

Energy: renewable, non-renewable and sustainability

Lesson at a glance

Open by asking what powers the classroom lights, then model wind as renewable before groups sort five Irish sources (wind, sun, hydro, peat, natural gas) on the sorting-tree interactive. Groups rank the same cards into three sustainability zones, then build a paper wind catcher to feel moving air become turning movement. Close with a chaired debate on a wind farm near a familiar ridge and finish the SortingGrid Investigation Journal page in class.

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

Pre-slit one ~15 cm paper square per pupil the night before; set out pencils with rubbers and dressmaking pins (heads large enough to hold paper). Print one set of the five energy-source cards plus three-zone labels per group. Build one sample catcher and hide it until the demo. Count pins into a tray for full return after the build.

Materials

Item	Qty	Per	Source	Low-cost substitute
energy-source cards (wind, sun, hydro/river water, peat/turf, natural gas)	1	group	classroom	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	classroom	three desk zones marked with chalk, tape, or sticky notes
Investigation Journal pages	1	pupil	classroom	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	classroom	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; scissors only for adult-helped repairs.

Teaching moves

- **Energy that keeps coming back:** Surface the wind card first and run one full think-aloud (wonder → predict → check card → place → reason) before naming both terms. Do not board all three definitions at once; leave sustainability as a light bridge to the ranking step.
- **Sort: renewable or not:** Drive the sorting-tree interactive in challenge mode. Read each card clue before pupils call out renewable or non-renewable, then place and reveal. In the last minute, every pupil jots the five names only into the two SortingGrid columns before the board clears.
- **Rank by sustainability:** Model a 60-second wind-vs-peat contrast, then hand each group five cards and three zone labels. Remind them there is no single official order — one solid reason per card is enough. Capture zone names only on the SortingGrid before layouts clear; cold-call two groups for one top and one bottom card.
- **Our class sustainability ranking:** Build a free three-zone class ranking on the IWB or side board and leave it visible through the catcher and debate. If groups disagree, park the card in the middle and note both reasons. Bridge: wind often sat high — next we feel wind energy turning into movement.
- **Feel the wind: build a catcher:** Demo fold 1, skip 1 once at the front with the IWB picture sequence. If the build will overrun about six minutes of pupil work, switch at once to one shared teacher catcher and a journal energy sketch. Board only: moving air in → turning movement out. Count every pin out and back in before leaving this step.
- **A wind farm near us:** Name a real local ridge or hill pupils know, then chair a balanced advantage/drawback tally. Two minutes partner think, four minutes whole-class contributions, two minutes each group chooses one advantage and one drawback for the journal. Revoice fairly — never let it become always-good or always-bad.
- **Record our thinking:** Keep this in-lesson and required. Pupils finish the SortingGrid from their earlier jots, the class ranking still on the board, and the debate tally: five sources sorted, three-zone names, one high and one low reason, plus one full-phrase advantage and drawback of a wind farm.

What it should show

Sort: wind, sun and hydro renewable; peat (turf) and natural gas non-renewable. Sustainability ranking is open but well-reasoned patterns put wind and sun higher, peat lowest, with hydro and gas in between. Catchers spin when the pin is loose and every-other point is folded; a tight pin or crushed adjacent folds stops the spin. Wind-farm talk should name real benefits and real drawbacks, not a one-sided verdict.



Misconceptions & interventions

- **Pupils say electricity just 'comes from the plug' and stop there.** — Push gently: the plug is the end of a longer chain. Hold up a source card and ask what had to happen before the power reached the socket.
- **Pupils treat renewable as 'good' and non-renewable as 'bad'.** — Revoice: renewable answers 'will it run out?'; sustainability also asks about land, wildlife, noise and fairness. Point at the wind-farm debate — a renewable source can still have drawbacks.
- **Pupils think a renewable source has zero impact, so a wind farm needs no careful siting.** — Use the drawback bank: birds and bats, sound, shadow flicker, familiar views. End on agency — communities and engineers choose sites carefully.

Differentiation

Emerging	Developing	Proficient
• Pair at the teacher table with the printed cards and sentence starters already on the board (We put ____ as more sustainable because... / One advantage is...). • If individual builds overrun, switch to the shared teacher catcher and a simple air-in → spin-out sketch in the journal margin.	• After the three-zone placement, add one extra reason that names land, air or wildlife from the card text. • In the debate, name which drawback matters most for homes near the ridge and why.	• Stretch to a finer 1–5 order only after a solid three-zone sort, still justified from the cards. • Fast finishers add a second wind-farm drawback or sketch the catcher with arrows labelled air in and spin out — no new kit.

Cross-curricular hook

Link to Geography: lightly pencil wind on western hills, hydro on rivers and peat on midland bogs on the Ireland outline map.