



Topic 2

Resources & Climate Change

World Sailing Sustainability
Education Programme

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Welcome to the World Sailing Sustainability Education Programme!

World Sailing started in 1907 in Paris and is the world governing body for the sport of sailing. The organisation promotes sailing internationally, manages the sailing at the Olympics and Paralympics, develops the racing rules of sailing, and supports sailors from all over the world.

World Sailing is formed of national authorities in 145 countries as well as 115 classes of boat. World Sailing wants its sailors to share their love of sailing, while working together to protect the waters of the world. Sailing is part of a global movement to create change and positive impact, and you can be a part of this through your actions, on and off the water.

To help sailors do this, there is a plan, called World Sailing's Sustainability Agenda 2030. This plan describes changes within sailing that will help achieve the United Nations Sustainable Development Goals and maximise the positive effect that sailors can have on the environment.

What are the Sustainable Development Goals?

The United Nations Sustainable Development Goals were published in 2015 to end extreme poverty, fight inequality and injustice and combat climate change by 2030. There are 17 goals that 193 countries have committed to. In Topic 2: Resources & Climate Change, you will work with the following goals:

You can access World Sailing's Sustainability Agenda 2030 at the following link: bit.ly/2sjGrKZ



World Sailing's Sustainability Agenda 2030 is aligned with the 5 focus areas of the IOC's Sustainability Strategy



Infrastructure and natural sites



Sourcing and resource management



Workforce



Mobility



Climate

Topics

In Topic 2, you will be introduced to:

- **Climate change and how it affects the ocean and us, as sailors**
- **The use of resources (like water, energy and purchased products) in a sailing club**
- **Using resources effectively to help reduce the impact of climate change**
- **The circular economy and how this helps to reduce the impacts of climate change**

Check out the other topics in the World Sailing Sustainability Education Programme for more help on becoming a top sustainable sailor!

Topic 1	Race with World Sailing!
Topic 2	Resources & Climate Change
Topic 3	Navigating Wildlife & Biodiversity
Topic 4	Reducing Waste
Topic 5	Oil & Fuel
Topic 6	Boat Cleaning & Maintenance

Glossary



Sustainability

The concept that we could keep using or doing something for a long time without running out of resources or damaging the environment.



Coral bleaching

Coral loses its colour because algae no longer live on it. This can be caused by an increase in the water's temperature or ocean acidification.



Ocean acidification

A change in the ocean chemistry due to an increase in carbon dioxide (CO₂) in the water.



Drought

A long period with little or no rain.



Silt

Sand, clay or other material moved by water and sometimes deposited in a harbour.



Erosion

A process where wind, water, ice and gravity wear away at rocks and soil.



Greenhouse gas

Gases that hold in heat and warm the Earth's surface and air.



Let's get under way!

What is climate change?

Climate change is the long-term climate pattern which includes cold and warm changes. At the moment the Earth's atmosphere is warming up. This is caused by something called 'the greenhouse effect'. This is when gases in the atmosphere act as a blanket, trapping the heat of the sun in the atmosphere which would usually be released into space. Greenhouse gases are the types of gas that act as this blanket. Carbon dioxide (CO₂) is the most common, and even though it occurs naturally, the problem is that humans have been creating much more of it, meaning the warming effect is increased.

In the last 100 years, the planet has warmed up by an average of 1°C, which has had a big impact on people, plants and animals all

over the world. Weather is becoming more extreme and unpredictable, which means that lots of plants and animals (and humans too!) will not be able to adapt to where they normally live. In the ocean, melting sea ice and rising sea levels mean that some animals' natural habitats are disappearing. Warming of the ocean where there are coral reefs can lead to coral bleaching; this is when the coral turns white. Sometimes the coral dies - that means a loss of habitat for the huge variety of animals and fish that live there. The more CO₂ that ends up in the atmosphere from human activities, the more acidic the ocean becomes as it absorbs more CO₂. This is causing problems for many species, including coral reefs themselves.

The climate is what the weather is like in general over a long period of time (like 30 years).

Weather vs climate

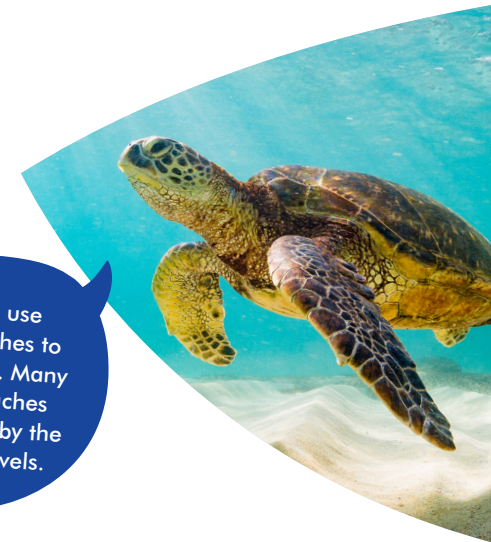
Take a look outside! Is it sunny or rainy? Are there any grey clouds in the sky? Are the trees blowing in the wind? The weather is what you can see now. It might change quickly, or stay the same.



What's the weather generally like in your state or country in the summer? In the winter?

Did you know that the temperature of nests determines whether turtle eggs are male or female? With temperatures increasing, this could mean that many more females are born than males, threatening future turtle populations.

Sea turtles use nesting beaches to lay their eggs. Many of these beaches are impacted by the rise in sea levels.



What is a carbon footprint?

When we create and use a product, greenhouse gases are released into the atmosphere. The amount that is created as a result and released into the atmosphere is known as the 'carbon footprint'. It is measured by weight of CO₂ released into the atmosphere (e.g. 1 tonne).

A boat with an engine burns petrol that creates CO₂. The more the engine is used over the year, the higher the carbon footprint. The materials and energy that were used to produce the boat also cause CO₂ to be released into the atmosphere.

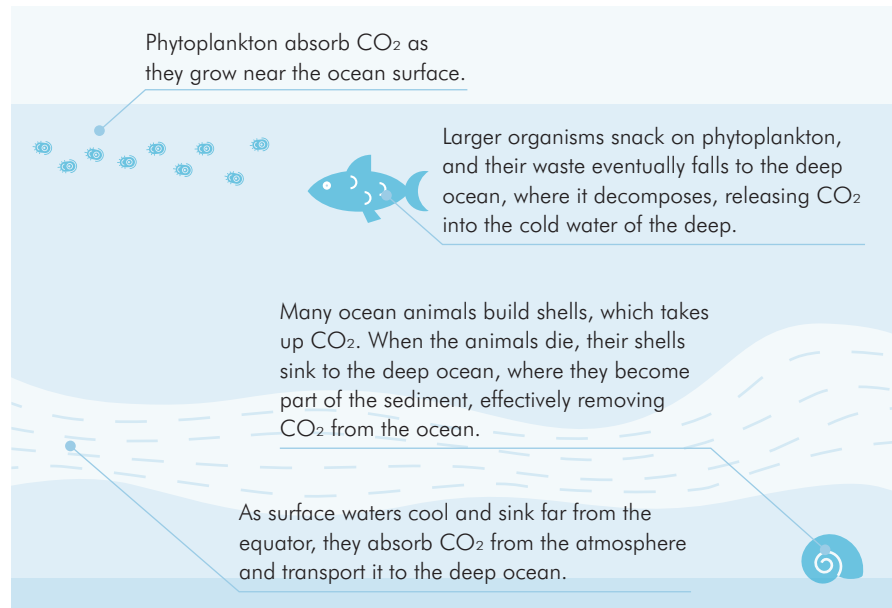
Everything has a carbon footprint, so it is important to think about how we can reduce it.

The main things you can change are what you eat (by eating less meat and dairy products and buying locally), the way you travel (use public transport and car share where possible) and the energy you use (turn off lights and electrical equipment when you leave a room or are not using them).

The ocean as a global climate control system

The ocean absorbs, stores and releases greenhouse gases in many different ways, which helps to regulate the concentration of CO₂ in the atmosphere. In the past 200 years, the ocean has taken up about 30% of all CO₂ emissions from human activities!¹

CO₂ in the ocean



Malizia

Want to know more? Check out what IMOCA Team Malizia are doing to spread the word about climate change and the ocean! team-malizia.com/en/my-ocean-challenge/

How might climate change affect us, as sailors?

- More extreme weather events (e.g. storm surges and hurricanes) increase risk of damage to boats, marinas and sailors' lives
- Rising sea levels might mean that sandbars or rocks that are marked on charts are now not visible creating hazards to sailors
- Drought in lakes result in a drop of water below normal levels, meaning marinas and boating infrastructure is unusable
- Flooding and coastal erosion causes an increase in silt and that can cause marinas to silt up and excessive silt is expensive to remove
- Species that can only survive in certain water temperatures are spreading due to the warming of the ocean. Some species can cause damage to the hulls of boats and affect local biodiversity

Resources

We use lots of resources on our boats and in our sailing clubs every day, and probably don't think about the impact this is having on the environment and climate.

Using resources

On the boat, in the club

Energy:

Refrigeration, electronic systems, GPS, VHF, navigation, lighting, pressurised water, heating & cooling.

Water:

Taps, toilet, boat cleaning, drinking, hygiene, cooling.

Common items:

Water bottles, wet wipes, packaging, food.

Letting your tap run for 5 minutes while washing dishes can waste 45 litres (10 gallons) of water and uses enough energy to power a 60-watt light bulb for 18 hours.²

The process of producing bottled water requires around 6 times as much water per bottle as there is in the container³

The onboard shower

The life of a wet wipe

It is very common to find wet wipes onboard an offshore sailing boat. If you are competing in a race or sailing on a long voyage, your next shower might be a long time or distance away! While they are great for keeping yourself fresh and minimising skin infections, they are a very unsustainable product that cannot be recycled. The resources used to produce wet wipes also contribute to climate change. Let's take a look at the 'life' of a wet wipe.



Life cycle analysis of a wet wipe



Step 1
Crude oil extracted from the ground.



Step 6
Wet wipes enter the system, are labelled as 'biodegradable' and disposed of.



Step 2
Logging/harvesting natural raw materials.



Step 7
Enter sewage system or natural water system if flushed down toilet.



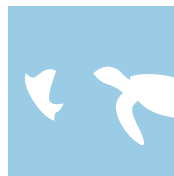
Step 3
Strong plastic fibres formed.



Step 8
Enter landfill and do not breakdown due to chemical components.



Step 4
Wood/cotton refined and made into pulp.



Step 9
Enter marine ecosystem (either directly or indirectly).



Step 5
Plastic and natural fibres blended, cleaning chemicals added to create product.

Sustainability

As top sustainable sailors there are many ways that we can use resources more effectively, which will reduce our carbon footprint. This is going to have a positive impact on the environment and reduce the effects of climate change. So what can we do, crew?



Acting sustainably

On and off the water

- Try to buy food that is produced locally. Remember that meat has a higher carbon footprint, so eat more plant-based meals when you can
- Measure the energy use at your sailing club. An energy monitor can be a good way to help use energy efficiently
- Make sure lights and other devices are all turned off when not in use
- Use controllers or sensors in the club to make sure electrical items are not left on when they don't need to be
- Check the heating/cooling systems are not turned too high/low; more energy will be used if they are not set correctly
- Change to LED lights on your boats and in your sailing club
- See if your club can buy renewable 'green power' from the energy supplier to power the club
- On larger boats, you can use solar or wind generators where possible to charge batteries and electronics onboard
- Consider using biofuels or electric engines
- Clean the boat hull regularly and check that the engine is running efficiently to reduce the amount of fuel it uses
- Choose products made from recycled materials
- Use reusable items as much as possible (e.g. sail ties)
- Reuse and recycle as much waste on board, at home and at the club as possible
- Collect any rubbish you have generated on your boat and take ashore
- Carpool to and from the sailing club. Walk, cycle and use public transport where you can
- Use a kit and clothing that are from sustainable sources. Think about reusing or recycling your wetsuit when it gets too small

Thinking about how we travel

The average person in the world, has an annual carbon footprint of 4.35 tonnes ⁴

Greta Thunberg's sustainable trip to New York City

It took climate activist Greta Thunberg 14 days to travel 4,800 km across the Atlantic in order to attend a United Nations climate summit. To reduce her carbon footprint, she sailed on a yacht called Malizia II, an 18 metre racing yacht that uses underwater turbines and solar panels to generate electricity, and produces no carbon emissions. Air travel is a significant source of global CO₂ emissions which is why Greta chooses to sail rather than fly.

Energy is the main contributor to climate change - it produces around 60% of greenhouse gases ⁵

Vestas 11th Hour Racing & Meatless Mondays

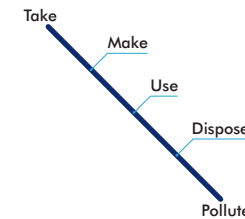
The Vestas 11th Hour Racing Team reduced their carbon footprint by committing to meat-free Mondays (not eating meat on Mondays!). By lessening their meat consumption, they reduced their carbon footprint by 2.72 tonnes, along with preventing the use of 671,000 litres of water.

Waste as a resource

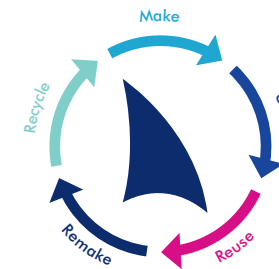
When we learn to look at waste as a resource, rather than something we just throw away, the possibilities are endless! Let's look at how sails can be used once they have reached the end of their 'life' on a boat.

A wind generator has the potential to produce power 24 hours a day whether sailing or at anchor ⁶

Linear economy



Circular economy



A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.

By following the circular economy model with sails, we can limit the use and waste of raw materials and non-renewable sources of energy. Instead of throwing the sails away, they could get a new life back on the boat as bags, buckets, and hats! Check out Topic 4 to see how a sail goes through the circular economy.

To learn about how to become an Ocean Hero and reduce the amount of waste you use, check out worldsailingoceanheroes.com

A traditional light bulb wastes 95% of the energy it produces ⁷

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World Sailing's Sustainability Agenda 2030

bit.ly/2sjGrKZ

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