

Energy: renewable, non-renewable and sustainability

Lesson at a glance

Open by asking what powers the classroom lights, then model renewable thinking with the wind card. Pupils sort five Irish sources (wind, sun, hydro, peat, natural gas) on the sorting-tree interactive and jot names under renewable or non-renewable. Groups rank the same cards into three sustainability zones, then build a paper wind catcher to feel air turning into movement. A chaired debate weighs advantages and drawbacks of a wind farm on a familiar ridge before finishing reasons on the Investigation Journal page.

Learning objectives

- Distinguish renewable from non-renewable Irish energy sources
- Rank sources by sustainability and justify the ranking with reasons
- Weigh advantages and drawbacks of a local renewable choice such as a wind farm

Before the bell – prep

Print one set of five energy-source cards per group the day before. Pre-slit every 15 cm paper square so pupils only fold and pin. Gather dressmaking pins, pencils with rubbers, and three-zone sticky labels. Build one sample catcher and hide it until the demo. Load the sorting-tree interactive in challenge mode.

Materials

Item	Qty	Per	Source	Low-cost substitute
energy-source cards (wind, sun, hydro/river water, peat/turf, natural gas)	1	group	provided printable	five sticky notes per group with the same source names and one clue sentence each
three-zone ranking labels (More sustainable / In the middle / Less sustainable)	1	group	provided printable	three desk zones marked with chalk, tape, or sticky notes
Investigation Journal pages	1	pupil	provided printable	ruled page with two columns headed renewable / non-renewable, three headed sustainability zones, and a two-column advantages/drawbacks box drawn by the pupil
Ireland outline map (printed class copy)	1	class	provided printable	sketch Ireland roughly on the board in 20 seconds and point while talking
pre-slit paper squares for wind catchers (about 15 cm)	1	pupil	classroom	reuse clean side of scrap printouts cut into squares and pre-slit; or one shared teacher-built catcher for the class
dressmaking or drawing pins	1	pupil	classroom	one shared class set of pinwheels already made; pupils test those instead of building
pencil with rubber end	1	pupil	classroom	a straw with a small blob of reusable adhesive as the hub
scissors	1	group	classroom	teacher makes any repair cuts

Safety watch-point

Pins only under supervision; never toward eyes or mouths. Count every pin out and back in before the debate. Prefer pre-slit squares; adult helps any repair cut.

Teaching moves

- **Energy that keeps coming back:** Work wind aloud before naming both terms. Model the full think-aloud on the wind card: wonder, predict renewable, check the card, place it, then say why nature replaces it quickly. Keep the board to short lines; leave the full sustainability definition for the ranking step.
- **Sort: renewable or not:** Drive the sorting-tree interactive in challenge mode. Read each card clue aloud before the class predicts, especially for peat and natural gas. Place, reveal, then fold watchers in with 'What word on the card convinced you?' In the last minute, every pupil jots the five names as two short lists under What I found out before the board clears.
- **Rank by sustainability:** Model one contrast on the IWB: wind toward more sustainable, peat toward less, saying renewable answers 'will it run out?' while the zones also ask about land, air and wildlife. Hand each group the five cards and three-zone labels. Remind them one solid reason per card is enough and there is no single official order. Cold-call two groups for a top and bottom card before the names-only journal jot.
- **Our class sustainability ranking:** Place the five sources into the three board zones as the class agrees. If two groups disagree, park the card in the middle and note both reasons. Keep this ranking visible through the catcher and debate so the recording step can copy from it.
- **Feel the wind: build a catcher:** Demo fold 1, skip 1 high and slow before any pupil touches materials. Say only: moving air in, turning movement out — and that a real turbine also drives a generator. If the clock slips, switch at once to one shared catcher and a journal sketch. Count every pin out and back in before leaving this step.
- **A wind farm near us:** Confirm pins are collected. Name a real ridge or hill from the school run, then keep the shared picture of ridge, houses and boggy field. Chair two minutes of partner think, four minutes of tallied contributions under Advantages and Drawbacks, then two minutes for each group to choose one of each to write. Revoice both sides; never let it become always-good or always-bad.
- **Record our thinking:** Recording stays in-lesson. Point pupils at the earlier jots, the class ranking still on the board, and the debate tally. Check peat and natural gas sit under non-renewable unless a reasoned challenge appears. Offer starters: 'We put ____ as more sustainable because...' and 'One advantage of a wind farm is...'

What it should show

Correct sort: wind, sun and hydro renewable; peat (turf) and natural gas non-renewable. A well-reasoned ranking often puts wind and sun higher, hydro near the middle or high, gas lower and peat least — accept any order the group justifies from the cards. Catchers spin when the pin is loose and every-other-point folds are used; a stuck spinner is usually a tight pin or crushed adjacent folds. Debate should surface both benefits (renewable, no fuel burned at the turbine) and drawbacks (views, wildlife, noise or siting).

Misconceptions & interventions

- **Pupils treat renewable as 'good' and non-renewable as 'bad'.** — Revoice: renewable answers 'will it run out?'; the sustainability zones also ask about land, air, wildlife and neighbours. Hold up wind and note a carefully sited farm can still have drawbacks.
- **Pupils say classroom electricity 'comes from the plug' and stop there.** — Gently push: the plug is the end of a longer chain. Point back to the five source cards and ask which of those might be feeding the grid today.
- **Pupils think renewable means zero impact, so a wind farm has no drawbacks.** — During the debate, tally at least one drawback beside the advantages and say sustainability means weighing both and choosing sites carefully.

Differentiation

Emerging	Developing	Proficient
• Pair at the teacher table with the wind card already placed as a model; pupil places the next card and copies the two journal lists from the board sort. • Offer sentence starters for the one high-zone reason, one low-zone reason, and the wind-farm advantage and drawback.	• After the three-zone placement, add a second reason that names land, air or wildlife rather than only 'it keeps coming back'. • During the debate, choose the advantage and drawback the group will write and say why those two matter most for the shared ridge site.	• Stretch to a finer 1–5 order only after a solid three-zone placement, still using evidence from the cards. • Fast finishers add a second wind-farm drawback or sketch the catcher with arrows labelled air in and spin out.

Cross-curricular hook

Link to Geography: mark wind on western hills and coasts, hydro on rivers, and peat on midland bogs on a quick Ireland outline.