

- 1) You can decide the starting cost per cm for 'cable' depending on your class. Whole numbers make the calculations easier. It is recommended to use rounding up as the rule so even 1mm more cable counts as another cm. A nominal cost could be £1million per cm or bring in decimals for more challenge.
- 2) Getting the children to physically make the route using paper straws gives much more flexibility when it comes to trying different routes. 'Drawing on' ends up in a mess! Although real cables do have some flex in them, using the concept of straight lines helps to focus the task better in terms of thinking out a route strategically.
- 3) Ensure that the children are recording their routes. This can be photos, separate diagrams, tables of calculations or whatever. Without the information to go back and review, their presentations will not be able to use the comparative data that allows them to say why they made a decision one way over another.
- 4) Ensure that the children do not just go for the cheapest option without reference to other factors about environmental issues in particular. Real companies like RWE spend millions over and above the basic construction costs to mitigate any disruption they cause. This approach also adds depth to their presentation.
- 5) Encouraging the children to think about roles and delegating tasks is integral to the outcomes of the project. Give the children a set timeline (could be over several sessions/days) when they will be able to work on the project so that they begin to manage the time effectively. Some teachers like the children to record this plan in advance in terms of which team member is doing what and when.
- 6) Building the turbine is a classic D&T focussed activity. Encourage the children to record (video/stills/planning sheets) each stage of the process to evidence how they plan, do and then review in practice, showing any improvements they make.
- 7) The turbine task can be non-competitive or can include 'who can make the highest?' (Or generate the highest voltage – if you have a volt meter or multimeter).
- 8) Some teachers provide a specified base onto which the turbine must slot (a bean tin works well or something made from LEGO). Others ask for it to be freestanding. Similarly the top section may have to include a design to allow a pre-made turbine head and blades to sit on. You can decide these parameters based on the toy turbine you are using. If time allows, teachers can also ask children to make a small house on the map (LEGO, use a net etc). Using wire and connectors found in most primary school science resources, the turbine can then actually connect to the house and light LEDs in the windows. Teams could be challenged on making small pylons to go over rivers as well.
- 9) The presentation needs to be defined by time. Some teachers may give the children a template: Introduction to our work, what we found (offshore routes and on shore routes) which will include costs and decisions to make, and then a recommendation for what they think is best.
- 10) Presentations could have all the children chipping in to their own area of expertise (the bit they mainly worked on) or they may be fronted by a spokesperson. Giving the children criteria for a great presentation is essential: Structure, use of images/video to illustrate, tables of data summarising findings, etc. A presentation can just as easily be a pre-recorded one or a video as much as a 'stand at the front version'.