

# SDG14 Future of the Ocean

## MM3: Offshore Renewable Energy



### Micro-Module 3: Offshore Renewable Energy

### Research and Development

### Lesson 5: Classroom Debate on Onshore vs Offshore Wind

Subjects: Climate Action and Sustainable Development, Design, English, Engineering Science

**7** AFFORDABLE AND CLEAN ENERGY



**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE



**11** SUSTAINABLE CITIES AND COMMUNITIES



**13** CLIMATE ACTION



### Lesson Title and Summary: Classroom Debate on Onshore vs Offshore Wind

In this lesson, learners engage in a debate comparing offshore and onshore wind energy. The lesson begins with a brief introduction to the debate topic. Learners then conduct individual research online to identify the pros and cons of each type of wind energy. Debating teams are formed, with learners either supporting offshore or onshore wind energy. During preparation, learners gather supporting arguments and compile flashcards. The lesson culminates in a facilitated debate where teams present their viewpoints using the synthesized information. This activity encourages critical thinking, research skills, and collaborative discussion on renewable energy sources.

### Vocabulary: Offshore Wind, Onshore Wind, Argument, Counterargument, Rebuttal, Closing Statement, Debate

### In this lesson, the learner will:

- Begin to understand the advantages and disadvantages of both onshore and offshore wind energy
- Engage in a debate:
- Conduct individual research
- Develop presentation and critical thinking skills

### Materials

- Worksheet: Debate Questions
- Notepad, flashcards and pen
- Whiteboard and markers

# MM3: Offshore Renewable Energy

## L5 Classroom Debate on Onshore vs Offshore Wind



### ACTIVITY INSTRUCTIONS

#### Activity 1: Introduction (5 minutes)

1. Explain that the class is going to have a debate on the advantages and disadvantages of offshore wind energy compared with onshore wind energy.
2. Have learners discuss in groups what a debate is and how a debate is structured.
3. Define the following terms as a class: argument, counterargument, rebuttal and final statement.

#### Activity 2: Research (10 minutes)

1. Divide learners into groups of 2.
2. Invite the learners to conduct online research to find the relative merits and drawbacks of offshore wind energy compared to onshore wind energy. Suggest that they can use the following websites as a starting point: [National Grid](#) and [GreenCoast](#). Use the questions in the Worksheet: Debate Questions to help structure their research.

#### Activity 3: Choose debating teams (5 mins)

1. Divide the class in half. Choose which half will be for the motion (in favour of offshore wind energy), and which half will be against (in favour of onshore wind energy).
2. Have each side choose 3-4 speakers for the debate.
3. Decide a running order for the debate, and the sequence in which each speaker will contribute.

#### Activity 4: Synthesizing the information (10 mins)

1. Invite the debating team members to prepare flash cards of the points they want to make, based on their own research, and the contributions of their classmates.

#### Activity 5: Facilitate the debate (20 mins)

1. Have the first speaker from the 'in favor of offshore wind energy' present their first argument.
2. Have the first speaker from the 'in favor of onshore wind energy' present their first argument.
3. Allow 2 minutes for each team to discuss as a group and develop a rebuttal or next speaking point.
4. Continue this process for the duration of the debate.
5. Allow each team to present a final closing statement at the end of the debate.
6. Vote as a class which team 'won' the debate.

### REFLECTIVE EXERCISE: 3-2-1

- Three things they feel they have learnt from the exercise
- Two things they found most interesting and would like to explore more
- One – their opinion they have about the site / exercises

Use Post-its or a Mentimeter survey - [mentimeter.com](https://www.mentimeter.com) to gather reflections

## MM3: Offshore Renewable Energy

### L5 Classroom Debate on Onshore vs Offshore Wind



#### **EXTENSION / REDUCTION ACTIVITIES:**

**Reduction:** For a shorter class, instead of researching both offshore and onshore wind energy, focus on just one type, allowing learners to delve deeper into the advantages and disadvantages of that specific option.

Condense the debate by having each team present only one main argument in favor of their assigned wind energy type and one counterargument against the opposing type.

**Extension:** For a longer class, after the debate, facilitate a class-discussion where learners can further explore nuanced aspects of wind energy by answering questions from their peers and engaging in a more open-ended dialogue.

Invite learners to create posters that summarize their findings, arguments, and counterarguments, encouraging a more comprehensive exploration of the topic. See Media Communications Micro-Module on Posters.

#### **MEDIA BOX: (materials, online video links, extra resources, case studies etc)**

Onshore vs offshore wind energy: what's the difference?

<https://www.nationalgrid.com/stories/energy-explained/onshore-vs-offshore-wind-energy>

Onshore vs Offshore Wind: What Are the Differences and Facts? <https://greencoast.org/onshore-vs-offshore-wind/>

#### **Local Trip / Expertise / Additional Work and Assessments**

Which type of wind turbine do we have more of in Ireland – offshore wind turbines or onshore wind turbines?

See if you can organize a trip to visit a local wind turbine in your area? Which do you think might be easier – a visit to an onshore turbine or an offshore turbine?

Interview a number of people in your town to see if they are in favour of onshore or offshore wind, or neither. Why do they feel this way?

## MM3: L5 WS DEBATE QUESTIONS



Use this worksheet to structure your research. Use the following websites as a starting point, but you will need to do more research on your own. You may need to use additional paper to take notes.

Onshore vs offshore wind energy: what's the difference?

<https://www.nationalgrid.com/stories/energy-explained/onshore-vs-offshore-wind-energy>

Onshore vs Offshore Wind: What Are the Differences and Facts?

<https://greencoast.org/onshore-vs-offshore-wind/>

Which is cheaper: onshore wind turbines or offshore wind turbines? Why?

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What are the economic implications of investing in onshore wind energy compared to offshore wind energy?

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How do onshore and offshore wind energy projects affect job creation and local economies?

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Which is more environmentally sustainable: onshore wind turbines or offshore wind turbines? Why?

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When thinking about the visual impact of wind turbines, are people more likely to be badly affected by offshore wind turbines or onshore wind turbines?

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## DEBATE QUESTIONS

Which type of turbine is easier to build, onshore or offshore?

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Which type of turbine can be connected to the electricity grid more easily: onshore or offshore?

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Which type of turbine is likely to generate the most amount of electricity?

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Could there be a negative impact on wildlife and sea-life because of the construction of wind turbines?

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Which type of wind energy is more reliable and less susceptible to weather-related disruptions: onshore or offshore?

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What are the geopolitical implications of relying on onshore or offshore wind energy for a nation's energy needs?

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How do the permitting and regulatory processes differ for onshore and offshore wind projects, and which is more efficient?

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## DEBATE QUESTIONS

Are there safety concerns related to onshore wind turbines (e.g., blade failures) or offshore wind turbines (e.g., maintenance in harsh marine environments) that should influence the choice between the two?

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