

Shipping carousel sheet


**Royal
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Advancing geography
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Station 1: Green Ports, Duqm

Read the information in the article and create a mind map below summarising how Duqm is becoming a green port.



Green ports

Produced for, and in association with



Station 2: Wind powered ships

Read the information about the wind powered ships and use that information to annotate the image below. Make sure you focus on how these help reduce emissions.



Image: Computer generated image of bulk carrier Sohar Max fitted with rotor sails. Credit: RGS

Station 3: Fuel saving shipping

Complete the table below using the information on the different methods to use in shipping which reduce fuel consumption. Include a brief description on how it works, a sentence on positives and one on negatives of each method. Challenge: which one do you think works most effectively and why?

| Method | How it works | Positives/Pros/Benefits | Negatives/Cons/Costs |
|-----------------------------|--------------|-------------------------|----------------------|
| Weather routing | | | |
| Constant velocity | | | |
| Route optimisation software | | | |

Station 4: Alternative fuel

Watch the [video](#) then fill in the gaps in the text below to look at alternative fuel for shipping to reduce carbon emissions.

There is a textbox at the bottom of the page with the missing words/numbers. NOTE: some are repeated.

New studies released have identified the potential for two alternative fuels from the traditional diesel in shipping: _____ and _____.

_____ are work in a similar way to traditional fuels but come from the production of _____ rather than the extraction of oil. However, as the demand for _____ increases, more land is needed for this which may have an impact on food production. Therefore, looking at alternatives such as _____ or burning _____ might be a more sustainable solution.

Ammonia is a naturally _____ free fuel. Current production of ammonia however, accounts for around _____% of global carbon dioxide emissions¹. If produced sustainably, it could greatly cut _____ emissions in shipping.

| | | | | | | | |
|-------|---------|------------|-------|--------|-----|----------|-------|
| waste | Ammonia | greenhouse | algae | carbon | 1.8 | Biofuels | crops |
|-------|---------|------------|-------|--------|-----|----------|-------|

¹ [Ammonia: Zero-carbon fertiliser, fuel and energy store. The Royal Society](#)

Station 5: Shipping policies

Read the information about different policies that aim to help minimise the impact of shipping on marine life. Draw an annotated diagram or a series of diagrams to summarise this information.

