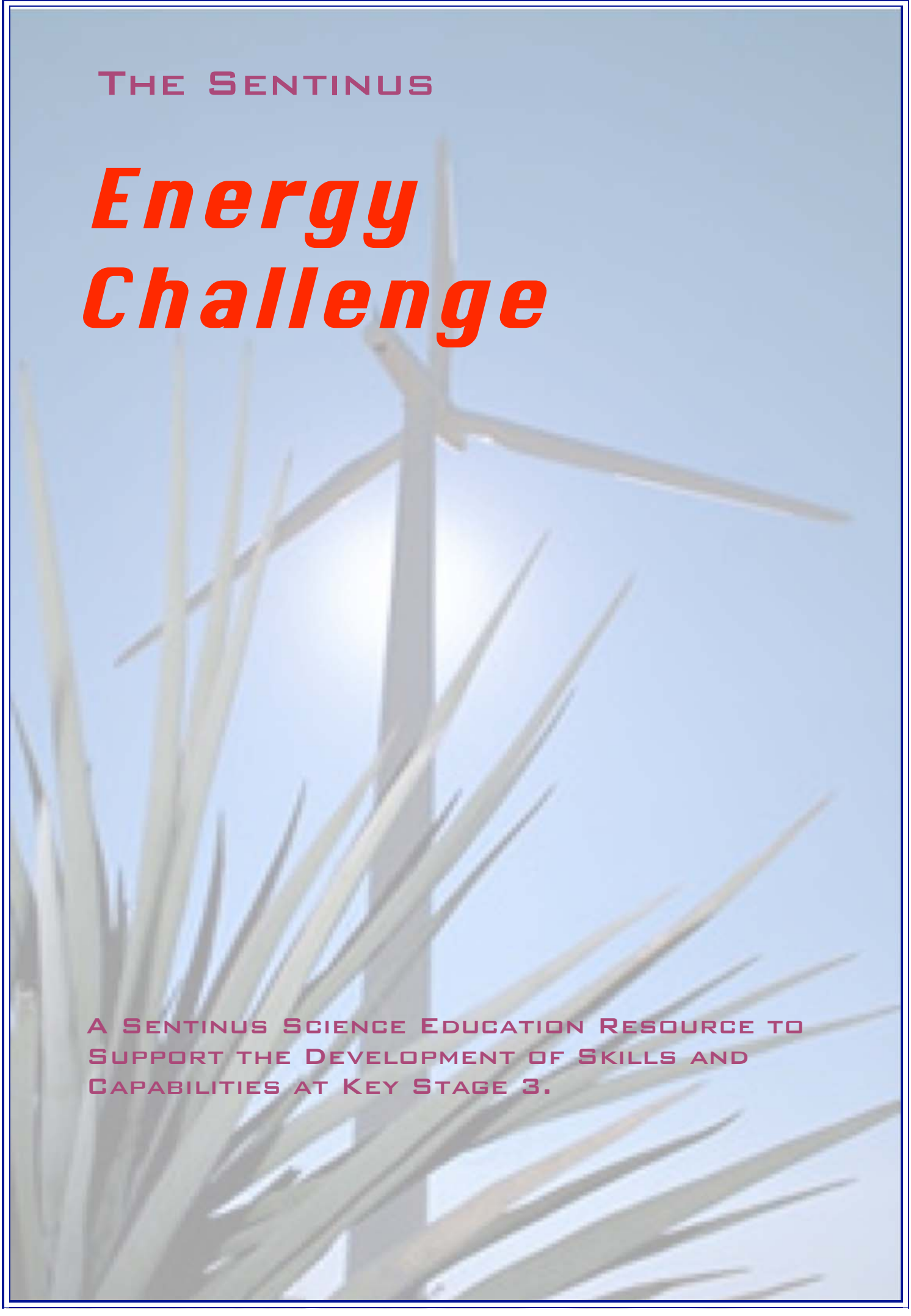


THE SENTINUS

# Energy Challenge

A SENTINUS SCIENCE EDUCATION RESOURCE TO SUPPORT THE DEVELOPMENT OF SKILLS AND CAPABILITIES AT KEY STAGE 3.

## What is the Sentinus Energy Challenge?

A programme which has been developed to supprt teaching and learning in science at Key Stage 3. It supports the ethos of the revised curriculum by linking learning to the world of business and industry. The programme focuses on practical, investigative activity based around renewable energy technologies, demonstrating how they can be used to reduce the impact of fossil fuels on climate change.

## Who is it Aimed at?

It is aimed at science pupils in Year 10 and designed to be undertaken by a Year Group or a whole class. The students will work in groups of up to five to complete the activities.

## How Long Does it Take?

The programme can be completed within six weeks based on five periods per week. The work can, however, be developed to last longer than this if the teachers wishes.

## What are the Benefits of Taking Part?

The students will learn, through a series of structured, practical activities, about energy usage and climate change, renewable energy technologies, data collection and analysis and the preparation of a project report. This process of learning will take place within a real world context and will support the delivery of the revised curriculum at Key Stage 3. Students' work will be accredited with a BA CREST Bronze Award and a range of the best projects will be invited to attend Seagate Young Innovators at the Odyssey Arena, Belfast on Tuesday 12th June.

## What Will We be Doing?

The activity comprises four Units of work (see overleaf for more details) which introduce students to renewable energy and lead them through the process of assessing a site for potential use of these energy sources:

Unit 1 – An Introduction to Energy and Renewable Technologies;
Unit 2 – Investigations and Experiements on Energy;
Unit 3 – Gathering on Site Data to Assess Potential for Renewable Energy;
Unit 4 - Analysing Data and Producing a Proposal/Report.

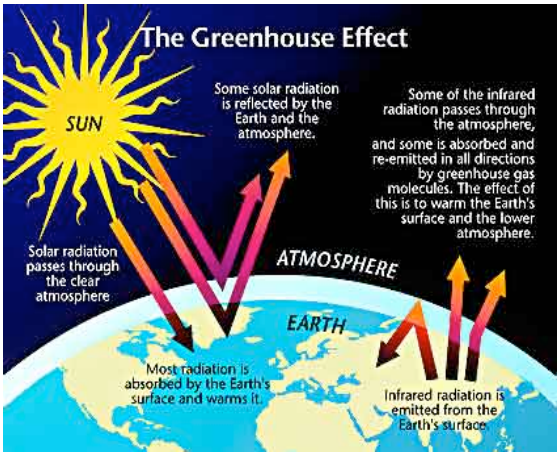
## How Do I Get Started?

You will first need to complete a registration form and decide which classes should undertake the Challenge. Sentinus will then help you to identify a company/site on which to carry out your data collection and organise an industrial representative to introduce the Challenge to your students.

# Programme Content

## An Introduction to Energy, the Impact of Energy Use and Renewable Energy Technologies

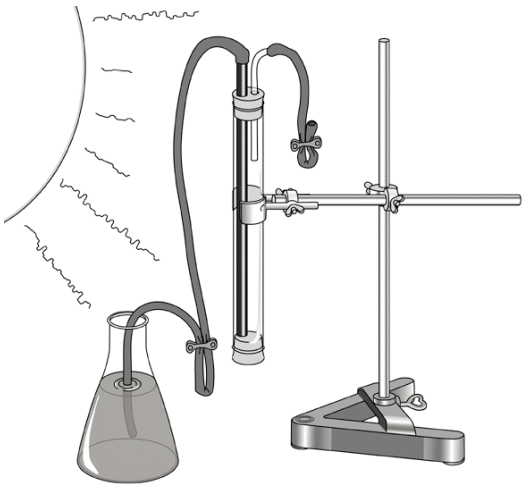
The Fact Files for the resource provide information on how energy is produced and used in a developed society. It also introduces students to basic facts about energy and outlines current scientific thinking on how the use of fossil fuels is affecting global climate.




The pupils will also learn about a variety of renewable technologies and how these can be used to reduce the emissions of greenhouse gases.

Fact Files 1 concludes with group activities which allow the pupils to discuss the merits and disadvantages of installing renewable energy technologies in given situations.

## Practical Experiments on Renewable Energy

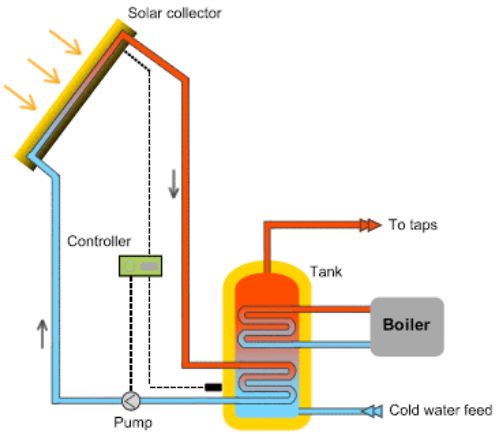


The resource includes a series of practical experiments designed to demonstrate a range of methods for the generation of renewable energy.

The activities include experiments concerned with solar energy, wind energy, biogas, solar collection and hydrogen fuel cells and can be carried out in the classroom without the need for expensive or elaborate equipment.

## Site Overview and Data Collection

Students will be given an opportunity to investigate a specific location for its suitability for installation of renewable energy technology.




The students will visit a business or industrial site to investigate energy use within the facility. They will gather information on current energy consumption and data relating to potential renewable energy sources. These will include light intensity levels, wind speeds and waste production.

## Analysing the Information and Putting Forward a Proposal

After completion of the information gathering and data collection the students will be asked to assess their findings and make recommendations on reduction of energy demands within the facility. They will also be required to decide which renewable energy technologies may be suitable for the site. This will include information on the recovery time for any expenditure associated with the implementation of the recommendations.

The students will be expected to produce a written report on their project and prepare a presentation on their research which will be presented to their peers and/or the host company.