

*In some places, rising sea levels will have such an impact that withdrawal from the coasts will become inevitable. Sea walls will only postpone the problem.*



**When you grow out of your clothes, you:**

- A. Throw them away
- B. **Donate them to charity**
- C. Put them in a box in the attic

*Each stage in the clothes manufacturing process uses energy and emits greenhouse gases. To limit emissions, we should extend the lifespan of consumer items.*



**Whose responsibility is it to lower emissions from transport?**

- A. Adults
- B. Politicians
- C. **Everyone at all levels has to make an effort.**

*Transport is responsible for over a third of global CO<sub>2</sub> emissions. Everyone can help reduce emissions by choosing to walk, use the bike or public transport, and by limiting air travel. Shop locally if possible.*



**What is a hydrokinetic turbine?**

- A. **A turbine that produces energy from ocean currents**
- B. A turbine that produces energy from wind
- C. A turbine that produces energy from rain

*Underwater turbines use the force of ocean currents to generate electricity.*



**In larger cities, the highest degree of air pollution is:**

- A. **Inside a vehicle**
- B. Affecting pedestrians
- C. Inside buildings

*The air inside vehicles is less frequently renewed, so pollutants can accumulate. It is a better idea to take the bike!*



**What is a bio fuel?**

- A. A type of fuel made from organic produce
- B. A type of fat-free fuel
- C. **A type of fuel made from plants**

*Bio fuel, or agro fuel, is made from beetroot, sugar cane, rapeseed oil, or organic waste.*



**How can we all help reduce CO<sub>2</sub> emissions?**

- A. By doing nothing
- B. **By changing our consumption habits**
- C. By returning to a life in the wilderness

*We can reduce greenhouse gas emissions considerably just by limiting our every-day consumption.*



**Through photosynthesis, plants:**

- A. Absorb oxygen and release carbon dioxide
- B. **Absorb carbon dioxide and release oxygen**
- C. Absorb water and release oxygen

*Plants represent an important carbon sink. The process of photosynthesis transforms solar energy into chemical energy.*



**What is an 'invasive species'?**

- A. Alien invaders
- B. A fish that impales its prey
- C. **A species that colonises a new habitat**

*These species, introduced into new surroundings different from their natural habitat, adapt and proliferate to the detriment of the indigenous species.*





