**Greening Business Group Projects**

Keele University has committed to embedding a ‘deep green’ sustainability ethos throughout its operations with the aim of becoming an internationally-recognized sustainability leader within the Higher Education sector. There are several areas which the University wants to investigate in order to further improve its sustainability performance. Your group will be investigating one of the following 9 sustainability projects:

1) A Sustainable Vehicle Fleet

2) Environmental Baseline Review of Keele Leisure Centre

3) Environmental Baseline Review of Keele Library

4) Waste Management and Recycling at Keele

5) Enhancing Sustainability within the Student Experience

6) Green Transport Strategy

7) Energy Reduction in Academic Buildings

8) A Renewable Energy Strategy for Keele

9) Green Purchasing Policies – Cleaning Products

10) Enhancing the Sustainability Literacy of Staff

**Instructions**

Read through your chosen project. Following the 6 steps below will help you to successfully complete your group projects:

1. Highlight and clarify unfamiliar terms and concepts - make sure you know what everything means and make sure you are clear about what your group task is asking of you.
2. Analyse and brainstorm the task, what are the problems and issues that need exploring, what ideas and solutions can you come up with.
3. Formulate group learning objectives for further research. Learning objectives are a list of things that your group needs to find out and research to be able to complete the task. You may want to split your research into 4/5 areas so each team member takes responsibility for one part of the research.
4. In-between class sessions you should research your agreed learning objectives, i.e. the topic/area/issue that was assigned to you, through the internet, books, articles, etc. and be ready to share this research with your group the next time you meet.
5. Remember to keep in regular contact with your group and discuss ideas and progress via your Facebook or Blackboard discussion groups. You should also meet up as a group in person in-between class sessions.
6. Module staff will be monitoring online group interaction. Please feel free to ask the module facilitator (Sophie) any questions related to your project via email, Blackboard or Facebook. The facilitator is there to provide guidance and support through the group projects.

For all of the group projects it is very important to consider the following two things:

* **Current Practice:** What is Keele currently doing and how can you find out about this? Are there relevant members of staff that you could contact and talk to? Is there information on the internet about what Keele is doing?
* **Other Universities:** What are other universities doing? Can you use examples from other institutions (or other organisations/businesses) to back-up your recommendations?

**Project 1) A Sustainable Vehicle Fleet**

You are working within the Environmental Management team at Keele University. The University wants your team to investigate ways to make ***campus-based*** transport more sustainable. In particular, looking at motorised transport around campus, such as that used by estates staff, security, gardening, maintenance, etc.

You need to present a five minute video to the University’s Senior Management outlining your recommendations for making campus-based transport more sustainable. The recommendations will need to be well justified and based on your detailed research of the different options and issues. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* In what different ways is campus-based transport at Keele used?
* What sorts of vehicles are currently used?
* What are the main environmental issues associated with campus-based transport?

**Facilitator Notes:**

In looking at different motorised vehicle options students should consider:

* All the different uses of transport around campus.
* The number of campus-based vehicles in operation.
* The sorts of vehicles used and needed, i.e. cars, small vans, large vans?
* Do campus-based vehicles ever travel off campus, and if so how far?
* Alternative options to petrol powered motorised transport available on the market.
* Different fuel types and their advantages and disadvantages (from different perspectives).
* The cost (financial, time, environmental/carbon/waste) of purchasing and maintaining alternative vehicles in the long run.
* The production of the alternatives, i.e. materials used in vehicle components, transport of materials to manufacture vehicles, transport of vehicle products to the UK/Keele.
* Life span of vehicles, maintenance, disposal - Life Cycle Analysis.
* Fuel consumption and fuel type.
* Solar, electric, hybrid, and hydrogen powered vehicles.
* Alternatives to motorised transport where this is appropriate – use of bicycles? Use of motorised bicycles?

**Project 2) Environmental Baseline Review of Keele Leisure Centre**

You are working within the Environmental Management team at Keele University. The University is interested in auditing the environmental impact of different parts of its operations and wants your team to investigate the environmental/sustainability impacts of the Keele Leisure Centre; identifying areas of both good and bad practice, and ways in which to improve its environmental performance.

You need to present a five minute video to the University’s Senior Management outlining the findings of your environmental baseline review and your recommendations for improving the environmental/sustainability performance of Keele Leisure Centre. The recommendations will need to be well justified and based on your detailed research on the Leisure Centre and different options for improving environmental performance. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* What is an Environmental Baseline Review?
* What are the financial costs of environmental improvements and savings in terms of: a) energy/carbon and b) money?
* Are there any innovative solutions that could bring the University good PR?

**Facilitator Notes:**

Findings and recommendations should be as quantified as possible with costs and savings (both energy/carbon and financial). The different areas to look at include:

* What is an environmental baseline review? What systems/resources are available for conducting an environmental baseline review? Should this be linked in to a University Environmental Management System (EMS)? What are the benefits?
* Energy – think about the different types and uses of energy. Energy used in lighting, heating the building, for appliances, gym equipment, heating water for showers etc – how could these processes be made more energy efficient? Is there any possibility to incorporate renewable energy sources into the building? How much would these changes cost? What are the monetary and carbon savings?
* Water – how efficient are the buildings water appliances, e.g. taps, showers, toilets? How could these processes be made more efficient? Money/carbon savings?
* Transport – does the leisure centre have its own vehicles? Could its vehicle fleet be made more sustainable? What about commuting of employees and gym goers?
* Waste – recycling facilities? Reducing and reusing? What cost/energy savings can be made be improving waste management at the leisure centre?
* Purchasing – of food, drinks, gym equipment, uniforms, cleaning products. Are the procurement systems at the centre sustainable? Are there any environmental, social or legal issues associated with these operations?

**Project 3) Environmental Baseline Review of Keele Library**

You are working within the Environmental Management team at Keele University. The University is interested in auditing the environmental impact of different parts of its operations and wants your team to investigate the environmental/sustainability impacts of the Keele Library; identifying areas of both good and bad practice, and ways in which to improve its environmental performance.

You need to present a five minute video to the University’s Senior Management outlining the findings of your environmental baseline review and your recommendations for improving the environmental/sustainability performance of Keele Library. The recommendations will need to be well justified and based on your detailed research on the Library and different options for improving environmental performance. **The recommendations must be realistic in addition to being well justified.**

A few questions to get you thinking:

* What is an Environmental Baseline Review?
* What are the financial costs of environmental improvements and savings in terms of: a) energy/carbon and b) money?
* Are there any innovative solutions that could bring the University good PR?

**Facilitator Notes:**

Findings and recommendations should be as quantified as possible with costs and savings (both energy/carbon and financial). The different areas to look at include:

* What is an environmental baseline review? What systems/resources are available for conducting an environmental baseline review? Should this be linked in to a University Environmental Management System (EMS)? What are the benefits?
* Energy – think about the different types and uses of energy. Energy used in lighting, heating the building, computers, printers and other appliances, heating water – how could these processes be made more energy efficient? Is there any possibility to incorporate renewable energy sources into the building? How much would these changes cost? What are the monetary and carbon savings?
* Water – how efficient are the buildings water appliances, e.g. taps, toilets? How could these processes be made more efficient? Money/carbon savings?
* Transport – does the library have any of its own vehicles? Could its vehicle fleet be made more sustainable?
* Waste – recycling facilities? Reducing and reusing? What cost/energy savings can be made be improving waste management at the library?
* Purchasing – of books, equipment, uniforms, vending machine products. Are the procurement systems at the library sustainable? Are there any environmental, social or legal issues associated with these operations?

**Project 4) Waste Management and Recycling at Keele**

You are working within the Environmental Management team at Keele University. To help to continue to improve waste management practices and recycling facilities on campus, the University would like your team to conduct an audit of the different facilities and practices occurring around the campus and to understand the financial, environmental and energy implications of recycling.

You have been asked to produce a five minute video for the University’s Senior Management outlining the findings of your waste management and recycling audit and an action plan for improving waste management practices on campus. The recommendations will need to be quantified in terms of waste figures. Your recommendations should also consider the financial, environmental and energy costs of current practices and of your proposed more sustainable practices. Recommendations must be based on your detailed research of waste management on the campus. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* What are all the different types of materials that can be recycled on campus and where are the locations of all the recycling facilities?
* How well advertised are recycling facilities and how convenient is it for staff and students to recycle? How could communication be improved?
* Are there examples of recycling facilities being misused? What might be the implications of this?

**Facilitators Notes:**

The waste management and recycling audit should consider:

* All the different types of materials that can be recycled on campus and the location of all of these recycling facilities.
* Which materials can be recycled in many easily accessible locations? Which materials have to be taken to a certain place to recycle?
* What materials cannot currently be recycled?
* Evidence of difficulties in managing recycling schemes on campus, i.e. overflowing bins, dirty bins, wrong wastes in recycling bins.
* What information would help people recycle correctly? I.e. knowing the impact of putting the wrong/dirty stuff in recycling bins?
* Advertising and ease of recycling for staff and students. How could this be improved?
* Where do materials disposed in recycling bins on campus end up?
* Recycling associated with bars, restaurants and halls of residence on campus.
* The energy and raw material savings associated with recycling different materials.
* Could you include monitoring of waste management practices into the action plan?
* Could you research student attitudes to waste and recycling?
* Could the University/Council do anything to help students off-campus with their management of waste?
* Should there be such an emphasis on recycling? Does this prevent students/staff thinking about the higher actions of the waste hierarchy?
* What are the alternatives to recycling - reducing waste, reusing products, not buying certain things in the first place?
* Could you propose some realistic new waste management and recycling targets for the university? What are the targets/achievements of other institutions?

**Project 5) Enhancing Sustainability within the Student Experience**

You are working within the Environmental Management team at Keele University. The University has asked your team to investigate ways in which to increase engagement with sustainability as part of the general student experience at Keele.

You have been asked to produce a five minute video for the University’s Senior Management outlining an action plan of new initiatives and ways to improve existing projects which will enhance the presence of sustainability within the general student experience at Keele. The action plan needs to be well rounded and must consider ‘the student experience’ from several different angles. All proposed initiatives must be justified in terms of benefits to students and to the wider university community. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* What current student sustainability projects are going on at Keele?
* What are all the different aspects of sustainability in the student experience that you could consider in your action plan?
* Should sustainability be a compulsory part of students’ curriculum at Keele? How could this be integrated?
* How will you sell new projects and ideas to the senior management of the university?

**Facilitator Notes:**

Sustainability in the student experience should cover the following areas:

* Sustainability education – UG/PG degrees and modules available, how could uptake be increased? Could more sustainability modules be made available for larger numbers of students from all disciplines?
* Sustainability research opportunities for undergraduates and postgraduates – are there opportunities for students to conduct environmental/sustainability dissertations under the guidance of sustainability professionals and academics in the university? How could this best be managed?
* Student sustainability projects and societies – what is already going on at the university?
* Sustainability volunteering – what opportunities exist? Green Week? Volunteer Experience? Could more volunteering partnerships be forged with local businesses, schools, charities based around sustainability?
* Sustainability outreach with local schools – what does the university do in terms of working with schools?
* Student involvement with environmental practices on campus and in student halls/houses, e.g. recycling, energy saving, ‘green’ shopping and travelling, how could awareness be raised and involvement be increased, is there enough advertising?
* Sustainability within the entertainments sector of the university – Film nights? Book clubs? Forums? Nights out? Quizzes? Debates? Charity events?
* What role should the Students’ Union have?

**Project 6) Green Transport Strategy**

You are working within the Environmental Management team at Keele University. The University has asked your team to develop a green transport strategy for both staff and students at the university, in particular focusing on reducing car use for daily commuting to Keele. They want you to investigate a number of different options.

You have been asked to produce a five minute video for the Senior Management of the University outlining the current environmental issues associated with transport at Keele and outlining your recommendations to develop a more sustainable transport strategy. The recommendations will need to be well justified and quantified and based on your detailed research. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* What are the main types of transport use related to activities carried out by Keele University and its staff (commuting and other types of transport) and what are the key environmental issues?
* What are the barriers to implementation of different transport options at Keele?
* What are the alternatives for commuting to Keele aside from single-occupancy car use?

**Facilitator Notes:**

The Green Transport Strategy should consider:

* What are the main types of transport related to Keele University and what are the key environmental issues? Commuting (staff and students); travel for research-related activities, e.g. conferences, data collection; student travel from hometown to Keele (including international students); deliveries and supply chain travel.
* In terms of commuting:
* A range of different strategies for decreasing car use, what are the alternatives and what examples can you use from other companies/universities? How can you decrease car use (disincentives) and increase alternatives (incentives)?
* Barriers to the implementation and take up different transport options, how can these be overcome – increase bus frequency, more cycle routes, a staff bus for Keele?
* Benefits of different transport options.
* Development of strategies, incentives and advertising for reducing car use at Keele.
* Cost (financial and energy/carbon) of different solutions, how much money/carbon can be saved through using buses, trains, cycling, car share schemes, home working?
* National schemes for encouraging cycling and public transport?
* Health benefits to individuals of cycling.
* How can the benefits of alternatives be promoted effectively?

**Project 7) Energy Reduction in Academic Buildings**

You are working within the Environmental Management team at Keele University. The University has asked your team to look into ways to significantly reduce the amount of energy used within university academic buildings, e.g. the William Smith Building or Chancellor’s Building, not including halls of residence, shops, students union, catering outlets, etc.

You have been asked to produce a five minute video for the Senior Management of the University outlining your recommendations and an action plan for reducing energy use in academic buildings. The recommendations will need to be well justified and quantified and based on your detailed research. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* What are the main sources of energy usage in academic buildings?
* What strategies can you think of to reduce current levels of energy usage or make practices more energy efficient?
* How do behavioural issues factor into your plan?

**Facilitator Notes:**

Reducing energy use in academic buildings - key questions:

* What are the main sources of energy usage in academic buildings? Heating, lighting, plug-in appliances, research equipment.
* How can heating of buildings be made more energy efficient – boilers, timings of boilers/radiators, temperature of radiators, wall and roof insulation, educating staff about heating use?
* How can lighting be made more energy efficient – motion detector lights, energy saving bulbs, educating building users about light usage?
* What are the main types of plug-in electrical devices and research equipment in the university’s academic buildings – computers, printer/photocopiers, heaters, kettles, microwaves, lab equipment, desk lights, etc? Which devices use most energy?
* What types of equipment in academic buildings are suitable for energy saving devices/ software?
* What energy saving devices/software are available on the market?
* Could some electrical equipment be replaced with more energy efficient options?
* Financial cost/savings of different energy saving devices or replacing with new products.
* Carbon cost/savings of different energy saving devices or replacing with new products.
* Life Cycle Analysis and lifespan of different products.
* Are there any other environmental issues associated with electrical appliances, energy use aside? Chemicals? Paper use? Printing? LCA?
* How can we change behaviours around heating, lighting and electrical appliance use?

**Project 8) A Renewable Energy Strategy for Keele**

You are working within the Environmental Management team at Keele University. The University has asked your team to develop a renewable energy strategy for the university.

You have been asked to produce a five minute video for the Senior Management of the University outlining your renewable energy strategy for Keele for the next 10-15 years. The recommendations will need to be well justified and quantified in terms of costs of building new energy infrastructure, savings in both financial and carbon terms, and will be based on your detailed research of Keele’s current energy usage and future potential. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* Where does the University’s energy currently come from?
* Is there any renewable energy generated on campus?
* What are all the different renewable energy options that Keele could consider? What are the best conditions for these?

**Facilitator Notes:**

A renewable energy strategy for Keele must consider the following things:

* Where does the universities energy currently come from? Is any bought from renewable sources? Is there any renewable energy generated on campus?
* What potential exists on campus for retrofitting renewable energy generating technologies into existing buildings, e.g. solar panels (thermal and PV), combined heat and power, condensing boilers, ground source heat pumps?
* What potential exists on campus for building renewable energy technologies to create electricity to feed into the main university grid system, e.g. wind turbines, solar PV, geothermal, bio-fuels?
* What are the costs of implementing these technologies and the payback times?
* What are the savings in terms of carbon and long-term financially?
* What are the pros and cons of different technologies?
* What are the drivers for the university to pursue such initiatives? What are the barriers?

**Project 9) Green Purchasing Policies – Cleaning Products**

You are working within the Environmental Management team at Keele University. The University has asked your team to investigate the possibility of using more ‘environmentally-friendly’ cleaning products on campus.

You have been asked to produce a five minute video for the Senior Management of the University outlining your recommendations and action plan for more ‘environmentally-friendly’ cleaning products. The recommendations will need to be well justified and quantified and based on your detailed research. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* What are the main types of cleaning which happen on campus?
* What are the environmental/health impacts associated with cleaning products?
* What might be the barriers to changing cleaning practices and bringing in new products?

**Facilitator Notes:**

* Main types of cleaning which occur
* Current cleaning product suppliers
* Environmental/health impacts of cleaning products
* Interviewing/speaking to cleaning staff
* Barriers to changing products
* Benefits of different more environmentally friendly products

**Project 10) Enhancing the Sustainability Literacy of Staff**

You are working within the Environmental Management team at Keele University. The University has asked your team to investigate ways in which to increase the engagement with sustainability of staff working for the University.

You have been asked to produce a five minute video for the University’s Senior Management outlining an action plan of new initiatives and ways to enhance the understanding and awareness of staff working at Keele. The action plan needs to be well rounded and must consider staff who undertake very different roles at the University, this includes academic staff, and staff who support the University’s Central Services such as the Library and IT, accommodation and recruitment etc., as well as staff who work in the catering outlets, leisure centre, and cleaning and grounds staff. All proposed initiatives must be justified in terms of benefits to students and to the wider university community. **The recommendations must be realistic in addition to being well justified.**

You will need to make sure that you have considered any relevant environmental/sustainability issues, in addition to resource, financial, social, behavioural, ethical and legal issues.

A few questions to get you thinking:

* What current activity is there to help staff engage with sustainability?
* What are the different angles of sustainability that relate to different job roles within the University. How can these be addressed in your action plan?
* How will you sell new projects and ideas to the senior management of the university?