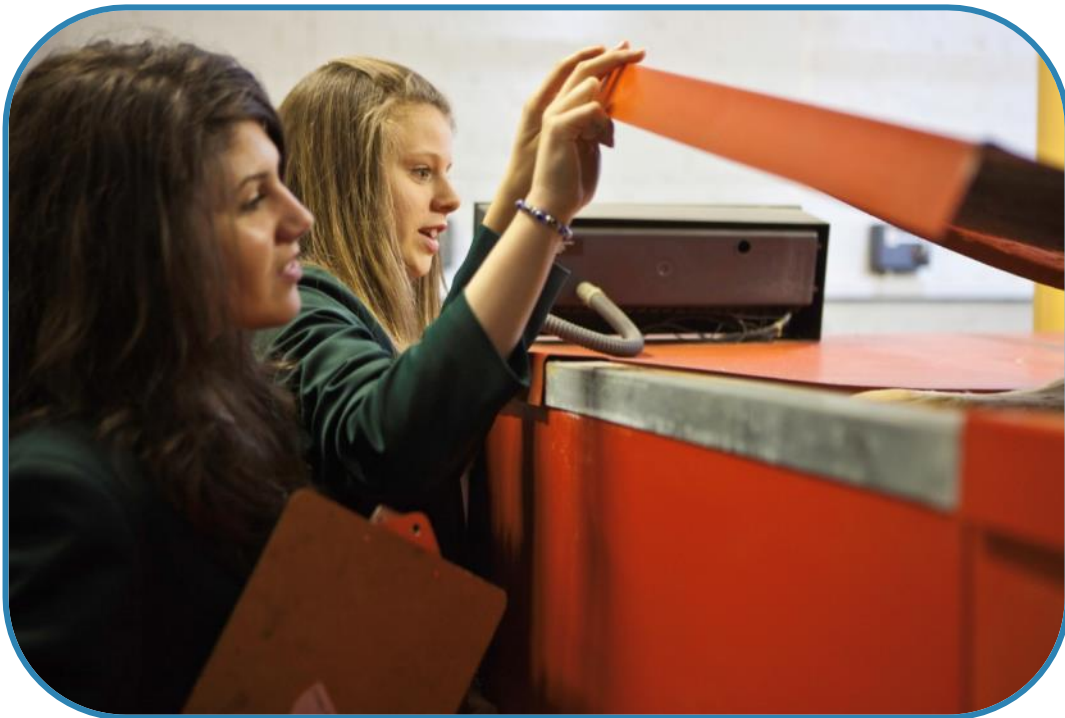




Supporting schools and their communities in sustainability and student development since 2007

OUR FUTURE'S PEOPLE

Pilot Study 1



Cronfa Datblygu
Cynaliadwy

Sustainable
Development Fund



The European Agricultural Fund for Rural Development: Europe investing in Rural Areas
Supported by the Sustainable Development Fund – Brecon Beacons National Park Authority

About us: Severn Wye Energy Agency

Severn Wye is a charity which aims to promote sustainable energy and affordable warmth. We employ nearly 50 staff across our two main offices in Llandrindod Wells and Gloucester.

Severn Wye work closely with staff and students in schools and colleges both in the UK and across Europe and have developed a range of education programmes and resources for primary, secondary and adult education. Our education team consists of qualified, experienced teachers meaning that we understand schools' needs and the pressures they face and are able to identify the types of support that will prove most effective according to individual school's circumstances. As a result, we have a strong track record and won an Ashden Award for our main secondary school project 'Young Energy People!', one of the forerunners to this project - see www.ashden.org/winners/swea11. One of our 'Your Green Future' events, which form a key part of this project, was also recognised as STEM event of the year for South-West England - see www.yourgreenfuture.org.uk.

Severn Wye's community and business teams have extensive experience of carrying out technical energy surveys and providing advice on energy efficiency and renewable energy measures for both domestic and non-domestic premises.



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Aims of Our Future's People

'Our Futures' People' is a culmination of years of development and refinement of Severn Wye's two most popular educational programmes, to create a complete programme for secondary school students with **overarching aims to:**

- Increase young people's understanding of the construct and importance of a low carbon future
- Raise levels of enthusiasm for active engagement in the development of a low carbon future
- Support schools in providing teaching and learning experiences that enhance their provision of careers, global citizenship and STEM (Science, Technology and Maths) education in order to facilitate young people's entry into the careers that support a low carbon future
- Support schools in achieving reductions in energy use and encourage snowball effects into the community through local businesses and householders.

The work that was proposed was for the area of Powys and involved events that brought schools and businesses together and a full academic programme with the aim of giving students an overview of the skills (technical, creative and social) that are required to successfully engage in action on energy sustainability.

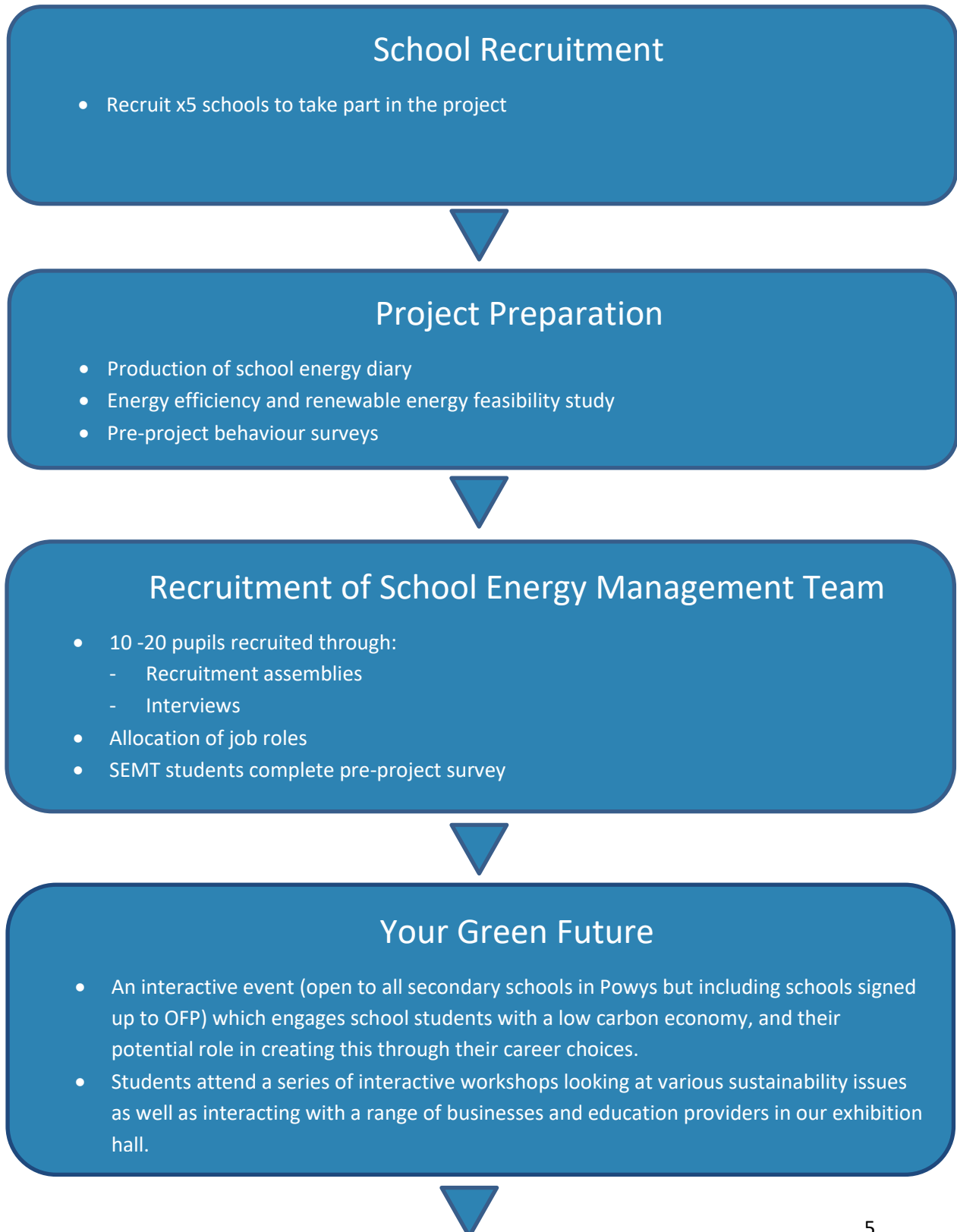
The project had a budget to support 10 schools, so with 17 secondary schools (Local Authority & private) within Powys, there was a significant opportunity for Our Futures' People to engage with local, young residents to bring about a **range of benefits including:**

- The opportunity to practically apply curriculum learning, whilst developing problem solving, team working, and communication skills;
- Building young people's sense of achievement and societal contribution through realising significant energy savings and their confidence to engage beyond their peer group;
- Preparing young people for work, introducing them to their local economy, broadening their understanding of how business interacts with sustainability; increasing their familiarity with people from local business and the jobs they do;
- Giving students the opportunity for practical work experience; providing the knowledge and skills for the management of their own energy usage in the future and for providing a positive influence for the family home and local businesses (via work placements);
- Increasing the capacity and skills of teachers and skills to deliver this type of learning through their engagement with the programme;
- Enhancing local cross sectorial working on environment, economy, youth and skills.

The work was carried out in two phases or 'pilot studies'. The aim of Phase 1 was to implement the project as close to the initial plan as possible, in so doing learning what would work and what would need to be adapted during Phase 2.

Main project activities

The chart below summarises the main project activities for Phase 1:



Student Training

- 3 x 1 hour training sessions:
 - i) Energy and the environment
 - ii) Energy efficiency and renewable energy
 - iii) Energy use in schools

Global



Local

School energy survey

- Investigating:
 - Heating
 - Insulation
 - Lighting
 - Electrical appliances

Dissemination of findings

- School energy report
- Presentation to governors and senior management

School energy campaign

- Students plan and run an energy awareness campaign to promote positive behaviour change in the school.
- This could tie into national and international events such as Earth Hour and students may decide to raise money for Solar Aid or raise money to implement energy efficiency measures in their school.
- The campaign may include an information evening to spread the message to parents and the wider community.

Workplace survey

- Students carry out work-based survey and report back to host organisation.

Evaluation

- Post-project surveys carried out and feedback from schools recorded and evaluated.

Intended project timetable

Sep 18	Recruit students
Sep / Oct 18	Your Green Future event to launch / inspire
Oct / Nov 18	Student training
Nov / Dec 18	School energy survey
Jan / Feb 19	Dissemination of findings
Mar – Jul 19	School energy campaign
May – Jul 19	Workplace surveys and Evaluation

Implementation

School Recruitment

With the aim of recruiting 5 schools for the academic programme all schools in South Powys were emailed with information about the project and invited to take part. A meeting with interested schools was offered so that the implications of taking part in the project could be discussed before the school confirmed its participation.

5 schools signed up to the project.

As part of the recruitment process schools were asked to identify a Lead Teacher who would be responsible for co-ordinating the project within their school.

Project Preparation

Energy Diaries were produced by project staff for each school and all data to date inputted.

Technical energy efficiency and renewable energy feasibility studies were carried out on each site by qualified project staff.

Schools were provided with a link to an online 'pre-project' behaviour survey and were asked to ensure that all students and staff completed the survey, ideally before the SEMT recruitment assembly took place. This, in general happened as it should during the 'pre-project' phase.

Recruitment of School Energy Management Teams

SEMT recruitment assemblies were carried out on the 5 sites. The assembly explained the link between energy and climate change and the urgent need to reduce carbon emissions by drastically reducing fossil fuel use and invited students to take action on this by taking part in the project. Application forms were handed out at the end of each assembly along with details on how to return completed forms.

The assemblies generally worked well, generating sufficient applications for the project and enthusing teachers about the topic.

The roles 'advertised' included: Senior Project Manager, Project Manager, Promotions Manager, Energy Data Manager and Energy Advisor.

Students who applied were then interviewed and allocated roles.

The interviews were beneficial in the sense that they gave the students an experience of what a 'real' interview is like. They also gave the project staff an opportunity to get to know the students before the training sessions. But, in practice, they served no purpose in the recruitment process as all students who applied were accepted onto the team and offered the roles they had applied for. During Phase 1 this meant the SEMTs were very large. This caused problems in that it was difficult to find enough tasks to keep the whole of the team busy. It is recommended that in Phase 2 teams are kept to no more than 20 students.

Students were sent 'offer' letters confirming their position within the SEMT.

Team sizes ranged from 16-30.

SEMT students were then asked to complete another online survey. Generally speaking most of these surveys were completed after the initial training - calling into question its validity as a benchmarking tool. Having said that, valuable information about students' both aspirations and concerns was captured during this process.

Your Green Future Event

The Your Green Future 2017 event was delivered with help from a Local Delivery Team (LDT) (consisting of personnel from Powys County Council, Careers Wales, STEM Ambassador Hub, Brecon Rotary Club, & Radnorshire Wildlife Trust). The planning for the event commenced in March, approximately 7 months before the event was held. The LDT was able to provide local knowledge and context to the planning process, which helped shape the delivery of the event. Of particular benefit was the knowledge of local businesses, potential event venues and school contacts to recruit schools and businesses to the event. This year's event attracted 22 organisations (86 professionals from the green economy) to take part as either mentors or exhibitors; while 7 schools brought 272 students to the event over the two days it was held.

The 2017 event was able to attract sponsorship from Scottish Power Energy Networks & funding from National Lottery, bringing £6,000 as match funding towards the delivery of the OFP project. Generally the event was very well received amongst organisations mentoring/exhibiting, students and teachers. For the first time, two of the workshops

were adapted to enable a school to bring students with special educational needs and disabilities, which was welcomed by the school attending. Similarly, other schools were full of praise for the attention to detail and level of interaction for the students taking part.

Future considerations (based on feedback from organisations attending) include:

- Easier venue in a more accessible location. Understandably it was a better venue for Mid-Wales schools but not easy for businesses to get to. Some had to decline as the cost of travel / accommodation was a deterring factor.
- Due to the locality and travel times, sessions were reduced to one hour. During this time it was sometimes a rush to get through everything and maybe we need to consider how to fit into the timeslot allowed. This is obviously dependent on the young people in the session. There were times when the hour seemed very long.

Future considerations on the choice of venue include:

- The event was split over two buildings, which offered logistical issues in having students guided to workshops throughout the day & those organisations situated in the smaller building felt isolated from the main event.
- Larger space would be beneficial for the exhibitor hall.
- The venue location was not ideal for two schools, having to arrive later and leave earlier than other schools due to the travel distances.

School Energy Management Team Training

Training was provided in 5 schools.

Topics covered included:

- Energy use in the home
- How is electricity produced?
- Renewable and Finite energy sources and Low Carbon and Carbon Intensive energy sources.
- How is heating produced?
- Greenhouse Effect, Climate Change and impacts
- How to measure energy and how much various appliances use
- How to reduce energy use when using appliances
- How to reduce energy use when heating
- Energy use in school/s

During feedback session some project staff reported that the training needed more content as often students had completed training tasks before the end of the training session. The training session could also benefit by being more dynamic in nature.

Survey Day

Student energy surveys of school buildings were facilitated in the five schools. These were carried out successfully. Support was provided by Severn Wye staff and in some schools Brecon Rotary Club kindly provided staff to help chaperone students around the

school during the survey. The surveys generally worked well, especially when junior team members were able to record data and senior students then completed the data analysis.

During feedback sessions some project staff reported that the amount of data collected during the survey day was difficult to handle and that the day may benefit from being 'slimmed down' with data being collected from a representative sample of rooms in the school rather than the whole school building. This would enable staff and students to focus more on discussing the data and prioritising recommendations to be put to the School Governors.

Dissemination of Findings

Students presented their findings in the form of an energy report and a Powerpoint presentation to their respective Governors and Senior Leadership Teams. These presentations were either to a sub-committee of the Governors, for e.g. the finance sub-committee, with members of the SLTs present or to a group of interested Governors, again with members of the SLT present. These presentations were very successful with positive feedback from both the Governors and SLT's. 5 sets of Governors/SLT's committed to reviewing the recommendations, implementing the no-cost and some low-cost recommendations now, and considering ring-fencing savings from the no or low cost measures to implement further energy saving in the future.

Some School Energy Management Teams required a lot of support to write their energy reports resulting in staff frequently travelling to and from schools, with students also missing more lessons to work on the project than anticipated. Following internal discussions it was decided that students would focus on creating a Powerpoint presentation only during Phase 2.

School Energy Campaign

Each SEMT then planned and implemented a behaviour change campaign in their schools. These focussed on only using lighting when needed and turning it off if it wasn't needed. The focus stemmed from the findings of the technical survey and the student survey.

The campaigns included:

- Pledges tree – 3D tree with pledges written on leaves, in tandem with World Environment Day.
- Dress Up Bright Day – Pupils and staff give £1-2 and dress up in bright clothes, the best dressed student/teacher receives a prize.
- Email/social media/poster campaign – Awareness raising activities to promote energy saving culture; cut out posters to fit over light switches.
- Bike Power – using peddle power to make smoothies, which can be sold to students and staff to raise money for energy saving measures.
- Tutor time activities – For example, showing Solar Aid video; running Smoothie bikes; general energy saving tips etc.
- Information/tips on intranet and digital displays around school.
- Awareness event/day focussed on climate change and plastic pollution.

The campaigns mainly ran successfully and will have contributed to raising awareness. Their efficacy in changing behaviour, given the time and resources available, should be investigated. However, the effect they have had on the students organising the campaigns should not be underestimated. A real sense of achievement and realisation that they could instigate and lead on something that could create change was evident.

Awareness Evenings

This element was meant to focus on two aspects, an opportunity for the SEMT students to raise awareness of their activities to peers, teachers and parents; but also to bring in other agencies to raise the profile of fuel poverty within the school community.

While two schools were able to have awareness stands at pre-existing events, other schools found this difficult to implement. It was also felt that very few parents would attend a standalone event.

In addition it was difficult to gain buy-in from other support organisations and one national provider of fuel poverty support and advice was going to attend two events, but had to pull-out at late notice.

Work Placements

The idea of this element was for students to take their learning from the training, school survey and report writing and use those skills within a local business to advise them on becoming more energy efficient.

While there was interest amongst schools and local businesses this element of the project was effectively cancelled due to each school not having their own transport (mini-bus) or a budget to pay for the provision. If this is to be done in future projects, then a budget to facilitate this will be needed.

Publicity

Tweets were sent following all visits to schools. Press Releases were sent for each school following presentations to Governors and campaign days as well as following the Your Green Future Event. We had some success with articles being published, especially at Builth Wells High School; while at Brecon High School we were able to get an article published in the construction companies (BAM Construction) newsletter, which has a circulation of 14,000 readers (the newsletter was in Dutch).

Evaluation

Once all activities had taken place all students and staff were asked to complete a 'post-project' behaviour survey online. The SEMT students were also asked to fill in a post-project online survey. Lead Teachers were asked to submit their evaluation of the project via an online questionnaire.

In addition, data from the schools' energy diaries was used to measure the fiscal impact of the project as well as evidence reductions in CO₂ emissions.

All data and information provided during the benchmarking and evaluation process is analysed in the 'Evaluation' section below.

Summary of Findings

This report has outlined the main activities and achievements of Phase 1 of Our Future's People. The project has been evaluated by an external evaluator and a full evaluation of Phases 1 and Phase 2 produced.

The key points from the evaluation of Phase 1 are outlined below.

The Project Exceeded its Outputs

Based on a 50:50 split of the output/ outcome measures between the two Phases, the project has exceeded its targets.

Project Outputs

Output	PI	Actual
No. of networks established	1 over 2 Phases	1 Local Delivery Team Phase 1
No. of pilot activities undertaken/supported	1	1 Pilot Study
No. of stakeholders engaged	1,000	1,615
No. of participants supported (awareness raising events only)	500	2,204

Project Outcomes

Outcome	PI	Actual
No. communities benefitting	5	3 High Schools
No. businesses benefitting	15	8 organisations at YGF events

The project reached over 2000 students in 5 Phase 1 target High Schools, one other Powys High School (Llanidloes - which would be part of PHASE 2) and a Brecon – based school for students with learning difficulties. These two non-Phase 1 target schools attended a Your Green Future Event.

The funder required letters /emails from participating schools to prove that they had benefitted. This explains why the outcome is lower than the PI in the table above.

Likewise, the funder required similar evidence from businesses attending the YGF events so, although surveys show 16 businesses/ exhibitors/mentors attending YGF and positive feedback from surveys, only the lower figure in the table above can be shown.

Assemblies were held in all 5 High Schools and the project presented to approximately 2,204 pupils.

School Energy Management Teams (SEMTs) were established in all 5 High Schools. 112 students in total were members of a SEMT in Phase 1. The largest was Gwernyfed (30), the smallest Crickhowell (14). This report has already discussed how the larger teams were sometimes difficult to manage.

272 students attended the Your Green Future (YGF) events at the Royal Welsh Showground Llanellwedd. 5 organisations attended Local Delivery Team meetings to plan the YGF event.

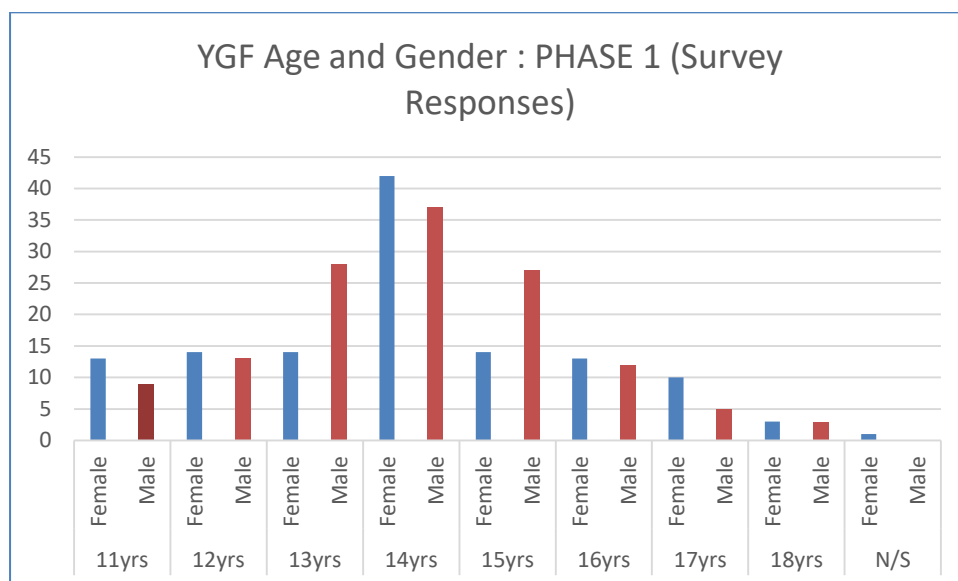
An Equitable Split of Female and Male Student Participants

Of those students who filled in the YGF pre- event survey, (258 students) there was broadly an equal proportion of male and female students.

YGF Pre-event Survey: Gender

Gender	PHASE 1	
	Number	%
Female	124	48%
Male	134	52%
TOTAL	258	

In Phase 1 the YGF events attracted students across a wide age range but with a peak in numbers around 14 /15 yrs.



Sample size 258

The Project Raised Awareness of Energy Efficiency

One of the project's aims was, to reduce energy use, thus improving the sustainability of a school's operations.

This aim was reflected in the hopes and reflections of SEMT members:

- 41 % mentioned saving energy as one of their hopes.
- 57% of SEMT members felt that one of the project's achievements was that it saved money.

Student energy audits were carried out at each school but as this report has already said, feedback suggested that the amount of data was difficult for students to process.

We have saved a load of energy. *Student*

Energy diaries were part of the original project design but , in reality these proved difficult for students to complete and the amount of support needed was a major drain in Phase 1 on project staff. Project staff took on the role of monitoring school energy and collating technical data for student reports.

The original project design envisaged an awareness evening taking place at each school for parents, organisations and the wider community. These proved difficult to organise given the time and other resources needed. Schools also had problems attracting external agencies to events. It was decided that these events would only go ahead if they piggybacked onto other events. This was done in two schools.

Despite the changes made to the original project design, comments from SEMT students consistently show that their awareness has increased as a result of the project.

The Wider Impact of the Energy Campaigns is Harder to Quantify

Behaviour Change

Students, teachers and other members of staff from participating schools were asked to fill in a pre-project and a post-project energy use behaviour survey. The survey had two distinct elements to it. One set of questions asked about behaviour at school, the other behaviour at home.

The table below shows that numbers of pre-project surveys were good but this fell away dramatically for post-project surveys. This means that the behaviour survey cannot be used as a means of evaluating behaviour change.

Behaviour Surveys Completed

PHASE 1		PRE	POST
Student	School	1178	214
	Home	1109	206
Teacher	School	113	15
	Home	112	15
Other Member Staff	School	52	4
	Home	52	2

Energy Savings

Data gathered by project staff was used to estimate that participating schools on average saved £4,036 a year during the project lifespan. It is not possible however to attribute this saving solely to the work of the project. Other factors may have come into play.

The Project had a Positive Impact on Student Self-confidence.

Students reported an increase in self-confidence as a result of participating in the project. Project staff also reported the impact the project had in this respect, especially on the students who were part of SEMTs.

I have become more confident speaking in front of people.

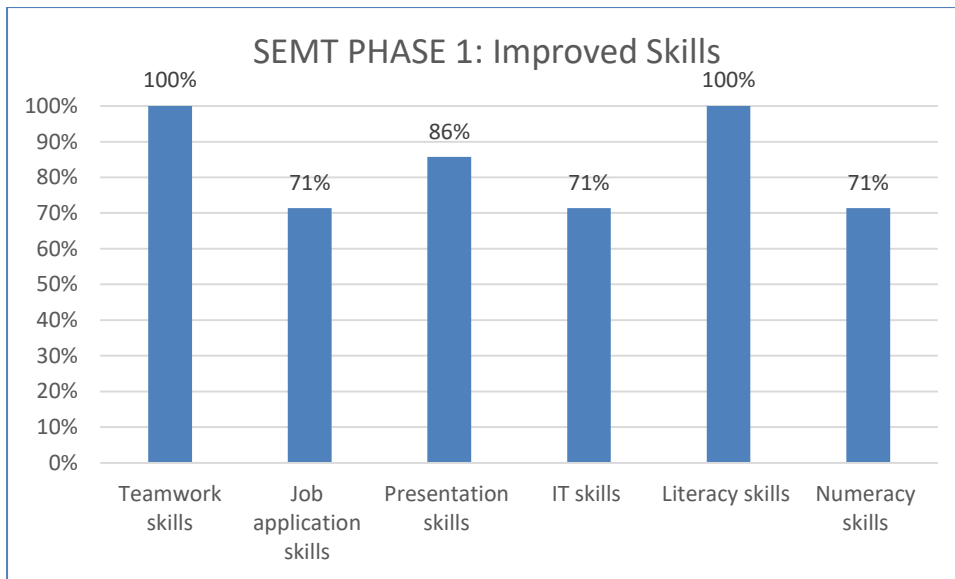
The training was well received with some feedback on the need to be more focussed in some cases.

Students particularly valued the opportunity to speak to Governors and Senior Leadership Teams within participating schools. This gave them the sense of being listened to.

Students Gained Transferrable Skills

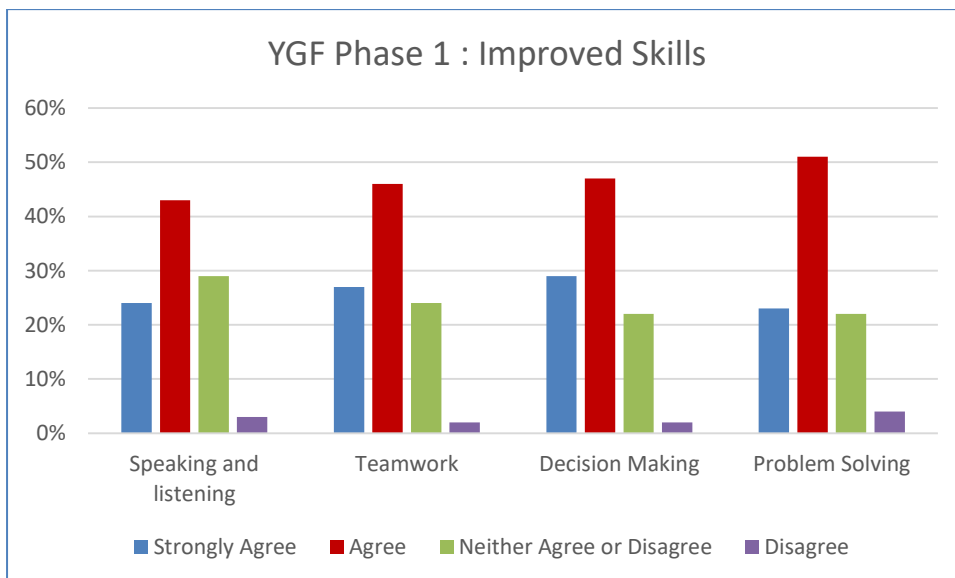
The post-project SEMT survey demonstrated clearly that students gained a range of transferable skills through participation in the project as illustrated in the graph below.

This first graph demonstrates that teamwork skills and literacy skills were the aspects most SEMT students felt had improved.



Sample size 87

The second graph shows that students involved in YGF events agreed or strongly agreed that participation had improved their skills.



Sample size 272

Students Gained Awareness of Employment Opportunities in the Green Economy

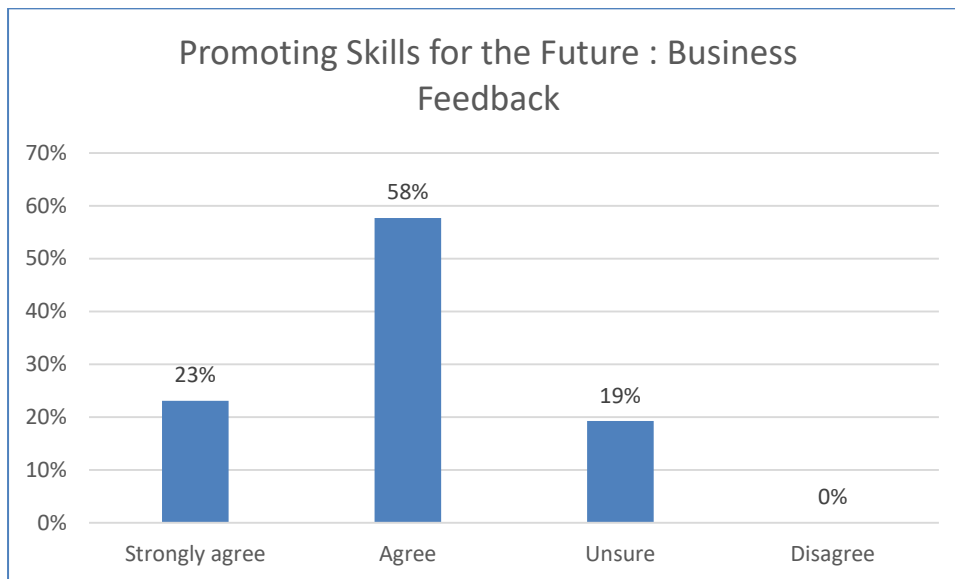
Teachers and local businesses both valued the opportunity that the YGF events gave for exploring careers in the green economy.

This point was reinforced when businesses were asked to comment on the statement that the YGF event, "Gave our organisation the opportunity to

A well-planned event that gives pupils multiple opportunities to further their learning in green issues and employment opportunities.

Teacher

promote the skills we need now and in the future". 81% either strongly agreed or agreed.



Sample size 26

Student feedback from the YGF events also demonstrated a greater awareness of opportunities in the green economy.

Having attended the event I have a better understanding about

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Disagree Strongly
..what choices I can make to lead a more sustainable life	28%	59%	10%	3%	0%
... what businesses do to promote sustainability	23%	57%	18%	2%	0%
... what engineering is	24%	44%	27%	4%	1%
....what engineers do	26%	42%	27%	3%	2%

Sample size 196

Project Monitoring and Evaluation Tools Required Modification

Mention has already been made to a slimmed down version of energy data tools originally envisaged by the project. The completion of post-project behaviour surveys was low and only Ysgol Maes y Dderwen completed the post SEMT surveys.

Project staff chased schools which took time and energy. The amount of survey work for evaluation purposes was perhaps not well pitched for project purposes. It is unclear why some questions were being asked e.g. what school-based activities children were involved in.

The tools used for evaluation were not perhaps the most appropriate. The use of Survey Monkey online survey had to be completed in school and participants had to have the opportunity and the time to complete these. This organisation and chasing fell on teachers.

A more interactive evaluation at YGF events and in school possibly linked to the school energy campaigns, may have worked better.

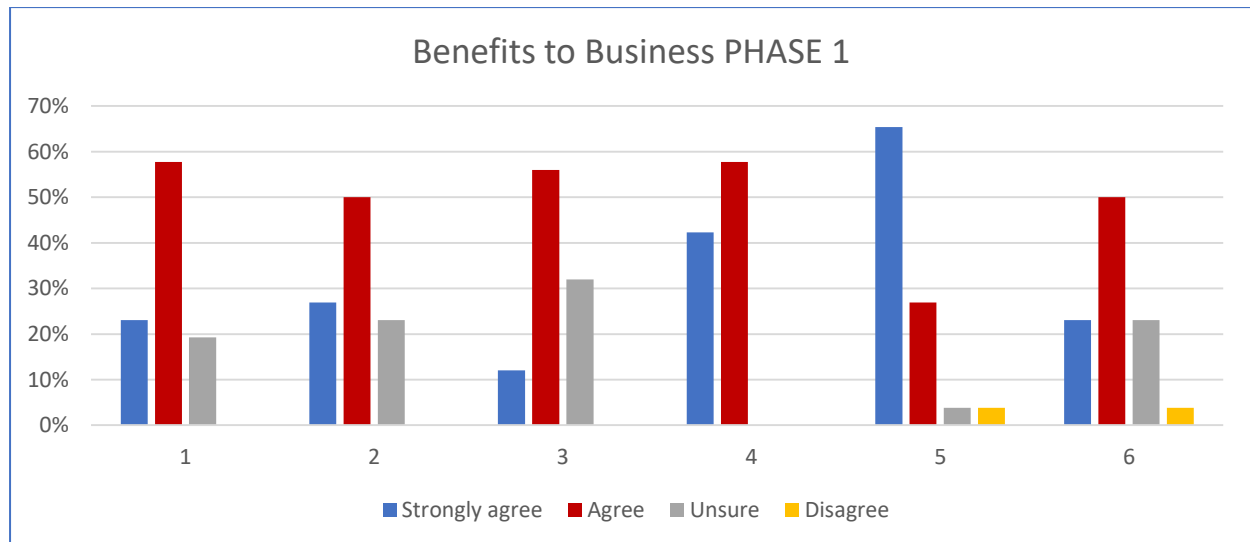
Business Participation was Good

Although rurality made it difficult to bring together businesses on a regular basis for Local Delivery Team meetings, participation in YGF events was good. 22 organisations (86 professionals from the green economy) took part in the events.

Engaging and well-constructed with excellent planning. Focused on the participants and their future. A pleasure to contribute to this event.

Exhibitor YGF

The benefits of the events are illustrated in the graph below.



- 1 Gave our organisation the opportunity to promote the skills we need now and in the future
- 2 Provided a good opportunity to network with other businesses
- 3 Helped to develop new ideas that I am able to take back to my organisation
- 4 Was a good opportunity to promote our organisation in the local area
- 5 Provided an opportunity to educate attendees on the things that matter to my organisation
- 6 Provided inspiration for the environmental issues my organisation is tackling

Sample size 26

A work placement element was originally included in the project design. Although schools and businesses were keen, the logistics of getting students to work placements proved problematic. This element was dropped.

Rurality had an Impact on the Project

The very rural nature of Powys had a big impact on the project. In Phase 1 staff were travelling from outside the area to support schools which was challenging for project budgets, especially when schools required more time than originally anticipated.

Some schools reported issues with travel time to YGF events as did businesses. No venue was going to suit everyone.

Pulling businesses, especially SMEs, together for project planning was problematic over a large area. The work placement element did not happen mainly because of travel costs and logistics.

Conclusions

Pilot Phase 1 of the OFP project demonstrated excellent engagement and a demonstrable increase in student knowledge of a low carbon economy. It had an impact on student skills, especially for those involved with SEMTs.

The project learnt much about delivery models in Phase 1 which they took forward to Phase 2.

Appendices

Appendix I – Example of Student Presentation



The European Agricultural Fund for Rural Development: Europe Investing in Rural Areas
Supported by the Sustainable Development Fund – Brecon Beacons National Park Authority

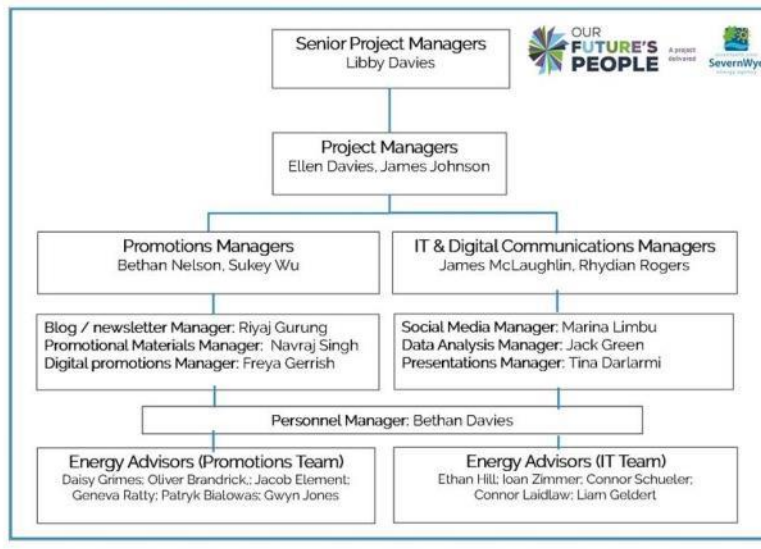


By the end of this presentation you will...

2

- ▶ Know the activities we have completed so far.
- ▶ Be aware of the current energy situation in the school.
- ▶ Understand how we can reduce energy use in the school.
- ▶ Know what we would like to see in the new school to ensure it is as energy efficient as possible.





- ▶ Recruitment interview
- ▶ Training
- ▶ School survey
- ▶ Survey report
- ▶ Presentation writing



How much energy is used at our school?

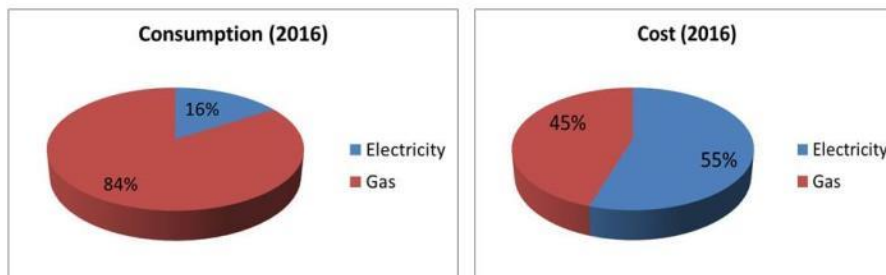
5

Utility	Annual consumption (kWh)	Annual Cost (£)
Electricity	267,524	£31,911
Gas	1,312,219	£25,352
Total	1,579,743	£57,263



Brecon High School Energy Data

6





Carbon emissions

7

Utility	Annual CO ₂ emissions (tonnes)	Households equivalent	Balloons CO ₂ equivalent
Electricity	119.2	20	11,924,080
Gas	278.2	46	27,820,360
Total	397.4	66	39,744,440



How do we compare to other schools?

8

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed; they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient



Less energy efficient





How do we compare to other schools?

9

	Heating	Electricity
Our school's energy use (kWh/m ² /yr)	209	37
Average school's energy use (kWh/m ² /yr)	156	40



Our energy survey

10





Lighting

11

Issue identified	Recommended improvements in current school	Recommendations for the new school
<ul style="list-style-type: none"> T12 and T8 bulbs are being used (they're not efficient) 	<ul style="list-style-type: none"> Make teachers and students turn off lights when they are not needed. 	<ul style="list-style-type: none"> LED lighting throughout the school (inside and outside).
<ul style="list-style-type: none"> 16 empty rooms with lights left on. 	<ul style="list-style-type: none"> Include as part of energy awareness campaign. Consider having people responsible for switching off lights during lesson changes. 	<ul style="list-style-type: none"> Automatic or movement-sensor lights.
<ul style="list-style-type: none"> 16 rooms had lights on when daylight was able to light the room sufficiently. 	<ul style="list-style-type: none"> Include as part of energy awareness campaign. Consider awareness week where teachers are asked to turn the lights off at the start of each lesson and consider whether they are needed. 	<ul style="list-style-type: none"> Lux sensors that automatically dim the lights according to the level of natural daylight OR ensure occupancy sensors have over-ride switch so they can be turned off on bright days.
<ul style="list-style-type: none"> Lights closest to windows on when plenty of sunlight coming through windows. 	<ul style="list-style-type: none"> Label light switches closest to windows with red sticker – Ask people to leave this off whenever possible. 	<ul style="list-style-type: none"> Lux sensors that automatically dim the lights according to the level of natural daylight.



Electrical appliances

13

Issue identified	Recommended improvements in current school	Recommendations for the new school
<ul style="list-style-type: none"> Too many computer screens/monitors were left on. (Our behaviour survey showed that 56% of staff and 22% of students rarely or never shut their computer down after use and 35% of staff and 24% of students rarely or never turn the screen off after use) 	<ul style="list-style-type: none"> Install automatic shutdown software so that computers automatically shut down at a set time in the evening (unless over-ridden) Set computers to hibernate after 10 minutes of inactivity (monitors are currently set to turn off but not computers) Encourage people to turn off computer screens after use (so they are not left on standby) 	<ul style="list-style-type: none"> Install automatic shutdown software so that computers automatically shut down at a set time in the evening (unless over-ridden) Have master switch in IT suites that turns off all screens
<ul style="list-style-type: none"> Whiteboard and projectors were left on when not in use 	<ul style="list-style-type: none"> Include as part of our energy awareness campaign 	<ul style="list-style-type: none"> Have screens rather than projectors and ensure that they 'sleep' automatically
<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Don't have 'bling' appliances (e.g. display screens) that aren't needed
<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Ensure any new appliances purchased have the best energy rating possible





Issue identified	Recommended improvements in current school	Recommendations for the new school
• Blinds down and lights on.	• Include as part of energy awareness campaign – Open blinds once finished using projector.	• More natural lighting (windows).
• All lights on when only part of a room is being used.	• Include as part of energy awareness campaign.	• Parallel circuits – lights individually controllable.
• Lights left on until cleaning staff lock the rooms each night (typically 8/8:30pm).	• Lights could be switched off by teachers when classrooms are vacated at 3:30/4pm.	• Maintain this routine



Issue identified	Recommended improvements in current school	Recommendations for the new school
Appliances being left on overnight, at weekends and during school holidays	<ul style="list-style-type: none"> • Start system where site staff go round the school and switch everything off, either... <ul style="list-style-type: none"> - At the end of every day (ideal) - At the end of the day on Friday (if the above not possible) - At the start of the school holidays (if the above not possible) • Turn off empty fridges across school and in catering during holiday periods • Fit timers to: <ul style="list-style-type: none"> - Bottle fridge (Catering) - Water cooler (English corridor) - Coffee machine (Photocopy Room) - Printer (6th form quiet room) 	Maintain this system in the new school. Fit timers to appliances that are commonly left on overnight



Issue identified	Recommended improvements in current school	Recommendations for the new school
Classrooms are far too hot (24°C in most areas compared to recommended 19°C)	Reduce time and temperature settings	Carry out temperature monitoring during first heating season and adjust heating settings accordingly Check room thermostats are set to 19°C
Radiators were unable to be turned off.	None	Have TRV's for the radiators with numbers so that we are able to control the amount of heat needed.
Some windows were open while the radiators were on.	Run campaign discouraging people from opening windows in winter. Reduce heating temperature setting.	Install thermostats into rooms so that we can control the heating instead of having to waste energy by opening windows whilst radiators are on.
There were some radiators covered e.g. in P1 a radiator was completely covered by a cupboard.	Move items that are blocking radiators.	Consider underfloor heating.
There were no thermostats in any rooms.	None	Have individual room thermostats so that teachers can achieve their desired room temperature.



Recommendations for the new school
Plan heating zones carefully so that areas used outside of normal school hours can be controlled separately.
Consider use of renewable heating (e.g. Biomass, air / ground source heat)





Heating and hot water

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Block	Current average winter temperature	Potential % saving if temperature reduced to 19°C
Upper school (downstairs)	24°C	40%
Upper school (upstairs)	24°C	40%
Middle School	24°C	40%
Lower school (upstairs)	24°C	40%
Lower school (downstairs)	23°C	32%



Insulation

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Issue identified	Recommended improvements in current school	Recommendations for the new school
Windows open (58% of staff open windows rather than turning down the heating)	Reduce temperature setting using centralised controls and then include as part of energy awareness campaign	Experiment with heating settings until get building to consistent 19°C classroom temperatures
Lots of draughty windows/doors/windows not closing properly	Repair windows and install draught-proofing.	Draught lobbies at entrances
Uninsulated pipes	Insulate pipes with foam tube insulation	None of these issues will arise as the new building will have a BREAM rating of excellent, meaning that it will be well insulated throughout and will have double glazing as standard
All windows single glazed in all rooms.	None – would not be cost effective to replace or add secondary glazing	
The school has unfilled cavity walls	None – not cost effective	





Solar panels



Biomass boilers



- ▶ Reduce heating time and temperature settings (by 0.5°C and 10 mins per week)
- ▶ Move items blocking radiators
- ▶ Install automatic shutdown software to computers so they automatically shut down at a set time each evening
- ▶ Set computers to hibernate after 10 minutes of inactivity
- ▶ Turn off empty fridges across school and in catering during holiday periods
- ▶ System for site staff turning all lights and appliances off:
 - At the end of every day (ideal)
 - At the end of the day on Friday (if the above not possible)
 - At the start of the school holidays (if the above not possible)
- ▶ Fit timers to:
 - Bottle fridge (Catering)
 - Water cooler (English corridor)
 - Coffee machine (Photocopy Room)
 - Printer (6th form quiet room)





Lighting:

- ▶ LED lighting throughout the school (inside and out).
- ▶ Combined occupancy and lux sensors with manual over-ride.
- ▶ Windows and skylights to maximise use of natural light
- ▶ Multiple switches so have the option of using only some of the lights in a room

Electrical appliances:

- ▶ Install automatic shutdown software to computers
- ▶ Have master switch in IT suites that turns off all screens
- ▶ Have screens rather than projectors and ensure that they 'sleep' automatically
- ▶ Ensure timer switches fitted to all water heaters, photocopiers, water coolers, vending machines
- ▶ Don't have 'bling' appliances (e.g. display screens) that aren't needed
- ▶ Ensure any new appliances purchased have the best energy rating possible



Heating:

- ▶ Carry out temperature monitoring during first heating season and adjust heating settings accordingly
- ▶ Rooms to have room thermostats or TRVs
- ▶ Check room thermostats are set to 19°C
- ▶ Consider underfloor heating.
- ▶ Plan heating zones carefully so that areas used outside of normal school hours can be controlled separately.
- ▶ Consider use of renewable heating (e.g. Biomass, air / ground source heat)
- ▶ Experiment with heating settings until get building to consistent 19°C classroom temperatures

Insulation:

- ▶ Draught lobbies at entrances


Renewable energy:

- ▶ Solar PV (with diverter switch so excess electricity can be used to heat water). As large a system as possible, maximising use of any south-facing roofs.







Appendix II – Example of Student Report







Supporting schools and their communities is sustainability and student development since 2007



School Energy Management Team Report



Crickhowell High School
Date of publication: 1st February 2018

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Introduction

This report has been produced as part of the *Our Futures People* project run by Severn Wye Energy Agency and supported by the *Rural Development Programme* and the *Brecon Beacons National Park Sustainable Development Fund*. It outlines the findings of an energy survey carried out on 11th November 2017 and provides some key recommendations for reducing the school's bills and improving its educational performance.


Credits

This report has been produced by:

With thanks to:
Miss Panfil, Mark Stead, Mr Brown, Mrs Shand

General Description of School

Crickhowell High School is a community comprehensive secondary school located in the Brecon Beacons National Park. It is an English medium school of about 900 and the age range of the students is 11-19. Crickhowell is a Green Flag school and has now been awarded a Platinum flag due to its sector leading practice in the area of sustainability. The school was built in 1963 and an extension was added to one of the buildings about 20 years ago. The school community is continuing to strive to maintain and improve its commitment to ESDGC.



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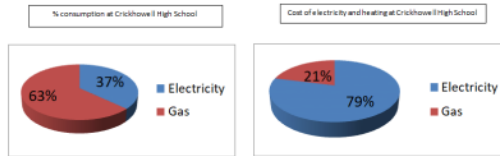
School Energy Performance

Current Energy Use

The energy sources used in our school are electricity and gas.

Utility	Annual Consumption 2016		Annual Cost 2016	
	KWh	% of total consumption	£	% of total cost
Electricity	326,518	37%	£39,874	79%
Gas	567,796	63%	£11,095	21%
Totals	894,314	100%	£50,969	100%

Overall our school used 894,314 kWh of energy in 2016 and this cost the school a total of £50,969.



Two charts showing proportion of consumption and cost made up by different energy sources in 2016

Even though we use more gas, the cost of the electricity is actually much higher. This is because electricity is considerably more expensive per kWh than gas.

Carbon emissions data

The table below shows the CO₂ emissions arising from our school's use of each fuel type:

Fuel Type	Annual CO ₂ emissions - tonnes	No. of households equivalent	No. of party balloons this would fill	No. of trees that would have to be planted to offset these emissions
Electricity	146	14	14,553,560	728
Gas	120	20	12,037,841	602
Total	266	44	26,591,402	1330

Annual Carbon Dioxide emissions from energy use at Crickhowell High School during 2016

In 2016, a total of 266 tonnes of CO₂ was emitted from our school as a result of our energy use. This would amount to 44 households. We would have to plant 1,330 trees to offset this and it would fill 26,591,402 party balloons.

As you can see, the greatest environmental impact resulted from our school's electricity use, although the environmental impact of our gas use was also significant.



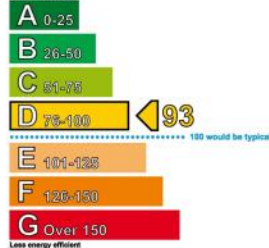
Display Energy Certificate

Schools are required to display a 'Display Energy Certificate'. This shows how the school compares to the average school. As you can see from the rating below, our school achieved a D rating and a score of 93. The average score for a school is 100 meaning that our school uses slightly less energy than the average school.

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed, they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient



This is also broken down for electricity and heating. As you can see from the table below, our school uses less gas than the average school but more electricity.

	Gas	Electricity
Our school's energy use (kWh/m ² /yr)	87	53
Average school's energy use (kWh/m ² /yr)	141	40

Main findings of energy survey

Lighting

Lighting typically accounts for approximately 10% of a school's total energy use but up to 25% of total costs as electricity is usually considerably more expensive than heating fuel. Therefore, there are substantial savings that can be made by improving the type, control and use of lighting in our school.

Main issues identified	Recommended actions
Lots of T8 and T12 lights	Replace with LED lights with occupancy and LUX sensors
53% of rooms had lights on when there was plenty of natural day light	Campaign to encourage teachers to turn off lights when there is plenty of daylight
47% of rooms had all lights on when those nearest the window could be off	Label switches controlling lights closest to windows. Ask people to leave these off on all but the darkest days
22% of rooms had lights left on when the room was empty	Campaign to encourage people to turn lights off Check occupancy sensor timings
Some rooms without occupancy sensors	Install sensors in toilets, changing rooms and any dark corridors that don't already have them
Automatic sensor lights stay on too long	Alter settings
Some sensors not working	Replace sensors

There are four types of lighting. T12 is the worst, T8 are average, T5 are quite good and LED are the best and most environmentally friendly. Our most common lighting sources are 2 foot T5 which are good but LED are better. A good way to spend the school's money is to replace as many lights as possible with LED. According to the survey, the school already has a few LED lights, which is a positive. If you were to replace any of the lights, I would start with the T12. We could fit the new lights with occupancy and LUX sensors. This would mean that the lights would automatically switch off when the room is empty and would automatically dim as levels of natural daylight increase.

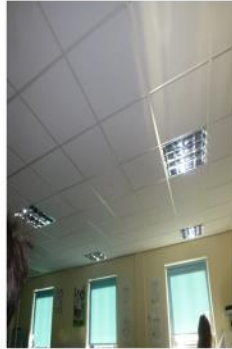
The problem we suffer from most is lights being left on when there's plenty of natural daylight. We suggest having a natural lighting awareness week where teachers are asked to switch all of the lights off at the start of each new lesson and decide whether they really need to be on. We will also encourage teachers to open blinds whenever possible to make better use of natural daylight. We will also label the switches controlling lights closest to windows and ask teachers to leave these off on all but the darkest of days. Another problem is lights being left on in empty rooms. We will include in our campaign encouraging people to turn lights off when they are the last to leave a room. As many rooms have sensors, we also need to check how long these lights are staying on for and reduce this setting where required. Where sensors aren't already in place, we recommend installing these in toilets, changing rooms and any dark corridors.



T8 lights with diffusers. Ideally, we would like to replace these with LED lights with reflectors



Lights on when not in use



Blinds closed when plenty of natural daylight

Electrical appliances

Electrical appliances use a significant amount of electricity in schools. This can be reduced by ensuring that appliances are switched off when not in use. This can be achieved through a mixture of behaviour change and automated control.

Main issues identified	Recommended actions
34 computers left on when not in use	Include as part of a school-wide energy awareness campaign
15 computer screens left on when not in use	
7 projectors left on when not in use	
Computers left on overnight	Install automatic shutdown software
Appliances left on when schools not in use	Fit timer switches to <ul style="list-style-type: none"> Vending machines in 6th form Vending machine in PE block Laptop charging trolleys in A1 and L3 Screen in PE block Start system where site staff go round the school and switch everything off either: <ul style="list-style-type: none"> At the end of every day (ideal) At the end of the day on Friday (if the above not possible) At the start of the school holidays (if the above not possible)

The main issues in terms of electrical appliances relate to appliances being left on when not in use. Many appliances are left on when the school is closed. To solve this we could fit timers to vending machines, laptop charging trolleys and display screens so that these appliances automatically switch off overnight. We also recommend starting a system where site staff go round the school and turn everything off either at the end of each day, at the end of the day on Friday or at the start of each school holiday (depending on how much time they have available). The school also lacks automatic shutdown software for computers so we recommend that this is installed and that updates are scheduled to take place between the end of the school day and the time computers are set to shut down for the evening.

The remainder of the issues relate to pupils and staff leaving appliances on. These issues will form the focus of our energy awareness campaign.



We found that computers and screens are often left on when not in use



We recommend fitting timers to appliances such as vending machines so that they are not left on overnight.



An example of un-insulated pipework



An example of a covered radiator

Temperatures and comfort at our school

The table below shows the average classroom temperature for different areas of the school. Where the temperature is higher than the recommended temperature, the potential savings are indicated, showing how much energy is likely to be saved by reducing temperatures to those recommended. This is based on an average 8% saving per 1°C reduction in heating temperature.

Block	Average temperature of a classroom	Potential saving if temperature reduced to 19°C
Upper floor	23°C	32%
Ground floor	21°C	16%
Lower ground floor	21°C	16%

The highest temperature in a single classroom was 25 degrees. Three classes in total had this temperature. The highest temperature for a block, however, was 23 degrees, being slightly lower than some of the individual classrooms. Out of the 61 classrooms surveyed, only 6 were at the recommended temperature, 19 degrees. If all of the classrooms were at 19 degrees, the total saving would be up to 32%.

Heating

Heating is usually the largest and most expensive use of energy in a school and significant savings can be made through the implementation of even simple, low-cost measures. In fact, it is possible to cut heating costs by up to 30% by simply adjusting time and temperature settings.

Main issues identified	Recommended actions
Rooms are generally too hot	Heat rooms to a lower degree (reduce temperature setting by 0.5°C per week until people feel cold then take back a step) and install more thermostats
Heating is on from 6:30am to 9:00pm	Experiment with reducing the amount of time the heating is on (reduce by 10 mins. per week until people feel cold then take back a step)
20 un-insulated valves in the boiler room	Install insulation jackets
Many radiators do not have TRVs	Install more TRVs
Heating pipes un-insulated	Insulate the pipes
Radiators covered by objects	Move objects to a more practical place

During our survey of the school's heating, we identified many issues, and also some good points which the school should continue to develop. Many of the rooms in the school are too hot, meaning that not only are they uncomfortable, but a lot of heat is being wasted. On the ground floor and lower ground floor, the average temperature was 21 degrees, and the recommended temperature is a far lower 19 degrees. The upper floor was even worse, the average temperature being 23 degrees. We will be able to effectively eliminate this problem by turning down the temperature by 0.5°C each week until people report feeling cold. We can then take it back a step. We also recommend installing more Thermostatic Radiator Valves.

Many pipes in the school have been left uninsulated, which is a big problem as heat will be escaping through them. A solution would be to insulate the pipes with foam pipe insulation.

In total, there are at least 12 radiators that are being covered by various shelving units etc. These need to be moved so that the heat can escape into the room.

Also, we should begin turning the heating on later in the morning and off earlier at the end of the day, by roughly ten minutes each week until people begin to feel cold, at which point you can return to the previous setting. This way, you can reduce how long the heating is on, whilst still ensuring the building is heated to a comfortable temperature.

Insulation

Generally, in order to improve energy efficiency we aim to prevent warm air from leaving buildings. However, if a building was completely sealed the air would soon become stale and stuffy. Therefore there needs to be a certain amount of air exchanged from outside. However, significant reductions in energy use can be achieved by reducing levels of heat escaping from buildings and from the heat distribution network.

Main issues identified	Recommended actions
113m of un-insulated pipe work	Use tube insulation
Lots of single glazed windows in main building	Get new double glazed windows or secondary glazing
57% of staff have windows kept open whilst heating is on	Put posters up by the windows asking teachers to keep them shut and speak to teachers at one of their staff meetings
Draughty doors and windows	Draught proofing
Main school building has unfilled cavity walls	Install cavity wall insulation
Main school building and ICT block have very little roof insulation	Top loft insulation up to recommended 270mm

When we surveyed the school we found out there was lots of un-insulated pipe work. To solve this problem we will persuade the site manager and others to put on foam tube insulation. This will solve the problem and will help the rooms warm up faster, saving money for the school.

Furthermore, we found a lot of single glazed windows which means we are losing heat and wasting money, this also goes for leaving windows open. The solution to these problems are to get new double glazed windows (or cheaper secondary glazing) and educate people on how important it is to close windows. Also we discovered draughty windows and doors. This is easily solved by putting in draught proofing. This will help the heat stay in the rooms and insulate them. In the main school, the walls have a gap in them to prevent losing heat through the walls but the gap is not filled with insulation. We can fill them with cavity wall insulation which will keep the heat in even better. Finally our school has very little roof insulation so we recommend topping it up with more insulation to the recommended 270mm.



Here you can see some of the issues relating to insulation.
 Top left: Heat being lost from un-insulated pipes
 Top right: Windows being opened whilst the heating is on
 Bottom left: Example of a draughty door
 Bottom right: Example of a draughty window

Renewable energy

In the school, we already have some renewable energy. From what people have gathered there are solar panels on the ICT block which were installed in 2013. People would like to have more PV panels and maybe even wind. The reason we would like more PV panels is because we don't have very many and it would help a lot if we did. We suggest placing solar panels on the A3 roof. Below, you can see that if we installed a 17.5 kWp system, it would cost just over £20,000 but would pay for itself in just 7 years. Imagine the benefits of such a wonderful item. More electricity for less money!

Crickhowell High School			Solar PV Benefit Calculator Scenario 1		
System Sizing by Area	Generation Breakdown	Panel Data	With 17.5kWp EPC:		
Available roof area: 174.3 m ²	Annual generation: 36,817 kWh	Panel type: Monocrystalline	PER LEVELS TABLE - APR 2017		
Area to maximum capacity: 17.5 kWp	-Ofcar units: 6,905 kWh	Specific panel output: 205 kWh/m ²	Solar PV - up to 4kW: 4.14 kWh/m ²		
System Capacity & Export	-Demand required units: 8,199 kWh	Annual output: 283.4 kWh/m ²	Solar PV - 4-10kW: 4.14 kWh/m ²		
PV system characteristics:	Annual Revenue Breakdown		Solar PV - 10-20kW: 4.36 kWh/m ²		
Solar collection factor (shading): 100%	Feed-in-Tariff payment: £ 725		Solar PV - 20-25kW: 1.93 kWh/m ²		
Current electricity tariff: 19.9 p/kWh	Export bonus payment: £ 498				
WPA (weather-related tariff): 95%	Interest savings: £ 1,728				
Demand response: 50%	Total Benefit: £ 3,874				
Feed-in-Tariff Band: 4.4 p/kWh					
Payment to ALL generation: 1.8 p/kWh	Economics				
	Full-scale CO2: £ 20,961				
	Carbon saving: £ 1,202				
	Simple Payback: 7.2 years				
			INSTALLED COSTS TABLE		
			Solar PV - up to 4kW: £ 1,275 /kWp		
			Solar PV - 4-10kW: £ 1,200 /kWp		
			Solar PV - 10-20kW: £ 1,100 /kWp		
			Solar PV - 20-25kW: £ 1,100 /kWp		
			Roofs		
			Irradiance dataset to Cadfit used		

The information above is an entire Solar PV Benefit Calculator Scenario.

Priority actions
 These are listed below:

Our top 12 recommended actions:	
1	Upgrade all lights to LED with occupancy and LUX sensors as funding becomes available
2	Install occupancy sensors in toilets, changing rooms and any dark corridors that don't already have them
3	Check lighting occupancy sensor settings to ensure lights aren't staying on for too long
4	Fit timer switches to: • Vending machines in 6th form • Vending machine in PE block • Laptop charging trolleys in A1 and L3 • Screen in PE block
5	Start system where site staff go round the school and switch everything off, either: • At the end of every day (ideal). • At the end of the day on Friday (if the above not possible). • At the start of the school holidays (if the above not possible).
6	Install automatic shutdown software to computers
7	Reduce temperature setting by 0.5°C per week until people feel cold then take back a step. Reduce the amount of time the heating is on by 10 mins. per week until people feel cold then take back a step
8	Move furniture to un-cover any cover radiators
9	Fit insulation jackets to valves in the boiler room
10	Insulate exposed pipework using foam pipe insulation
11	Install cavity wall insulation to main school building
12	Top loft insulation up to recommended 270mm

In addition to the above, we will run an energy awareness campaign to encourage positive behavior change among staff and pupils. This will help to reduce consumption further.

Appendices

Appendix 1: Lighting (Type) – Summary Sheet

Type	Block			TOTAL
	Lower floor	Upper floor	Middle floor	
2ft T12	0	0	0	0
3ft T12	0	0	0	0
4ft T12	2	33	1	36
5ft T12	0	44	0	44
6ft T12	1	0	6	7
2ft T8	1	1	32	34
3ft T8	0	0	0	0
4ft T8	28	28	0	56
5ft T8	0	0	23	23
6ft T8	4	16	12	32
2ft T5	0	82	0	82
3ft T5	0	0	0	0
4ft T5	0	32	0	32
5ft T5	0	47	8	55
6ft T5	0	0	0	0
LED	24	9	28	61
CFL	0	47	0	47
Other	0	0	0	0

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Appendix 2: Lighting (Use) – Summary Sheet

Issue	Block			TOTAL
	Lower floor + B block	Upper floor	Middle floor	
No. of rooms with lights left on when empty	1	11	5	17
No. of rooms with lights on when there is plenty of natural daylight	2	25	14	41
No. of rooms with all lights on when only a few need to be on – because sunny	2	25	10	37
No. of rooms where all lights on when only a few need to be on – because not many people in room	1	25	5	31
Rooms that would benefit from occupancy sensors	0	30	30	60

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Appendix 3: Electrical Appliances – Summary Sheet

Issue	Area		TOTAL
	Upper Floor	Lower Floors	
No. of computers left on when not in use	13	21	34
No. of computer screens left on when not in use	10	6	16
No. of projectors left on when not in use	7	0	7
Appliances where eco-mode is not being used	1 Printer in L5	1 Unknown in H5	2
Appliances that would benefit from a timer switch	Vending machines in 6 th form	Laptop charging trolleys in A1 and L3 Vending machine in PE block Screen in PE block	

Appendix 4: Heating – Summary Sheet

Type of heating	Block			TOTAL
	Upper floor	Lower floor	Ground floor	
Radiators	25	9	13	47
Convactor heaters	0	1	1	2
Underfloor heating	5	0	4	9
Storage heaters	0	0	0	0
No heating	0	1	1	2

No. of radiators without TRVs				
Block	Upper floor	Lower floor	Ground floor	TOTAL
No.	19	4	26	49

Covered heaters / radiators				
Block	Upper floor	Lower floor	Ground floor	TOTAL
No.	7	4	1	12
Details	E1-Partially covered by desk. E2- Completely covered by shelves. E3- Covered by desk. S5- Partially by desks. LRC- covered by large desk. Office- Covered by drawers. Staff Room- Covered by chairs.	A3- Covered by cupboards. A1- Covered by tables and cupboards. A6- Covered by tables.	Covered by desk.	

Block	No. of rooms recorded at this temperature																		Average temp for this block
	<15	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	>30	
Upper floor						1		5	4	11	4	2							23
Ground floor					1	1	3	5	9	1	1	1							21
Lower ground floor				1		4	1	2	1	2	1								21
TOTAL				1	1	6	4	12	14	14	6	3							

Appendix 5: Insulation – Summary Sheet

Un-insulated pipework			
Block	Upper floor	Lower floors	Total
Length	61m	52m	113m

Single glazed windows			
Block	Upper floor	Lower floors	Total
No.	76	51	127

Draughty windows			
Block	Upper floor	Lower floors	Total
No.	16	27	43
Locations	E1, MPS, L3, corridors	S5, S6, S7, M2, corridors	

Windows open whilst heating is on			
Block	Upper floor	Lower floors	Total
No.	18	6	24

Draughty external doors			
Block	Upper floor	Lower floors	Total
No.	5	5	10
Locations	Exit, A3, corridors, sports block	S2, M2, music room, maths corridor, science corridor	

External doors open whilst heating is on			
Block	Upper floor	Lower floors	Total
No.	0	1	1
Locations		Music room	

Appendix III – Energy awareness campaign action plan

Activity	Steps to be taken	When?
Dress up Bright Day	<ol style="list-style-type: none"> 1. Lucy to ask permission from Head 2. Inform students via form tutors 3. Form tutors collect money – finance office 4. Ellie write letter to go with funds 5. Posters with example dress (Lucy, Will, Finlay, Grace, Charlie) 	5 th June (World Environment Day)
Bike power	<p>Pedal power smoothies outside at lunchtime</p> <ol style="list-style-type: none"> 1. MS contact Coop energy: Booked 2. Alex to arrange final details <p>On the day supporting: Ellie, Bryony, Mena, Izzie Making smoothies in morning: Shaun, Alex, Bryony, Ellie, Mena, Izzie Selling: Ffion, Alex, Shaun</p>	5th June (World Environment Day)
Outdoor classroom day	<p>Outdoor lessons if weather allows For Y7/8/9 Posters to send to staff (Ffion, Izzie, Mena, Shaun, Bryony) Remind students to bring sunscreen Inform staff at coffee morning</p>	5th June (World Environment Day)
Info on digital displays and website	Finlay / Will to arrange	Before 21 st May

Activity	Steps to be taken	When?
Activities in tutor times	Show Solar Aid video Smoothie bikes General energy saving tips Alex, Lucy, Grace, Charlie to arrange	WB 4 th June
Pledges	3D tree with pledges on leaves Y7/8/9 in tutor time Y7 cover Y7 tutor groups (Izzie, Mena, Ffion, Shuan) Y8 cover Y8 tutor groups (Bryony, Ellie) Y9 cover Y9 tutor groups (Alex, Rhys, Bran, Ella) Bethany to help out Lucy, Grace, Charlie to put together	Week before half term so can be put up for World Environment Day
Coffee morning for staff	Week before half term Cakes to sell (everyone) CoPE pupils to serve	Tues 22 nd May
Light posters	Cameron to design Laminate, cut out hole for switch and put up	Put up week before half term so up ready for world environment day



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