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NTfW
NATIONAL TRAINING FEDERATION WALES

Education for Sustainable Development and Global Citizenship (ESDGC) in Work Based Learning

BUDDSODDWYR MEWN POBL | INVESTORS IN PEOPLE

Ariennir gan Lywodraeth Cymru
Funded by Welsh Government

Introduction

This e-book is a resource which developed from ESDGC workshops Ymlaen Ceredigion delivered on behalf of the National Training Federation of Wales. The sessions aimed to support the integration of Education for Sustainable Development into a number of Work-Based Learning Sectors: Business Admin, Management, Care, Hospitality, Customer Services and Hairdressing.

ESDGC is all-encompassing, it covers every area of life. For that reason some may find the idea of integrating it into their work overwhelming. However, the fact that it does include all areas of life means it is possible to apply it in every context. During our training events this became obvious, once assessors had understood the key concepts and been able to address areas they were unsure about they were able to see how ESDGC was applicable in their area.

The key to integrating ESDGC into Work Based Learning is to build and develop the skills and knowledge of the people delivering the qualifications as well as identifying opportunities to integrate ideas into Essential Skills.

The e-book includes a number of generic activities which can be used for staff CPD and can also be adapted for use with learners if their course allows for the appropriate contact time.

Each sector covered by the workshop has its own pages and included in each section is a table mapping out how ESDGC can be integrated into that specific route. Also in these sections are relevant tips and ideas for that sector.

Ymlaen Ceredigion

Ymlaen's work is about behaviour change at all levels—individual, community, organisational and strategic - embedding sustainability in our culture so it becomes the natural way of living and running organisations.

Ymlaen has led in Wales on Education for Sustainable Development and Global Citizenship in post 16 education (FE and WBL) for the past four years. Initially we worked hand in hand with Coleg Ceredigion and then with the wider Wales FE sector to share good practice. We then assessed the first SAR completed by the WBL Sector and were funded by the Welsh Government to develop a series of training events and resources to support the integration of ESDGC into Work Based Learning.

Our work on the ground in Ceredigion innovates projects which engage and build capacity for a more sustainable community in the broadest sense of the word. **www.ymlaenceredigion.org.uk** Tel: 01970 633395.

How to use this document?

This document has been set up to be a useful resource for Work Based Learning Providers. It includes navigation to ensure that you can find the relevant information as easily as possible. The main navigation at the top of the page will take you to the required section and you will find arrow keys on all pages to enable you to navigate from page to page within the sections.

There are also active links which will either take you to websites which contain further information or to documents which are available for download as required.

We hope that you find this document a useful resource.

Contents

Introduction to ESDGC

Below are some key points you may want to use when delivering training on ESDGC. It includes a powerpoint which you may want to adapt if you are delivering a training session.

- Welsh Government in their document *One Planet One Wales* states that sustainability is their "central organising principle". Education for Sustainable Development and Global Citizenship (ESDGC) is an initiative to embed this principle in all levels of education and training.
- However, many people have not had the opportunity to understand what sustainability is. It is hugely complex and covers all areas of our lives. Often sustainability is either seen as economic sustainability or "the environment" which does not feel relevant or engage us emotionally.
- Because of the way the media represents climate change, people do not fully realise that experts worldwide agree that climate change is a huge threat which will change our lives, in as yet unknown ways, dramatically.
- Sometimes climate change 'denial' is compared to denial about the dangers of smoking because the danger seems way off compared to the immediate pleasure of doing the activity now and because the behaviour has become a habit, it is difficult to change.
- The Welsh Government believes that a more sustainable future is not just one which works economically and environmentally but it is also one where our well being is improved and increased.
- ESDGC was introduced into Work Based Learning in 2009 with the Work Based Learning Toolkit.
- An indicative assessment of ESDGC in Work Based Learning was carried out by Ymlaen Ceredigion following the publication of the toolkit. It concluded that training providers were embedding ESDGC well but were weak at making the links between the seven themes, were over emphasizing recycling and finding it hard to integrate the idea of biodiversity into their work.
- To help WBL integrate ESDGC into teaching and learning the following five principles were identified:
    - Make the links between the themes in order to understand them as a whole, consumption and waste relates to climate change, climate change relates to choices and decisions etc etc.
    - Make it relevant to the here and now. Young people find it very difficult to consider the future. Often they don't even believe they will be alive when the effects of climate change are felt!
    - Encourage people to reflect and think for themselves. No one changes just because they are told to. Encourage critical thinking.
    - Understand that people are not necessarily rational and we don't like change. It is key both for learners and training providers to understand that sustainability is a process of change not just about learning facts.
    - Because it is a process of change, be prepared to be challenged and to challenge when discussing ESDGC topics.

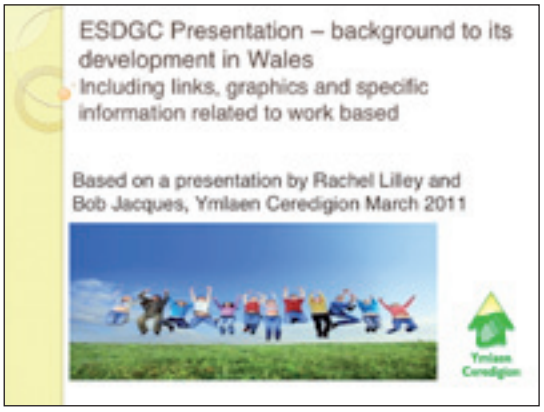
> **"The volume of education.... continues to increase, yet so do the pollution, exhaustion of resources, and the dangers of ecological catastrophe. If still more education is to save us, it would have to be education of a different kind: an education that takes us into the depth of things."**
>
> **E F Schumacher, Towards Sustainable Education**

Training providers in Wales are currently including ESDGC in their teaching and learning in the following ways:

- Finding units in the routes most appropriate to ESDGC and exploiting them to the full (see matrices for each different sectors)
- Including it in induction activities where relevant (see activities 1-5)
- Including it in ESW activities as themes, projects or activities (see activities 1-5 and matrices)
- Adding any appropriate additional qualifications
- Theming reviews, or adding questions to reviews. (see activity 6)
- Evidencing in log books or reviews
- Adding it on to appropriate staff agendas such as standardisation/quality groups
- Evidencing it through equality and diversity work
- Including and extending work around health and safety to include it as 'normalised ways of operating'
- Creating quizzes or workbooks the learners can fill in (see activites 1-6 and matrices)

This e-book resource will help you with ideas, activities and links to do all the above. It will also offer some ideas of how you can link ESDGC specifically to your sector.

Introduction to ESDGC powerpoint



Useful links and Resources

The Seven ESDGC Themes – teaching and learning

Choices and decisions

democratic and non-democratic decision-making at different levels from a small group discussion to international agreements; how to participate in decision making at different levels; how to present a point of view; the inter-connected consequences of making decisions;the role of governments; how to be a participant in civil society.

Climate change

the scientific evidence relating to climate change; the greenhouse effect; global warming; the causes of climate change; the potential impacts and the uncertainty of predictions; the precautionary principle; preventative and adaptive responses; the impact of individual and collective actions; ways of bringing about change; the impact on future generations.

Consumption and waste

renewable and non-renewable resources; energy, food and water; sustainable design and sustainable materials; the waste hierarchy; ecological footprint, carbon footprint; supply chains, transport; the rights of future generations to a quality of life; advertising; peer pressure;quality of life versus standard of living; reassessing values; resolving conflicts over resources.

Health

the importance of caring for oneself and caring for others; the relationship between health and quality of life; nutrition and sources of food; the impact of drug abuse on individuals and others; the value of different relationships including family, sexual and professional; the impact of the environment on health; the importance of access to clean water.

Identity and culture

personal and regional histories; Welsh heritage and language; how identities and culture influence actions; what constitutes a community; the impact of other cultures on Wales; challenge stereotypes; recognize that people hold different values; recognise and challenge discrimination and prejudice in an appropriate way; peaceful resolution of differences.

The natural environment

biodiversity; endangered species; conservation and restoration of habitats; human dependence on ecosystems and the interdependence of ecosystems; the impact of human activity including conflicts on natural environments; gene banks and genetic modification; stewardship of resources and habitats; the role of natural environments in relation to quality of life.

Wealth and poverty

levels of wealth and poverty; the gap between rich and poor locally and globally; basic needs; quality of life; the interdependent causes and impacts of poverty; migration; how wealth is created; perceived and real value of goods, services and relationships; globalisation; Fair Trade; the right of future generations to access resources.

Activity 1 – What is it better to do?

Five principles of teaching\ESDGC, this activity:

- Teaches that sustainability is complex, through demonstrating the connections between the themes
- Helps learners understand the issues for themselves through individual research and discussion
- Makes it relevant to young people today by using up to date media (newspapers/magazines)
- Has awareness of the barriers involved in accepting change. Encourages learners to reflect on issues.
- Challenges existing ways of thinking and doing through their own insight and group discussion

An exercise to help learners appreciate the complexity of issues related to sustainability and the choices and decisions involved. It can also be used to simply introduce the seven ESDGC themes.

This exercise could be adapted for different levels of learner or used in staff development.

Learning outcomes

1. Learners will have experienced for themselves the complexity of issues related to sustainability
2. Learners will have explored a common choice in terms of sustainability (environmental, social, economic)
3. Learners will have had the opportunity to research and increase knowledge on chosen issue
4. Learners will have explored the seven themes of ESDGC
5. Learners will have worked as a group to explore and research an issue and presented their own opinions and ideas.

Activity	Notes
1. Put learners into groups	Groups of 3-5 work well
2. Ask each group to choose a question. You can always develop other questions yourself for them to look at.	Put the questions (listed on the next page) on separate pieces of paper and lay them out on a table and either get them to chose one or offer them to them so they can't see them.
3. Ask each group to map out on a piece of flip chart paper what they already know and think about that question.	Get them to do a mind map, with the question summarised in the centre
4. Optional - now ask them if they can consider the question in terms of any implications on the seven ESDGC themes of health, consumption and waste, identity and culture, climate change, choices and decision and biodiversity	Give them the summary sheet with all the themes on it.

Activity	Notes
5. Now give them the handout and a computer (or the handout on the computer so they can follow the links). Using the information they research the question further via videos and websites.	You can either set the computer ready or get them to go and do this for themselves.
6. Now ask them, given the new information they have, to consider whether their opinions have changed. They can then create a summary of their learning and present it to the other group.	This could be very brief or made longer and link to a comms/wwo or aon project.

Activity - Is it better to…?

Click on links below to go to the section

1. Is it more sustainable to recycle waste plastic in the UK than send it to China for recycling?
2. Is it more sustainable to use biofuels (eg wood, vegetable oil, biogas) for heating fuel than fossil fuel gas, oil or coal?
3. What is the most sustainable seafood, salmon or prawns or some other fish or other protein food?
4. Is beer from aluminium cans more sustainable than beer from bottles?
5. Is it more sustainable to recycle old computers or given them away?

1. Is it more sustainable to recycle waste plastic in the UK than send it to China for recycling?

Choices and decisions

The choice is between a range of options, not just either/or. Each choice would have different implications. More detailed information might be needed, such as: What happens to the plastic that is sent to China, what happens to plastic recycled in the UK? How is it transported? What about other options, such as incineration or sending to landfill? Perhaps it would be possible to produce less waste plastic.

Identity and Culture

What is the impact on other cultures and on our own?

In the UK we produce 3 million tonnes of plastic waste per year, of which less than half is recycled. Most of the rest is sent to landfill. Much of the plastic sent for recycling is contaminated, greatly reducing its value.

There are now over 100 plastics recyclers in the UK, but much of the plastic recycled here is manufacturing waste or high quality separated plastic, such as clear plastic bottles or milk containers. Mixed plastic packaging is more difficult. There is little demand for recycled plastic in this country at this time.

You can find information about plastics recycling in the UK for small businesses from WRAP http://recycleplastic.wrap.org.uk

Wealth and Poverty

Does this process have a beneficial or detrimental effect on the distribution of wealth locally and globally? What are the economic implications?

There is very strong demand in China for recycled PET plastic (fizzy drink bottles), which is spun into polyester fibre and used to make textiles such as polar fleece, and HDPE plastic (milk bottles), which is turned into a variety of household products such as pipes, crates, bottles and films. Because of lower wages, resources such as waste plastic have a higher comparative value in China than in the UK. The UK has a huge economy and rate of consumption for its size and as new recycling plants start to open here, there will be increased demand from the UK for these materials. http://www.recyclenow.com/why_recycling_matters/isnt_plastic_export.html

The Natural Environment

What is the impact on the natural environment locally and globally?

If plastic is not disposed of properly it ends up in the environment.

Waste plastic in the environment can have a negative impact on many species, particularly when it ends up in the sea. The link below describes a huge area of the North Pacific where plastic accumulates, causing great damage to birds and other wildlife.

http://www.bbc.co.uk/programmes/b00v1qtn

Health

How does this process affect health locally and globally, in all the stages of production and use? Production of all fossil-fuel-based products is associated with widely recognised health hazards and environmental impacts. Polyvinyl chloride (PVC) and polystyrene are among the worst polymers and are associated with hazards throughout their lifecycle of production, use, and disposal. Production and disposal of PVC releases persistent pollutants into the environment that are known to cause cancer, disrupt the endocrine system, impair reproduction, cause birth defects, and more.

http://sustainableplastics.org/problems/plastics-impact-human-health

Disposing of plastic by incineration releases dioxins into the atmosphere, which are known to cause cancer.

Climate Change

How does this process affect the climate? What is its carbon footprint?

A report on the production of carrier bags made from recycled rather than virgin polythene concluded that the use of recycled plastic resulted in the following environmental benefits:

- reduction of energy consumption by two-thirds
- production of only a third of the sulphur dioxide and half of the nitrous oxide
- reduction of water usage by nearly 90%
- reduction of carbon dioxide generation by two-and-a-half times

A different study concluded that 1.8 tonnes of oil are saved for every tonne of recycled polythene produced. http://www.wasteonline.org.uk/resources/InformationSheets/Plastics.htm

The international trade in recycled materials is very important, and minimizes the need to use more expensive virgin plastics and the resources required to manufacture them, including oil. The recycled materials are usually transported in container ships that are returning to China after bringing goods to the UK, which lessens the environmental impact of the transport.

http://www.bpf.co.uk/Sustainability/Plastics_Recycling.aspx

Consumption and Waste

Is this product made from finite or renewable resources? How can it be recycled at the end of its useful life?

Plastic is a valuable and finite resource, usually made from fossil fuels, and environmentally the optimum use for most plastic after its first use, is to be recycled – preferably into a product that can be recycled again.

In the UK we produce 3 million tonnes of plastic waste per year, of which less than half is recycled.

Wherever they are recycled it is important to clean and separate the different types of plastic so that they can be used for higher value use, such as more bottles, textiles rather than fence posts. Sending plastic to landfill is the worst option of all, except perhaps dropping it on the street.

http://www.wasteonline.org.uk/resources/informationsheets/plastics.htm

CONCLUSION – On balance at the moment our expert would:
Reduce the amount of plastic I buy as much as possible, wash plastic carefully after use, separate it into different types as accurately as possible, and send it for recycling, in the UK if there is a UK market for it, but otherwise for sale to China.

2. Is it more sustainable to use biofuels (eg wood, vegetable oil, biogas) for heating fuel than fossil fuel gas, oil or coal?

Choices and decisions

The choice is between a range of options, not just either/or. Each choice would have different implications. More detailed information might be needed, such as: what is the source of the biofuel, or fossil fuel and how is it extracted or transported? The fuel that is possible also depends on the operating system, and a heating system designed for one fuel cannot easily be converted to another form of fuel.

Biofuels can come from waste cooking oil or biogas from sewage or slurry, from locally grown wood, pellets made from wood waste from the furniture or construction industry, or from intensively grown crops grown on land that could be used for food growing, or that has been clear felled from original forest to take advantage of subsidies. Each of these have their own implications.

Gas and oil can come from the Middle East, Russia, the North Sea, the Arctic, or from tar sands. Coal can come from open castmines or deep mines, in this country or abroad.

There is a range of different extraction methods with different environmental risks, and companies vary in their policies and procedures.

http://biofuel.org.uk/biofuel-from-waste.html

You can also use a heat pump to heat buildings, which uses electricity, but is highly efficient.

Identity and Culture

What is the impact on the culture of origin, on other cultures and on our own?

Using local wood chip or pellets might benefit local culture in rural Wales.

Using vegetable oil from clear felled forest land in the Amazon might be very detrimental to indigenous rain forest culture.

http://www.youtube.com/watch?v=zEs_ubdzHXA

Historically coal mining has been an integral part of Welsh culture. However open cast mining near to residential areas can have a negative effect on local communities.

In some parts of the world (eg.Nigeria, Siberia) the oil industry has had a negative impact on the life of the local people.

Wealth and Poverty

Does this product have a beneficial or detrimental effect on the distribution of wealth locally and globally?

There is much evidence that the policy to grow more biofuels on land previously used for growing food has led to rising food prices and food shortages world wide.

http://www.youtube.com/watch?v=yTBSJl9gabA

Oil extraction in Nigeria has caused pollution of fish ponds and farmland damaging the ability of rural people to make a living http://www.youtube.com/watch?v=XkRcKuGBmSg

The Natural Environment

What is the impact on the natural environment locally and globally?

Planting woodland to harvest sustainably for fuel can have a positive impact on the natural environment, creating diverse habitats for wildlife.

Biofuel is sometimes grown on land where ancient forest or other important wildlife habitat has been cleared to plant biofuel crops. This can be even less sustainable than using gas or oil.

http://www.youtube.com/watch?v=YHki3EgGzdY

The extraction of fossil fuels can cause catastrophic pollution, such as the devastating effect of oil spills, or the destruction of temperate forest in Canada to extract oil from tarsand.

BP oil spill in the gulf of Mexico http://www.youtube.com/watch?v=-OVNd6Fa9fg

Tarsands in Alberta http://www.youtube.com/watch?v=LaF5NfCjWHs&feature=related

Health

How does this product affect health locally and globally, in all the stages of production and use?

Burning coal can have an adverse effect on health, through air pollution.

Climate Change

How does the production and use of this product affect the climate? What is its carbon footprint?

In theory biofuels are carbon neutral, but if they are intensively grown using artificial fertilizers and heavy machinery they will have carbon dioxide emissions from this. http://www.youtube.com/watch?v=oKaAEYiTZfE

Similarly if they are grown on land that has been felled from original forest this will have implications for the footprint.

The fuel with the smallest footprint would be biofuels from waste materials.

Biofuels grown locally in coppiced woodland or under a sustainable management system would also have a low footprint.

Carbon dioxide emissions from heating can be reduced by better insulation and more efficient systems. It is possible to construct buildings that are zero carbon.

Each fossil fuel has a different carbon footprint. Coal produces two and a half times as much carbon dioxide as oil or gas, simply as a result of its chemical structure. In addition each fuel has a footprint from the extraction and transport.

Consumption and Waste

Is this product made from finite or renewable resources? How can it be recycled at the end of its useful life?

Biofuel from local sustainably managed woodland is a renewable resource, taking carbon dioxide from the air as it grows and releasing it when burned.

Biofuel from waste is very sustainable. This can be waste vegetable oil turned into heating oil, or it could be methane from waste products such as slurry or from domestic or industrial waste, or from waste organic products such as waste food.

http://www.youtube.com/watch?v=BGSI72xZHNk

Fossil fuel is a non renewable resource, and there are signs that the world has already used more than half of the total supply. This turning point is known as peak oil after which oil becomes progressively harder to extract and more expensive. http://www.youtube.com/watch?v=8j4Tyy5nsQ8

CONCLUSION – On balance at the moment our expert would:

Explore all the insulation options first, then consider the efficiency of the present heating system. If it is near the end of its life you might consider a new system, and could convert to local wood fuel, biogas, or even install a heat pump.

3. What is the most sustainable seafood, salmon or prawns or some other fish or other protein food?

Choices and decisions

The choice is between a range of options, not just either/or. Each choice would have different implications. More detailed information might be needed, such as: where is the seafood from, how has it been grown, processed and transported, what are the other options, such as other fish, or vegetarian food options?

The Marine Stewardship Council http://www.msc.org/about-us/vision-mission

Identity and Culture

What is the impact on the culture of origin, on other cultures and on our own?

On the west coast of Scotland small businesses have made a living fishing sustainably for centuries http://www.shellfishsafaris.com/shellfish.php

Tiger prawns imported from Indonesia or India have caused damage to coastal communities by damaging the local fishing resources, and depleting coastal ecosystems. The following film describes how in Indonesia people are campaigning against selling 95,000 km of coastline supporting millions of people for centuries to private businesses for development into prawn fisheries. For some it is too late, the mangrove has already been destroyed, and with it the whole ecosystem. http://www.youtube.com/watch?v=ubp7tARbTwg

Wealth and Poverty

Does this product have a beneficial or detrimental effect on the distribution of wealth locally and globally?

Some prawns are caught in Scotland and transported by boat to Thailand to be shelled by workers earning 25p per hour, then returned by boat for consumption in the UK. As a result factory workers in Scotland have been laid off.

http://www.fishupdate.com/news/fullstory.php/aid/7585/

Communities in India and Indonesia lose livlihoods and are thrown into poverty when coastline is developed into prawn farms.

Wild salmon is more sustainable than farmed salmon but it is expensive for people on low incomes. Try mackerel for a much cheaper option http://www.downsizer.net/Projects/Finding_food/Mackerel_-_The_most_underrated_fish_in_the_sea/ Alternative protein sources such as tofu, nuts and seeds or beans and lentils are much cheaper

The Natural Environment

What is the impact on the natural environment locally and globally?

Wild salmon are more sustainable than farmed salmon, better for the environment and better for health. http://www.sustainabletable.org/features/articles/wildpacificsalmon/

When coastal mangroves and ecosystems are cleared to make way for prawn farming it causes great damage to local wildlife, and loss of important ecosystems.

Health

How does this product affect health locally and globally, in all the stages of production and use?

Seafood is an important component of the diet in many cultures globally, being an important source of protein and omega oils, vitamins and minerals.

Scientists have found evidence of dioxins and PCB contamination in the fishmeal fed to farmed salmon, raising food safety concerns. Wild salmon is safer and tastier. Fresh mackerel is also very high in omega 3 oils. Alternative protein sources are available such as tofu, nuts and seeds or beans and lentils. These are also good sources of omega oils, vitamins and minerals.

Climate Change

How does the production and use of this product affect the climate? What is its carbon footprint?

Farmed seafood, both salmon and prawns, require many inputs, such as feed and medicines. Wild seafood has a lower footprint, so long as it is not transported great distances for processing.

Consumption and Waste

Is this product made from finite or renewable resources? How can it be recycled at the end of its useful life?

In theory fish are a renewable resource, but it is estimated that stocks of many species are so low that they cannot recover. Some species are more at risk than others, with cod being particularly at risk. Wild salmon are more sustainable than farmed salmon.

Because salmon are carnivorous, requiring fish meal in their diet, each pound of farmed salmon requires between two and five pounds of wild fish. This means a net loss of marine resources. http://www.newsreview.com/chico/content?oid=1380701

CONCLUSION – On balance at the moment our expert would:

Avoid all factory farmed seafood, use small amounts of wild prawns or wild salmon as a luxury, but otherwise eat locally caught mackerel, and explore vegetarian options.

4. Is beer from aluminium cans more sustainable than beer from bottles?

Choices and decisions

The choice is between a range of options, not just either/or. Each choice would have different implications. More detailed information might be needed, such as: Are the glass or aluminium from recycled or new materials, are they made locally, can they be reused, or recycled? Is there another option, such as draft beer? Can you buy the same beer in bottles and in cans?

Glass is made from silica, the main ingredient of sand. The production of glass is relatively environmentally friendly, but recycled glass needs to be smelted again, an energy intensive process. In practise much of the glass sent for recycling is used as hard core in road construction

Identity and Culture

What is the impact on other cultures and on our own?

The can is made from aluminium mined from the earth as bauxite. Bauxite mining has had huge impacts on indigenous cultures across the world. In Orissa, India bauxite mining by mining company Vedanta threatens to destroy the way of life of the Dongh tribal people.

http://www.youtube.com/watch?v=jQ1LG89SgY8

Bauxite mining in Australia has caused great damage to the ancestral lands of the aborigine people. In Northern Queensland a single mining company has a license to strip mine 2,600 sq km of bushland, and remove a billion tons of bauxite, displacing 3 communities of native people. Much of this land is considered sacred to the aboriginal people.

Aluminum can be recycled over and over again. In Britain we recycle only 41% of cans. In Norway 93% are recycled.

Wealth and Poverty

Does this product have a beneficial or detrimental effect on the distribution of wealth locally and globally?

The provision of jobs in bauxite mining may be more than offset by the loss of land and livelihood suffered by local communities.

Recycling aluminium creates employment. Europe's main aluminium can recycling plant is Novelis, in Manchester, reprocessing 30 billion cans per year. Cans are worth 1p each, representing only 1 percent by weight of household rubbish, but 25% of recycling value. http://www.novelisrecycling.co.uk/

The Natural Environment

What is the impact on the natural environment locally and globally?

Aluminium mining can cause considerable destruction to natural habitats. The aluminium is extracted from the ore using caustic soda, and the liquid which remains after extraction is extremely toxic. It is usually stored in large lakes or pools held back by dams causing contamination affecting wildlife downstream. In Northern Queensland there is a danger that tropical storms could spread this slurry into environmentally sensitive mangrove areas, rich in biodiversity.

Health

How does this product affect health locally and globally, in all the stages of production and use?

Aluminium mining can contaminate local water supplies and the natural environment. In Hungary last year dams holding back toxic sludge from alumina works burst, releasing thousands of tons of toxic sludge over the surrounding landscape, killing four people, and all the fish in the upper reaches of the river systems leading to the River Danube http://www.bbc.co.uk/news/world-europe-11491412

Climate Change

How does the production and use of this product affect the climate? What is its carbon footprint?

17 tonnes of CO2 are produced for each tonne of aluminium. The smelting process uses enormous amounts of electricity, and in many cases this electicity is inefficiently made from coal power stations. It is estimated that aluminium smelting uses 2% of all global electricity use.

The carbon footprint of recycled aluminium is only 5% of aluminium from raw materials. Glass is less carbon intensive to make, and cheaper, but it is more expensive to transport because it is heavier. It is also more fragile.

Consumption and Waste

Is this product made from finite or renewable resources? How can it be recycled at the end of it's useful life?

Aluminium is a finite resource but can be recycled over and over again, and it is estimated that 70% of the aluminium ever made is still in circulation.

Glass is made from silica, the main ingredient of sand. The production of glass is relatively environmentally friendly, but recycled glass needs to be smelted again, an energy intensive process. In practise much of the glass sent for recycling is used as hard core in road construction

CONCLUSION – On balance at the moment our expert would:

Drink beer from cans, so long as you make sure to recycle the can. If you have a local brewery and drink lots of beer you could approach them about returning your bottles. I actually drink bottled beer, and pass the bottles on to a friend who makes their own beer.

5. Is it more sustainable to recycle old computers or give them away?

Choices and decisions

The choice is between a range of options, not just either/or. Each choice would have different implications. More detailed information might be needed, such as: how are they being recycled? What are the health impacts on the workers or the environment? If you are giving them away how is the recipient using them? Is there a viable alternative? Do we need to upgrade computers so often?

http://dl.dropbox.com/u/21130258/resources/InformationSheets/ComputerRecyclersRefurbishers.htm

http://www.volresource.org.uk/moreres/extr_imp.htm#rec

Identity and Culture

What is the impact on other cultures and on our own?

Computers can be refurbished and sent for reuse in schools in the developing world. In the last 7 years Computers for Schools Kenya has supplied around 30,000 computers to 1,000 education establishments in Kenya, helping to enrich the lives of children in poverty, and playing an important role in teacher training, and in medical and technical education. www.cfsk.org (website)

Computer Aid International also comply with all regulations and arrange reuse wherever possible.

http://www.computeraid.org/donate.asp

Access to second hand computers can also have a positive effect on communities in the developing world in other ways, as in the following film from Ghana

http://www.5min.com/Video/Impact-of-the-Computer-in-Patriensa-Ghana-435151226 (2mins 57)

However in other places, computers are recycled in backstreet sweat shops by children, using no protective clothing, and working long hours for little pay. http://www.youtube.com/watch?v=jkndVAwBf_k (4mins 59)

Wealth and Poverty

Does this product have a beneficial or detrimental effect on the distribution of wealth locally and globally?

Many of the components of e-waste are valuable and are a resource worth recycling, and the export of e-waste to the developing world is an important part of many economies, providing employment, and supporting many small businesses. However, often workers are exploited and suffer health hazards from this work.

There are some businesses recycling e-waste in the UK, where the separation of components is done mechanically rather than by hand. The largest facility in the UK is at Billingham on Teeside.

http://news.bbc.co.uk/local/tees/hi/people_and_places/newsid_9361000/9361998.stm

Computers can be donated for re-use in the UK, often to local organisations, such as CRAFT in Aberystwyth, where they are refurbished and passed on to community organisations or sold at low prices in their shop, with discounts for people on benefit or low incomes.

http://www.craftaberystwyth.co.uk/page/computer_services

Open source software programmes are available to install on second hand computers. These are often free to download from the internet and use less operating capacity.

http://www.opensourcewindows.org/

The Natural Environment

What is the impact on the natural environment locally and globally?

It is estimated that two thirds of the toxic heavy metals in landfill sites come from electronic waste, and Britain produces more than 1 million tonnes of electronic waste per year. Most of this goes to landfill, where it can seep into the surrounding environment, affecting wildlife and water courses. It is now illegal in this county to send electronic waste to landfill (WEEE directive on electronic waste), but in practice it still happens, and waste that is sent abroad also often ends up polluting the natural environment.

Computer waste that is exported to the developing world and salvaged in back street workshops can be dipped in acid to remove the copper. The resulting sludge is then disposed of in the local environment, polluting streams and rivers. Some waste is burnt to melt off the heavy metals. The resulting fumes pollute the atmosphere, and are damaging both to human health and to the environment.

http://earth911.com/news/2009/07/14/video-ghana-a-literal-digital-dumping-ground/

Health

How does this product affect health locally and globally?

The toxic waste that affects the environment also affects the workers in the unregulated recycling industry.

http://www.youtube.com/watch?v=fdP8fOlk74E&playnext=1&list=PL46899C908722850A

Climate Change

How does the production and use of this product affect the climate? What is its carbon footprint?

According to Computer Aid International 'Reusing a computer is 20 times more effective at saving life cycle energy use than recycling it. Given the substantial environmental cost of production, it is imperative we recover the full productive value of every PC through reuse before eventually recycling it to recover parts and materials at its true end-of-life.'

http://www.computeraid.org/donate.asp

Consumption and Waste

Is this product made from finite or renewable resources? How can it be recycled at the end of its useful life?

Computers and other e-waste contain a range of valuable metals even including gold, but also mercury, cadmium, nickel, copper to name just a few. Some of these metals are becoming in short supply, and all are finite resources. It has been suggested that at some point in the future we may have to resort to mining landfill sites to retrieve these materials, because they are present at higher concentrations in landfill sites than in the few remaining mining deposits.

These materials can be recycled.

CONCLUSION – On balance at the moment our expert would:

If possible find someone who wants your computer and will use it, either locally or at an organsiation like Computer Aid International. If it has completely passed its useful life recycle it with a reputable company.

Activity 2 – Newspaper and String, understanding ESDGC

Five principles of teaching\ESDGC, this activity:

- Teaches that sustainability is complex, through demonstrating the connections between the themes
- Helps learners understand the issues for themselves through individual research and discussion
- Makes it relevant to young people today by using up to date media
- Has awareness of the barriers involved in accepting change encourages them to understand the change not just to be changed
- Challenges existing ways of thinking and doing through their own insight and group discussion

Outcomes: At the end of this session the learner should:

1. Be able to recall a number of the seven esdgc themes related to teaching and learning (handout/powerpoint)
2. Have analysed one theme in greater detail (newspaper activity)
3. Have an awareness of the interdependence of the themes (string activity)
4. Identify which themes relate easily to their own teaching and evaluated the them in terms of their own teaching areas
5. Identify topics relevant to the seven ESDGC themes (newspaper activity identifying topics)
6. Be able to explain some facts around the history/context of ESDGC (powerpoint)

Time		Tutor activity	Learner activity	Assessment method	Resources
10.00 - 10.05	Introduction	Start - Get students to write on post it notes – what is ESDGC?	To write on post it notes ideas on what they think ESDGC is	Activity assesses existing knowledge of ESDGC	Post it notes, flip chart paper, pens
10.05 - 10.15		Introductory powerpoint (with activities to give background to ESDGC and intro to ESDGC in college.	Listening/questions	Observation of engagement	powerpoint
10.15 - 10.30	Development	Introduction to ESDGC and themes and concepts (included in powerpoint and handouts)	Listening/questions, opportunity to look briefly at ESDGC guidelines document	Oral and observation	guidelines
		Split into pairs (seven groups) Give out themes, scissors, newspapers, glue Explain task – to find out how much the themes are included in the print media (national and local). To consider concepts as well as themes. Can add a competitive thread to exercise, best group gets prize (which you can use to highlight fair-trade issues – see later	Give out themes and concepts, take some newspapers and start to cut out articles/headlines relevant to your themes, advanced activity for staff training would be to identify links to concepts	Observation, questions asked as students perform activity.	Themes written out on paper (bi-lingual), scissors, newspaper, glue, flip chart paper
		Ask students to write name of theme on flip chart paper and then to stick articles / headlines on to paper. Answer any questions from individual tables.	Stick articles/headlines on to flip chart paper, one for each theme. Use pens to identify concepts linked to themes	Evidenced through learners ability to choose relevant articles to themes	Themes written out on paper (bi-lingual), scissors, newspaper, glue, flip chart paper
10.39 - 10.40		Organise learners to stand up and present – ask them to start to look for links between the articles on their flipchart and the articles on other flip chart	Learners take it in turns to say briefly what kind of articles they have on their paper.	Evidenced through presentation (oral) of montages of articles/ headlines.	Themes written out on paper (bi-lingual), scissors, newspaper, glue, flip chart paper
10.40 - 10.50		Explain that all the guideline documents for ESDGC (LLUK apps etc) require that we understand the interdependence between these issues. But this is very difficult. Use their suggestions to show links between themes by linking pieces of flip chart with string (learners holding up flip chart hold string) creates a web of string.	Whole group asked to identify links between the articles/themes on their flip chart paper. String used to create visual link between each theme.	Evidence of learner ability to identify links – observation/oral.	String

Time		Tutor activity	Learner activity	Assessment method	Resources
10.50 - 10.55	Conclusion	Summarise what we have learnt and handout sheet explaining all seven themes. (if haven't already) Ask students to identify/ consider one theme they could immediately identify which would fit in with a course/module they are teaching or learning about.	Consider and feedback which, if any, theme they think they could easily consider as part of their existing course. Given handout of seven themes as reminder.	Oral – learner feedback	Handout with seven themes
10.55 - 11.00		Determine winning group, hand out one bar of chocolate to that group, then – handout chocolate as though it were unfairtrade. Explain that fair-trade is one common way of introducing concepts of wealth and poverty, choices and decisions and climate change (three linked) Explain evaluation exercise	Listening and questions, enjoy chocolate Place cross on line to show how well understand ESDGC now	Oral Cross on line	Chocolate Flip chart/flip chart pens

Activity 3 – Footprint Quiz

Five principles of teaching\ESDGC, this activity:

- Teaches that sustainability is complex, through understanding the different types of footprinting and what they include
- Helps learners understand the issues for themselves through analysing various footprints
- Makes it relevant to young people today by using relevant material
- Has awareness of the barriers involved in accepting change by creating opportunities for them to challenge their existing pre conceptions
- Challenges existing ways of thinking and doing through challenging pre-conceptions

Aims

Have experienced and be able to explain a carbon footprint and a ecological footprint as measures of human impacts on the environment,

Be able to explain the differences between the two different forms of footprint

Relate carbon footprint and ecological footprint to:

- The workplace/qualification standards
- Essential Skills
- ESDGC themes

Essential Skills	Footprint	ESDGC themes of primary relevance	ESDGC themes of secondary relevance
Communication Application of Number ICT	Carbon footprint	Climate change Consumption and waste	Choices and decisions Health Identity and culture The natural environment Wealth and Poverty
	Ecological footprint	The natural environment Climate change Consumption and waste	Choices and decisions Health Identity and culture Wealth and Poverty

Learning outcomes:

1. Understand the terms carbon footprint and ecological footprint as measures of human impacts on the environment, and the differences between the two concepts
2. That different products, activities, people and countries can have very different, and sometimes surprising, footprints.areas
3. How to interpret and communicate information about footprints, in relation to climate change, the natural environment, consumption and waste, and their wider significance (eg choices and decisions, health, identity and culture, wealth and poverty.
4. How to make and interpret simple calculations relating to footprints
5. How to find and use a simple ecological and carbon footprint calculator in the internet/how to present information in an appropriate application

Part 1 Carbon footprints

Just about everything we do causes greenhouse gas emissions that contribute to climate change. Greenhouse gases include carbon dioxide, methane and nitrous oxide.

The total emissions caused by a product, an activity or a lifestyle are often called the "carbon footprint".

Emissions and carbon footprints are measured by the weight of the greenhouse gases produced; all the different greenhouse gases are lumped together for simplicity into the "carbon dioxide equivalent" or CO2e, so 1kg CO2e means that the greenhouse gas emissions together add up to the equivalent of 1 kilogram of carbon dioxide. The average person in the UK has a carbon footprint of 15 tonnes of carbon dioxide equivalent per year (15t CO2e per year).

Activity 3.1 - Put the following list of products/activities in to order of their carbon footprints, scoring 1 for the lowest emissions (see example).

Note that different products may in different amounts, some are cooked, some are uncooked – this will affect their total footprints. In thinking about the carbon footprint of each product, you need to consider how it is grown or produced and packaged, waste produced at various stages, the energy or fuels used to produce fertilizers, drive tractors, as well as processing, transporting and cooking the product.

Q No.	EXAMPLE: this is the correct order of carbon footprint of these products – lowest to highest, with estimated carbon footprints in Kg CO2e		Carbon footprint	
			Kg CO2e	Order
	1kg of carrots	Locally grown and sourced, in season	0.25	1
	1kg of carrots	Shipped in, baby carrots	1.00	2
	Eggs	A half-dozen box of eggs	1.80	3

Q No.	QUIZ: put these product in order of carbon footprint – lowest to highest – by putting numbers 1-14 the right hand column. If you like, you can try to guess the carbon footprints in Kg CO2e		Carbon footprint	
			Kg CO2e	Order
1	1kg of carrots	Locally grown and sourced, in season		
2	Punnet of strawberries	250g of strawberries grown out of season in UK (ie in a hothouse), or flown in from Spain		
3	1 kg of boiled potatoes	Locally grown and sourced, boiled rapidly with lid off		
4	Loaf of bread	A standard 800g loaf		
5	A burger	A veggieburger, in a bun with a bit of salad and condiments		
6	A burger	A 4-ounce cheeseburger, in a bun with a bit of salad and condiments		
7	1 kg of boiled potatoes	Locally grown and sourced, boiled gently with lid on		
8	Beer	Local bottled beer from the shop or a pint of foreign beer in a pub		
9	Eggs	A half-dozen box of eggs		
10	1 kg of cheese	Ordinary hard cheese bought from a shop		
11	Beer	A pint of locally brewed cask ale at the pub		
12	1kg of carrots	Shipped in, baby carrots		
13	A steak	Raw 4-ounce (approximately 108g) beefsteak		
14	Punnet of strawberries	250g of strawberries grown in season in UK		

Note: The number of products could be reduced as appropriate to the Essential Skills level. The answers are shown in Table 1

Activity 3.2 - Breakdown of cheeseburger's carbon footprint

3.2.1 Look at the table below showing how each ingredient or component of a cheeseburger contributes to its total carbon footprint.

Breakdown of cheeseburger's carbon footprint		Carbon footprint		
Ingredient	**Weight (g)**	**g CO2e total each component**	**g CO2e per g of each ingredient**	**Each component's % of total footprint**
Beef	108	1,910		
Cheese	20	250		
Bun	40	50		
Salad	20	10		
Condiments	20	80		
Cooking and transport	Approx.	200		
Total		2,500		100%

3.2.2 Fill in the blank columns by calculating:

a) The carbon footprint (in g CO2e) per gram for each ingredient.

b) The percentage contribution by each component (ingredients plus cooking and transport) to the total footprint of the whole cheeseburger.

c) Which ingredient has the highest footprint per gram?

d) Which ingredient has the lowest footprint per gram?

e) Which component of the burger contributes the most to its total footprint?

f) Which component of the burger contributes the least to its total footprint?

Part 2 Introducing the "ecological footprint" - the cheeseburger's wider effects on the environment

Activity 3.3 - Thinking about the cheeseburger's effects on the environment.

3.3.1.a Watch video A: Cheeseburger Footprint (CTRL+click on the image) and look at image 1: the parts of a person's ecological footprint.

Just as the production of all food causes emissions of carbon dioxide and other greenhouse gases, it also has effects on the wider environment – called the "ecological footprint".

3.3.2 Choose ONE option

a) Discuss with your assessor, manager or workmates the impacts of cheeseburgers on climate change and the wider impacts on the environment of producing and consuming cheeseburgers. (Suggestions – think about the land that is used for producing the different ingredients, effects on wildlife, the need for water, etc).

b) Summarise the information about the effects of producing and consuming cheeseburgers on climate change and write about the wider impacts on the environment of producing and consuming cheeseburgers

c) Prepare and give a presentation on the same subject

OR

3.3.1.b Do the WWF **ecological footprint calculator** at http://footprint.wwf.org.uk/ (CTRL+click to open page)

What is your ecological footprint (number of planets)?	
What % of your footprint is due to food?	
What % of your footprint is due to travel?	
What % of your footprint is due to home?	
What % of your footprint is due to stuff?	
What is your carbon footprint (tonnes per year)?	

Activity 3.4 - Differences between carbon footprints and ecological footprints

3.4.1 Read the passages below:

Carbon Footprint

A carbon footprint measures the total greenhouse gas emissions caused directly and indirectly by a person, activity, organisation or product. Thinking about the carbon footprint helps people or organisations make changes aimed at fighting climate change. Results are measured in grams, kilograms or tonnes of carbon dioxide equivalent (CO2e). More information: http://www.bestfootforward.com/carbon_accounting

Ecological Footprint

Our Ecological Footprint is a measure of the burden we place on the environment through the use of the earth's resources. The Ecological Footprint calculates the land area needed to feed, provide resources, produce energy, and absorb the pollution generated by our supply chains. As this land is distributed around the world, the figure is put in global hectares (gha) (WWF, October 2007, One Planet Wales, summary, http://wales.wwf.org.uk).

3.4.2- Give three differences between carbon footprints and ecological footprints in the table below:

	Carbon footprint	Ecological footprint
1		
2		
3		

Part 3 Ecological footprints, poverty and health

Activity 3.5 - Ecological footprints, population and poverty

3.5.1 Look at the maps A - D:

Map A shows the size of each country compared to other countries, more or less as we normally see it.

Map B looks strange because the size of each country has been changed to show its ecological footprint compared to other countries, so the bigger the country looks, the bigger its ecological footprint.

Map C has been changed to show its population size compared to other countries, so the bigger the country looks, the bigger more people live there.

Map D has been changed to show each country's wealth compared to other countries, so the bigger the country looks, the richer it is.

a) Put the countries that are labelled in order of their ecological footprint, starting with the biggest.

Rank	Order of ecological footprint by country (highest first, lowest last)
1	
2	
3	
4	

b) Put the countries that are labelled in order of their population size, starting with the largest.

Rank	Order of population (highest first, lowest last)
1	
2	
3	
4	

c) Put the countries that are labelled in order of their wealth, starting with the richest.

Rank	Order of wealth (richest first, poorest last)
1	
2	
3	
4	

The actual ecological footprints, populations and wealth per person (in "purchasing power") of each of these countries are shown in the table on next page:

	Population (to nearest million)	**Total ecological footprint** (to nearest million gHa)	**Ecological footprint per person** (gHa/p)	**Total Wealth** (US $ purchasing power to nearest billion)	**Wealth per person** (US $ purchasing power)
USA	307 million	3,752 million	12.22	14,214 billion	46,300
UK	61 million	384 million	6.29	2,166 billion	35,500
China	1,339 million	2,464 million	1.84	6,561 billion	4,900
Mozambique	22 million	17 million	0.76	18 billion	800

EITHER

d) Discuss how and why ecological footprint per person is related to the size of a country's population and the average wealth or poverty of its people.

OR

Look at image 2 showing the ecological footprints per person of the different countries. The "ideal" or "fair" ecological footprint is about 1.9 gHa per person – if everyone had this footprint there would be enough of the earth's resources to go round everyone.

e) Calculate the percentage of the ideal or fair ecological footprint for each country, and write them in the table below:

	"fair share" ecological footprint (gHa)	**Ecological footprint (gHa) in 2005**	**% of "fair share" ecological footprint**
USA			
UK			
China			
Mozambique			

The percentage of the fair share ecological footprint used by a person is often used to describe "how many earth-like planets" would be needed if everyone lived like that person.

f) Approximately how many earth-like planets would be needed if everyone in the world lived like the average person in each of the countries in the table below? (Complete the table)

How many earth-like planets would be needed if everyone lived like the average person in …		
	Countries	**Number of planets**
i	USA	
ii	UK	
iii	China	
iv	Mozambique	

1 http://www.nationmaster.com/graph/env_eco_foo-environment-ecological-footprint

2 http://www.indexmundi.com

Activity 3.6 - Ecological footprints and health

3.6 Look at charts 1 and 2. (gHa means "global hectares" – the way ecological footprints are measured)

a) In Chart 1, the ecological footprint of the average UK diet, which food has the biggest the ecological footprint, how much is it (approximately)?

b) Chart 2, the ecological footprint of the recommended healthy diet which food has the biggest the ecological footprint, how much is it (approximately)?

c) Which of the two diets has the lowest ecological footprint? Discuss what this means, for your workplace or in the home.

Part 4 - Resources

Resources Activity 3.3 - Thinking about the cheeseburger's effects on the environment.

Video A: Cheeseburger Footprint (CTRL+click on the image)

Cheeseburger Footprint - from Six Degrees, by Jamais Cascio, http://vimeo.com/4709524
Text - http://openthefuture.com/cheeseburger_CF.html

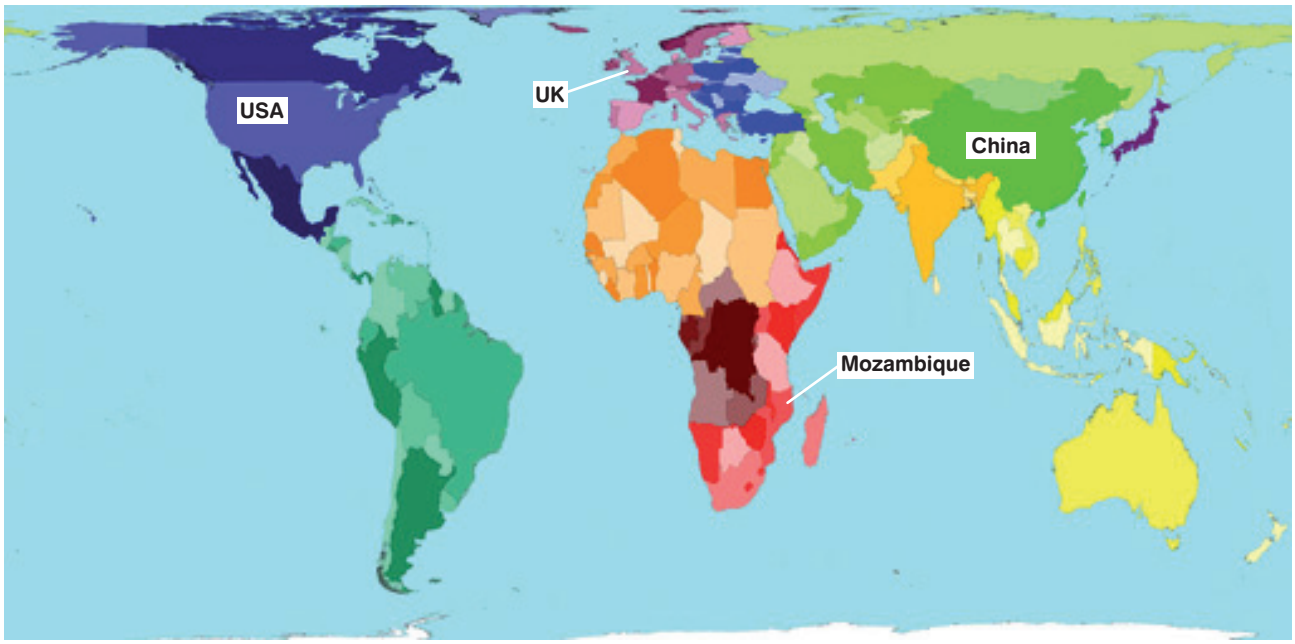
Image 1: the parts of a person's ecological footprint

Source: Reader's Digest, 2005, Discovery Box

Resources

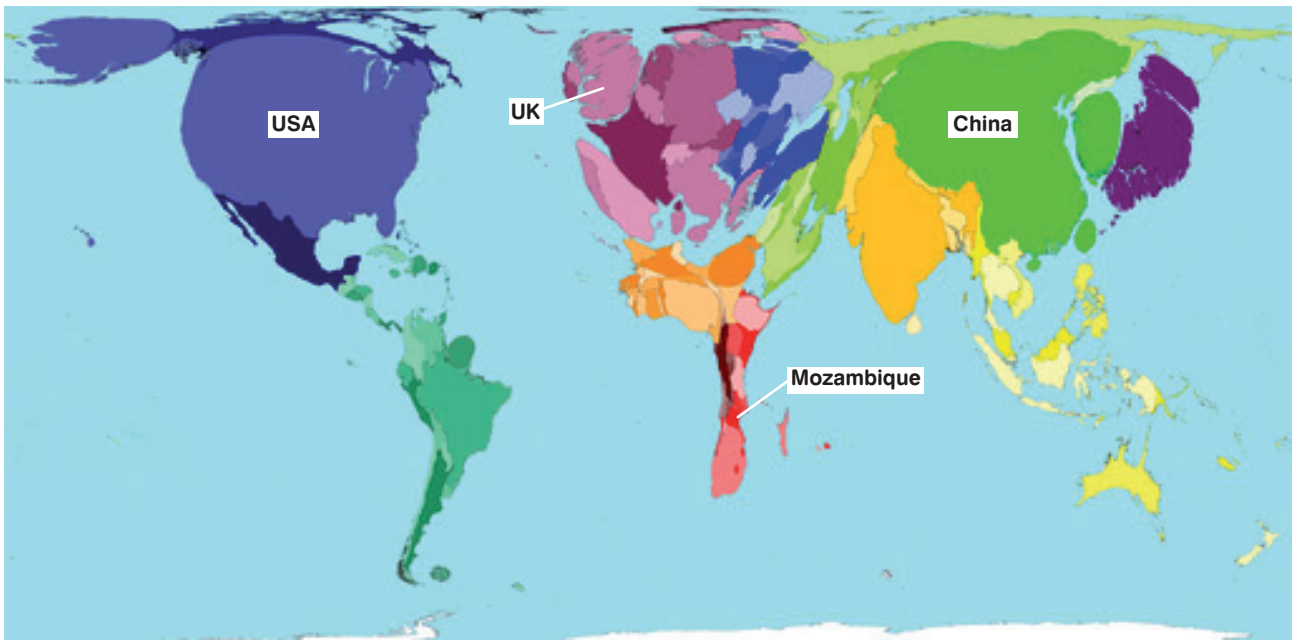
Activity 3.5 - Ecological footprints, population and poverty.

Map A: the size of each country compared to other countries



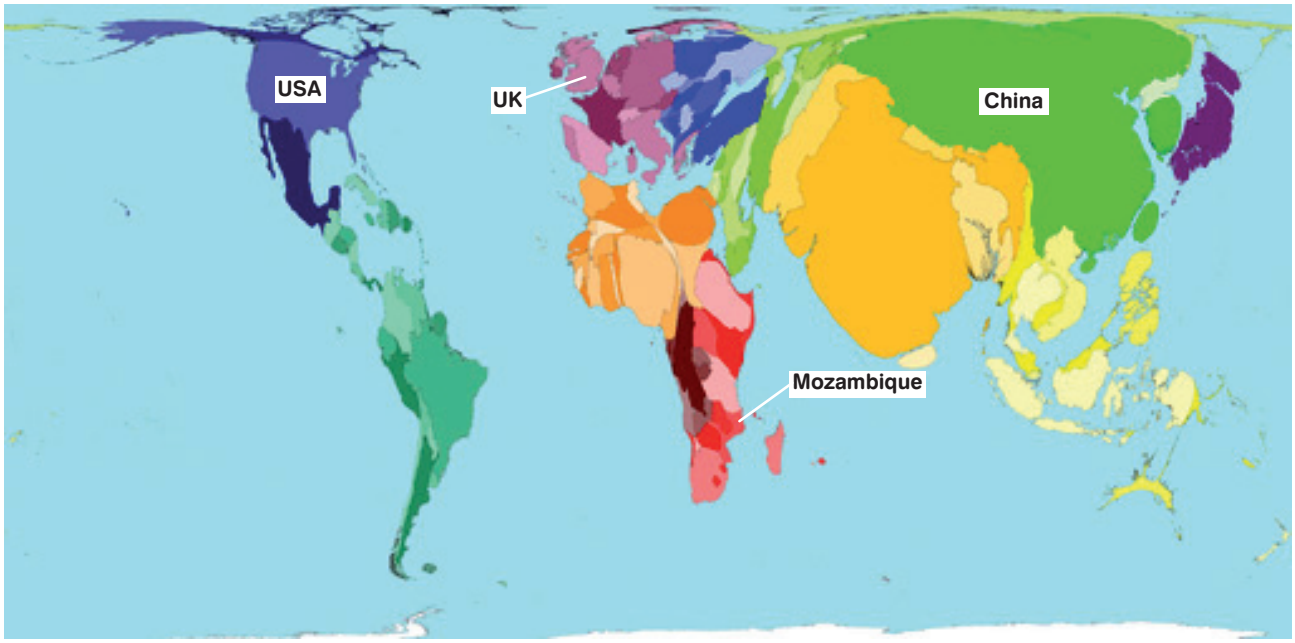
Each territory's size on the map is drawn according to its land area.

Map B: Ecological Footprint of different countries



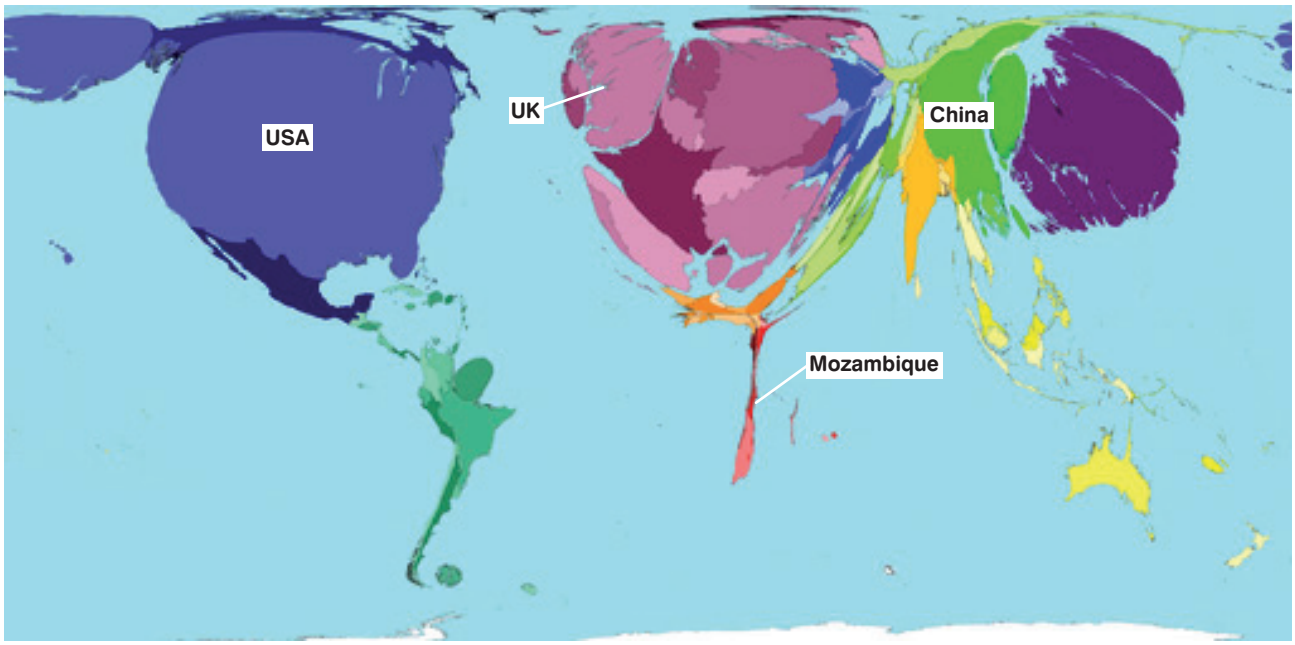
The map distorts the normal world map to show the size of each country's ecological footprint. "People consume resources and ecological services from all over the world, so their footprint is the sum of these areas, wherever they may be on the planet." The Living Planet Report, 2006 Source - http://www.worldmapper.org/display.php?selected=322

Map C: Total population size



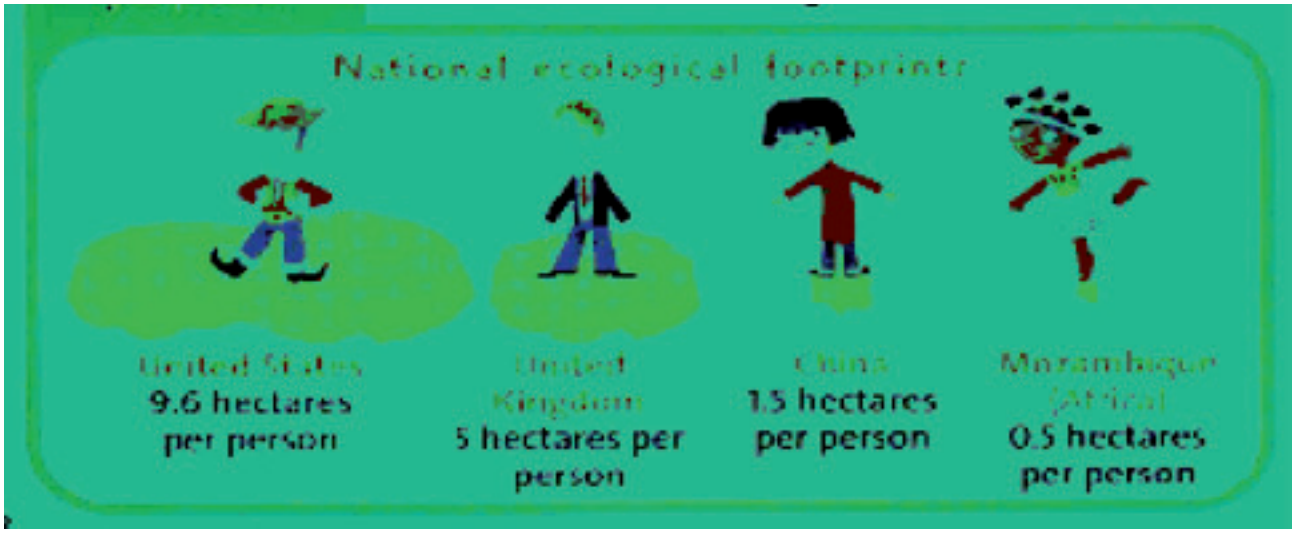
The size of each territory shows the relative proportion of the world's population living there.

Map D: Wealth (GDP by country)



Territory size shows the proportion of worldwide wealth, that is Gross Domestic Product based on exchange rates with the US$, that is found there.

Image 2: the ecological footprints per person of 4 different countries (in 2005)



Source: Reader's Digest, 2005, Discovery Box.

Resources

Activity 3.6 - Ecological footprints and health.

Chart 1 the ecological footprint of the average UK diet

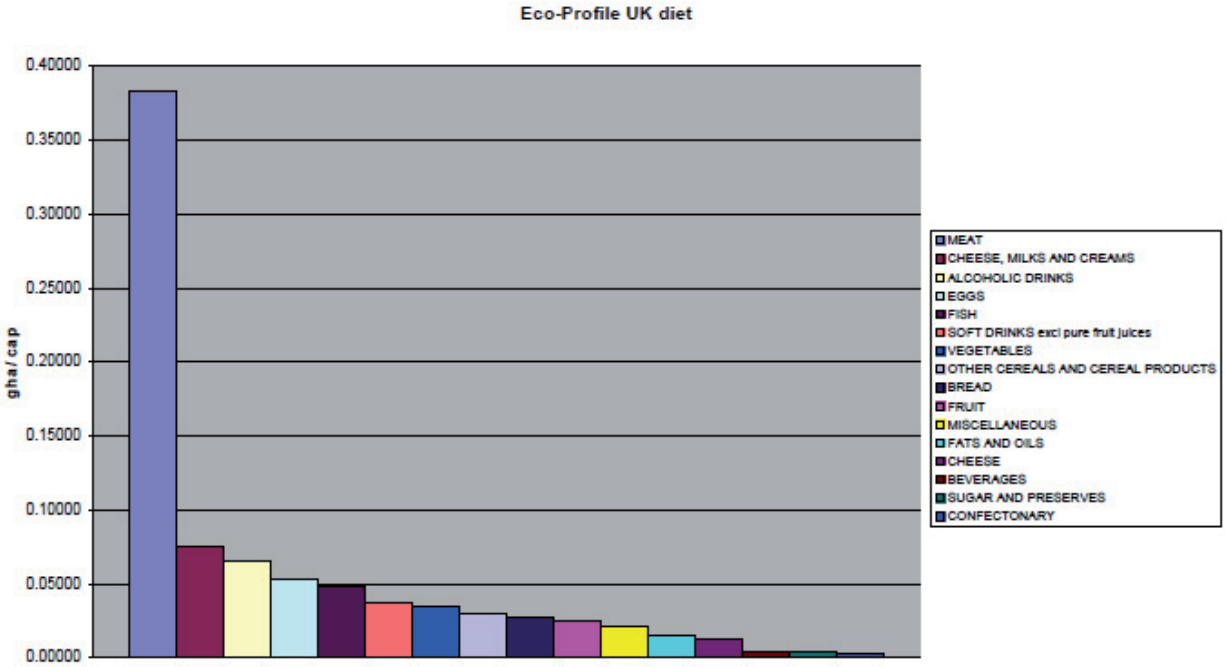
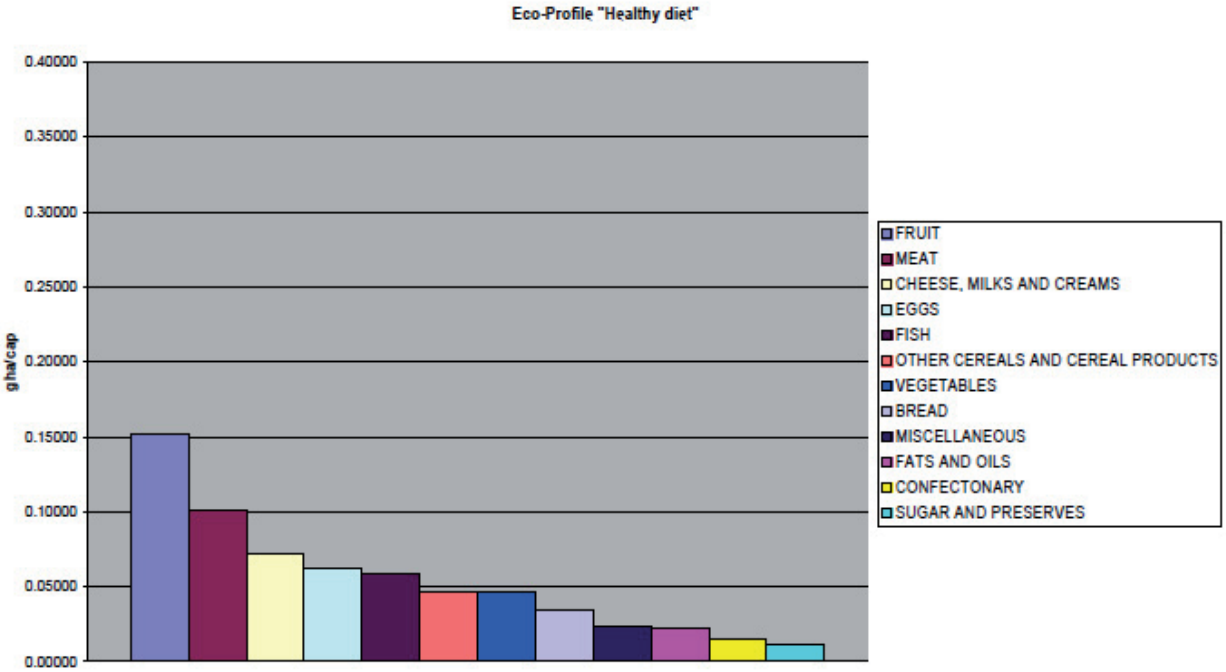


Chart 2 the ecological footprint of the recommended healthy diet



Relevance to Essential Skills

Communication:

Obtaining information from different types of document/media, discuss why selected products/countries might have different footprints, eg C1.1, C2.1.

Application of Number:

Standardise the amounts of some products (eg convert all to 1kg weight of product, and their carbon footprints proportionately) in order to compare carbon footprints more easily, N1.2.

Present calculations as a table and a chart, N1.3, N2.3.

ICT

Some of the activities could be developed by attaching a spreadsheet of carbon footprint data, enabling searching, extraction, calculations and simple formulae, and presentation as different types of charts.

Answers

Activity 3.1 - Put the following list of products/activities in to order of their carbon footprints, scoring 1 for the lowest emissions (see example).

Table 1 Answers to Carbon footprint quiz

Q No.	Answers: this is the correct order of carbon footprint – lowest to highest, with estimated carbon footprints in Kg CO2e		Carbon footprint	
			Kg CO2e	Order
14	Punnet of strawberries	250g of strawberries grown in season in UK	0.15	1
1	1kg of carrots	Locally grown and sourced, in season	0.25	2
11	Beer	A pint of locally brewed cask ale at the pub	0.30	3
8	Beer	Local bottled beer from the shop or a pint of foreign beer in a pub	0.50	4
7	1 kg of boiled potatoes	Locally grown and sourced, boiled gently with lid on	0.62	5
12	1kg of carrots	Shipped in, baby carrots	1.00	6=
4	Loaf of bread	A standard 800g loaf	1.00	6=
5	A burger	A veggieburger, in a bun with a bit of salad and condiments	1.00	6=
3	1 kg of boiled potatoes	Locally grown and sourced, boiled rapidly with lid off	1.17	9
9	Eggs	A half-dozen box of eggs	1.80	10=
2	Punnet of strawberries	250g of strawberries grown out of season in UK (ie in a hothouse), or flown in from Spain	1.80	10=
13	A steak	Raw 4-ounce (approximately 108g) beefsteak	2.00	12
6	A burger	A 4-ounce cheeseburger, in a bun with a bit of salad and condiments	2.50	13
10	1 kg of cheese	Ordinary hard cheese bought from a shop	12.00	14

Sources: all calculations were based on figures in Mike Berners-Lee, 2010, How Bad are Bananas? – The Carbon Footprint of Everything, Profile Books, ISBN 978 1 84668 891 1, http://howbadarebananas.posterous.com, http://www.facebook.com/pages/How-Bad-Are-Bananas/131637976863906

Answers

Activity 3.2.1 - Breakdown of cheeseburger's carbon footprint

3.2.1 Table

Breakdown of cheeseburger's carbon footprint		Carbon footprint		
Ingredient	**Weight (g)**	**g CO2e total each component**	**g CO2e per g of each ingredient**	**Each component's % of total footprint**
Beef	108	1,910	17.69	76%
Cheese	20	250	12.50	10%
Bun	40	50	1.25	2.0%
Salad	20	10	0.50	0.4%
Condiments	20	80	4.00	3.2%
Cooking and transport	Approx.	200		8.0%
Total		2,500		100%

3.2.2 Fill in the blank columns by calculating:

a) The carbon footprint (in g CO2e) per gram for each ingredient. **A – See table**

b) The percentage contribution by each component (ingredients plus cooking and transport) to the total footprint of the whole cheeseburger. **A – See table**

c) Which ingredient has the highest footprint per gram? **A - Beef**

d) Which ingredient has the lowest footprint per gram? **A - Salad**

e) Which component of the burger contributes the most to its total footprint? **A – Beef (76%)**

f) Which component of the burger contributes the least to its total footprint? **A – Salad (0.4%)**

Sources: all calculations were based on figures in Mike Berners-Lee, 2010, How Bad are Bananas? – The Carbon Footprint of Everything, Profile Books, ISBN 978 1 84668 891 1, http://howbadarebananas.posterous.com, http://www.facebook.com/pages/How-Bad-Are-Bananas/131637976863906

Answers

Activity 3.4 - Differences between carbon footprints and ecological footprints

3.4.2- Three differences between carbon footprints and ecological footprints:

	Carbon footprint	Ecological footprint
1	Measures the effect of a lifestyle, product, process or organisation on climate change	Measures the effect of a lifestyle, product, process or organisation on the environment/natural resources
2	Measures the amount of greenhouse gas emissions by the lifestyle, product, process or organisation	Measures the area of the world needed to support the lifestyle, product, process or organisation
3	Measured by weight of greenhouse gas emissions (gram, kilograms, tonnes, etc of "carbon dioxide equivalent"), eg g CO2e	Measured by area – "global hectares", gHa - of the world needed or used

Activity 3.5 - Ecological footprints, population and poverty

Activity 3.5.1 Maps A - D:

a) Countries **in order of their ecological footprint,** starting with the biggest.

Rank	Order of ecological footprint by country (highest first, lowest last)
1	USA
2	China
3	UK
4	Mozambique

b) Countries **in order of their population size,** starting with the largest.

Rank	Order of population (highest first, lowest last)
1	China
2	USA
3	UK
4	Mozambique

c) Countries **in order of their wealth,** starting with the richest.

Rank	Order of population (highest first, lowest last)
1	USA
2	UK
3	China
4	Mozambique

Answers

3.5.1 e) Percentage of the ideal or "fair share" ecological footprint for each country:e)

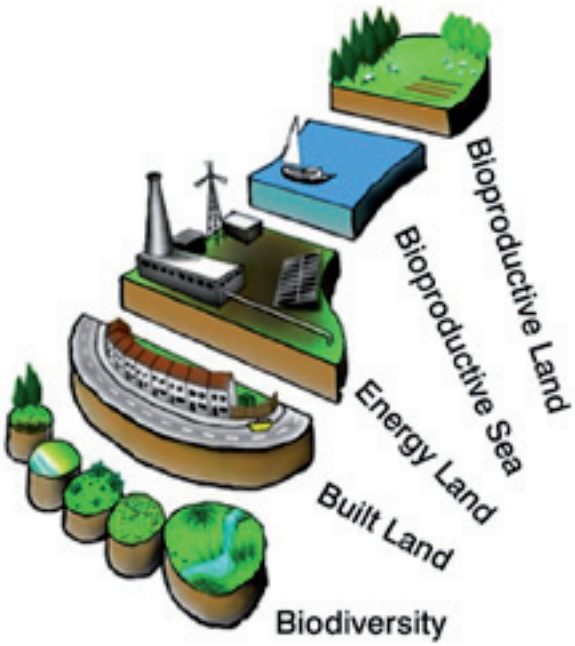
	"fair share" ecological footprint (gHa)	Ecological footprint (gHa) in 2005	% of "fair share" ecological footprint
USA	1.9	9.6	505%
UK	1.9	5	263%
China	1.9	1.5	79%
Mozambique	1.9	0.5	26%

3.5.1 f) earth-like planets needed if everyone in the world lived like the average person in each of these countries (complete the table)

How many earth-like planets would be needed if everyone lived like the average person in …		
	Countries	Number of planets
i	USA	More than 5 (5.05) planets
ii	UK	More than 2 (2.63) planets
iii	China	About (0.79) of a planet
iv	Mozambique	About (0.26) of a planet

Resources - Footprinting in ESDGC

This resource includes a list of, and information about, different footprinting tools which can be found on the internet.



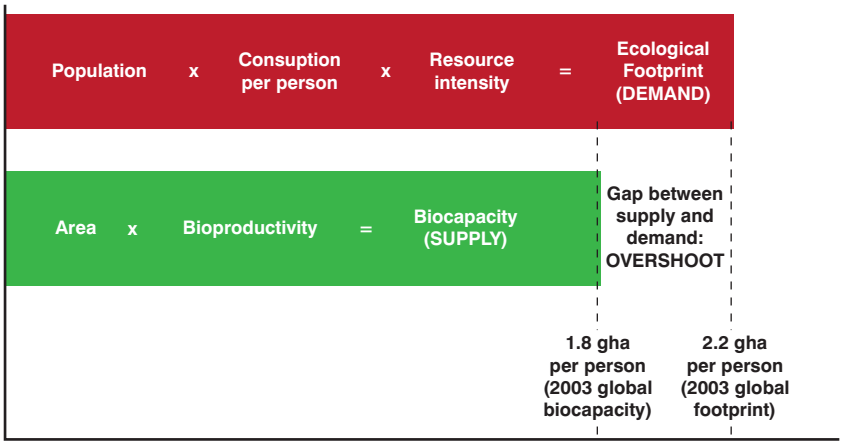
Ecological Footprint: Image reproduced from Best Foot Forward, http://www.bestfootforward.com

If everyone on earth consumed natural resources and generated carbon dioxide at the rate we do in Wales, we would need three planets to support us.

Our Ecological Footprint is a measure of the burden we place on the environment through the use of the earth's resources. The Ecological Footprint calculates the land area needed to feed, provide resources, produce energy, and absorb the pollution generated by our supply chains. As this land is distributed around the world, the figure is put in global hectares (gha) (WWF, October 2007, One Planet Wales, summary, http://wales.wwf.org.uk).

Supply and demand of natural resources

Footprint and Biocapacity Factors that Determine Overshoot



Reproduced from: Global Footprint Network, 2008, Africa: Ecological Footprint and Wellbeing, http://www.footprintnetwork.org/en/index.php/GFN/page/national_assessments

Footprint tools

The Climate Outreach and Information Network (COIN) carried out a review in 2007 of 19 online carbon calculators, which can be found at: http://coinet.org.uk/materials/carboncalculations

Tool	Applications	Information	Available from
WWF Footprint Calculator	Individual/ household	*WWF's ecological calculator allows people to unearth accurately their consumption levels. By spending five minutes filling out a range of simple questions the calculator, sited on the internet, will not only spell out a person's level of consumption but also the amount of CO2 released by them over the course of a year. Afterwards people are given specific eco-tips tailored to their individual consumption pattern. Users can then make pledges to take actions to reduce their impact while improving their quality of life. The calculator can be revisited and updated with the latest information that all feeds directly back into the computation to recalculate your footprint in real time.* Welsh option available.	http://footprint.wwf.org.uk Free, online tool
My Footprint	Educational tool	Simple to use quiz that allows comparisons with other countries and global averages. Primarily for individuals household as educational tool. *The Ecological Footprint Quiz estimates the area of land and ocean required to support your consumption of food, goods, services, housing, and energy and assimilate your wastes. Your ecological footprint is expressed in "global hectares" (gha) or "global acres" (ga), which are standardized units that take into account the differences in biological productivity of various ecosystems impacted by your consumption activities. Your footprint is broken down into four consumption categories: carbon (home energy use and transportation), food, housing, and goods and services. Your footprint is also broken down into four ecosystem types or biomes: cropland, pastureland, forestland, and marine fisheries.*	http://www.myfootprint.org On-line tool, institutions asked to register and donate
Energy Saving Trust Carbon Cutter	Individual/ household	Carbon Footprint calculator designed to *help you calculate your carbon footprint and give you a personalised action plan so you can do your bit to help fight climate change. The carbon cutter uses the official data and carbon factors used in the ACT ON CO2 Calculator to give you your carbon footprint based on your lifestyle.* Recommends you have energy bills, annual mileage and miles per gallon available to improve accuracy. Welsh option available.	http://www.energysavingtrust.org.uk/calculator/start Free, online tool
Global Footprint Network Footprint Calculator	Individual/ household	How much land area does it take to support your lifestyle? Take this quiz to find out your Ecological Footprint, discover your biggest areas of resource consumption, and learn what you can do to tread more lightly on the earth. Limited country-specific tools available (not UK yet!) – more to be added.	http://www.footprintnetwork.org/en/index.php/GFN/page/calculators Free, online tool
National Geographic Human Footprint	Individual/ household	Your human footprint is how much of the world you use in your lifetime. Calculate how much you will consume and see how that measures up with the rest of the world. Interactive with animated graphics, with links to videos and photos for more information. Gives comparisons of footprints of different countries – potentially useful for Identity and culture theme.	http://channel.nationalgeographic.com/episode/human-footprint-3224/Overview#tab-interactive Free, online tool
Living Carmarthenshire - Byw Sir Gâr	Community project 	Local project in Ferryside that includes footprinting. 270 (nearly all) households were surveyed, 107 responses received. Results showed a wide range of footprints; 2 - 5.85 'planets'. Higher ones were due to air travel. Could be repeated in future to monitor trends in footprints. *The Living Carmarthenshire / Byw Sir Gâr project is an innovative new scheme to help communities in Carmarthenshire to reduce their carbon footprint and tackle climate change… and will be rolled out to other communities across Carmarthenshire from 2010.*	http://www.livingcarmarthenshire.org.uk paper version of WWF tool, information on line

Tool	Applications	Information	Available from
Dyfi Footprint	Individual/ household	Example of a locally specific tool. *The Dyfi Footprint Project aims to help residents of the Dyfi valley reduce their impact on the planet, and to estimate and monitor the collective Footprint of the community.*	http://www.dyfifootprint.org.uk Free, online tool
Green Communities Community Carbon Footprint Tool	Community/ businesses/ buildings	What is your community's footprint? The Green Communities carbon footprint tool allows groups of individuals measure their carbon emissions and workout their community carbon footprint. Local businesses and community buildings in your community can also calculate their carbon footprint. Use this tool to aid your community project and engage community members. As a community leader your can set up a community profile and invite people to join. As more and more people fill out their carbon footprint you will get a more accurate estimation of your community's carbon footprint. Then you can monitor your community's carbon footprint as your project takes effect - helping you to evaluate the success of your project. Your can also use your community profile page to post news and events.	http://www.est.org.uk/cafe/Green-Communities/Guidance-and-useful-tools/Community-Carbon-Footprint-Tool Free, online tool Need to register (free) with 'Green Communities' (Energy Saving Trust) [Currently not working – 1/2/10]
REAP Petite	Community ecological and carbon footprinting Designed specifically for use with community groups.	Software tool developed by Stockholm Environment Institute (York) to help communities calculate their ecological or carbon footprint and test the effectiveness of a number of footprint reducing pledges. REAP petite is designed to be used by a community or with a community. Schools or voluntary groups might use the tool themselves as part of their environmental activities. It could be used to support campaigning, fund-raising, awareness raising, engaging with the local council or simply as an exercise in itself. It can also be used by local government or charity groups to support engagement with communities and more importantly to collect 'bottom-up' data on consumption activities. REAP petite can also function to support the targeting of policies and to assess their importance. REAP petite can measure actual footprint improvement within a community by simply resurveying the community at a later time to see the impacts of change.	http://www.resource-accounting.org.uk/reap-petite Download free demo Full version £600
Envirowise Indicator	Basic Business/ Organisation analysis	Interactive tool for businesses of any size or sector, intended to give an indication environmental impact and the financial savings that could be made. *The tool is designed to allow you to quickly get a feel for how your businesses use of resources affects the environment. It allows you to easily put data about the resources that you use based on the sector in which you operate. Once you have entered some data, the tool shows you the costs and gives an indication of the amount of carbon that would be generated for your use of resources.*	https://www.footprinter.com/standard/register Free, online, need to register
Standard Footprinter Best Foot Forward	Basic Business/ Organisation analysis	Flexible carbon and greenhouse gas calculator with a wide range of organisational applications. Free version of Footprinter for the 10:10 campaign (http://www.1010uk.org), uses DEFRA carbon guidelines (http://www.carbonlowemissions.co.uk/Standards/Defra). Sufficient for reporting to the guidelines, but limited functionality on modelling changes. Compatibility with DEFRA and Global Footprint Network	https://www.footprinter.com/standard/register Free, online, need to register
Best Foot Forward	In depth Business/ Organisation analysis	Number of tools available from the simple to in depth for businesses and organisations. Footprinting and other tools include *Carbon accounting, Ecological footprinting, Supply chain sustainability.* Best Foot Forward say: *We are specialists in calculating sustainability metrics but also in communicating our findings to clients and wider audiences. Since 1998 we have been using IT tools to engage users and demonstrate the relative impacts of alternative decision making. Our tools range from simple calculators to communicate personal lifestyle impacts, through to the sophisticated Footprinter series that enables full environmental accounting with data storage functionalities. A selection of our recent tools are presented below – use the arrow keys or click mouse left and right to scroll.*	http://www.bestfoot-forward.com/footprinting_analysis_tools Consultancy services, with some on-line availability Footprinter - http://www.footprinter.com

NB text in italics denotes quotes from the websites referenced

More information on footprints

Carbon Footprint

A carbon footprint measures the total greenhouse gas emissions caused directly and indirectly by an individual, event, organisation or product. Assessing the carbon footprint helps organisations adopt strategies aimed at fighting climate change. Results are measured in grams, kilograms or tonnes of carbon dioxide equivalent (CO2e). More information: http://www.bestfootforward.com/carbon_accounting

Ecological Footprint

The ecological footprint is a comprehensive indicator of sustainability that links consumption to the Earth's carrying capacity (or 'bioproductivity'); it considers both carbon and renewable resources. More information: http://www.bestfootforward.com/ecological_footprinting

Ecological Footprint grant scheme, Welsh Assembly

A grant scheme encouraging greater use of ecological footprinting techniques has been launched aimed at lowering Wales' footprint. Up to 75% of the total cost of projects and to a maximum of £5,000 per year per organisation is available. Visit http://wales.gov.uk/topics/sustainabledevelopment/funding/ecofootprint/?lang=en or e-mail sustainable.development@wales.gsi.gov.uk.

Ymlaen Ceredigion Cyf
Canolfan Rheidol
Rhodfa Padarn
Llanbadarn
Aberystwyth SY23 3UE
www.ymlaenceredigion.org.uk
01970 633395

Further Resources

Download COIN (Climate Outreach and Information Network) - Walking the Walk

Activity 4 – Handout to explore difference between ethical and non ethical values

Five principles of teaching\ESDGC, this activity:

- Teaches that sustainability is complex, through demonstrating the connection between shared values and equality of resource distribution
- Helps learners understand the issues for themselves through exploring their own values and values of others
- Makes it relevant to young people today by using their own values
- Has awareness of the barriers involved in accepting change, encourages them to develop an understanding themselves rather than simply trying to change them
- Challenges existing ways of thinking and doing through their own insight and group discussion

Background

This activity can be used for health and care based qualifications. It encourages groups to consider personal values and shared values. They can then consider how reflection on shared values may affect their relationships and behaviours in terms of community and equal use and sharing of resources. You can combine it with an exercise looking at eco and carbon footprinting. For a handout with a list of different types of values to support the activity see the handout below. Time allowed: 1 hour

Activity	Notes
1. Group discussion – what is an ethical value? An ethical value is something which is generally perceived as 'wrong' if it is turned into its opposite.	Eg: honesty, the opposite of which is dishonesty which is generally perceived as wrong. Some people may value humor, but not being humorous is not wrong or unethical so whereas this may be a value someone holds it is not an ethical value. Use handout below to consider ethical values.
2. Group brainstorm – as many ethical values that you can think of	There should be a good number here. Including such things as: respect, honesty, equality, fairness, kindness….
3. Now get people to list their five top values, the values they would most want their group to organize themselves by.	Individuals should to this on their own without any discussion
4. Then get into pairs and between you see if there are any values you share in your top five, then see if you can agree on a top five (some may not be exactly the same but could be similar).	This section could take a little while whilst people discuss how to define similar values.
5. Join each pair with another pair and again give them time to come up with their top five values (it is likely they will share one or two already).	Again, give them some time to consider which their shared values are.
6. Now come back to the bigger group and list everyone's values and see if there is any overlap. Can the whole group now come up with their five top values?	Once you have done this use the powerpoint to show the most common values that come out of this exercise. Groups can see how they all share values in common. This can be a powerful experience in itself.
7. Consider this in the light of sustainability and equality of use of resources. Go back to the slides which show how much 'planets worth' of resources different countries use.	This is a good place to start to consider how our core values effect our behavior, we often consider how this affects our relationships with each other, but can we use it to reflect on how it affects our relationship with the planet and sharing the resources the planet has available?

Activity 4 – Group exercise to explore shared values and link shared values to ESDGC

Pick out the words that are ethical values….

Honest	Shy	Creative
Reserved	Genuine	Adventurous
Gentle	Serious	Brave
Hospitable	Respect	Witty
Outgoing	Smart	Fair
Attentive	Responsible	Kind
Considerate	Ambitious	Open
Artistic	Athletic	Careful
Playful		

Activity 5 – Green Heroes or Green Wash

Background

A look at corporate responsibility and ESDGC and what is real change (green heroes) and what is just there to make a company "look" like they are doing the right thing. This exercise can be used to inspire reflection and discussion and/or to support Essential Skill activities.

Learning outcomes

1. Learners will be able to analyse ESDGC in terms of business and corporate responsibility
2. Learners will recognise the difference between innovation in sustainability and greenwash
3. Learners will understand the term green wash
4. Learners will be able to explore different aspects of sustainability such as fair-trade, ethics, choices and decisions

1. Discuss definition of greenwash	You can find definitions easily on the internet
2. Show first film, road to sustainability, give learners the handout with the script on it and allow them to make notes in the relevant boxes.	Encourage them to see links to the ESDGC themes and also consider which is green wash and which is innovation.
3. Show second film supersize me and discuss the two together in relation to the ESDGC themes and ethics.	This is a good film to show to young people who eat a lot of fast food and is a good comparative to the first film.
4. Show the third film (M&S) giving the learners the script and, as with the first, allowing them to fill in the boxes.	Encourage them to see links and then to compare this in terms of ethics and greenwash to the other films.

MacDonald's – the Road to Sustainability

Script	Greenwash ?	ESDGC themes?	Inspiration/ innovation?
http://www.aboutmcdonalds.com/mcd/csr/video/the_road_to_sustainability.html - the road to sustainability http://www.youtube.com/watch?v=N2diPZOtty0 – Supersize me in 7 minutes			
Nutrition and well being Empowering our customers to make the right personal choices Delivering user friendly nutrition information Including our NII (nutrition information initiative) Offering high quality food Lots of flexibility and regional variety to meet customer preferences Fun ways to eat fruit and vegetables, promoting physical activity			
Making people a priority Becoming an employer of choice, recognised as a great place to work in over 30 countries where we operate (poverty and wealth) Offering workplace flexibility and mobility (poverty and wealth) Embracing and empowering a diverse workforce – offering unique opportunities			
Sustainable supply chain Supporting sustainable agriculture. Highest food safety and quality standards from farm to fork (health) Working towards sustainable agriculture production by addressing ethical, environmental and economic challenges Industry leading animal welfare standards. McDonalds agricultural assurance programme and flagship farms initiative promote strong sustainable farming activities in Europe A global environmental commitment since 1990 Environmental scorecard tracks supplier eco efficiency Code of conduct for suppliers, sustainable logistics			
Recycling In Europe more than 80 per cent of our used cooking oil is being recycled and 30 per cent of fuel used in our delivery trucks is bio diesel. In the US nearly two thirds of our restaurants recycle used cooking oil for aftermarket use including biodiesel Close to 300 McDonald's restaurants in Brazil, Argentina and Chile deliver their used cooking oil to be converted into biodiesel			

Script	Greenwash ?	ESDGC themes?	Inspiration/ innovation?
Sustainable land use Sustainable packaging efforts – approximately 81 per cent of our packaging in our major markets is from renewable materials of which 31 per cent comes from recycled fibre Global rainforest policy for beef. McDonalds and Greenpeace an odd couple. First to work together to support the moratorium on further illegal deforestation Our fisheries policy won't cost the earth In partnership with conservation international we launched our sustainable fisheries programme In 2001 98 percent of fish sourced from fisheries with zero unsatisfactory ratings in 2008			
Choices We serve certified sustainable coffee in Australia, New Zealand and every market in Europe Certified by independent organisations such as rainforest alliance and UTZ certified good inside			
Energy and design Greening our restaurants, testing sustainable design techniques Conserving energy Energy efficiency lighting equipment and fire up schedules Recycling and composting pilot in the restaurant Litter patrols organic waste into the bio gas pilot, waste to energy pilots The founding members of refrigerants naturally supported by the United Nations environment programme and Greenpeace We can't predict the future but we can help shape it			
http://www.aboutmcdonalds.com/mcd/csr/video/the_road_to_sustainability.html - the road to sustainability http://www.youtube.com/watch?v=N2diPZOtty0 – Supersize me in 7 minutes			

Marks and Spencer's Plan A

Script	Greenwash ?	ESDGC themes?	Inspiration/ innovation?
Plan A – Marks and Spencer - http://www.youtube.com/watch?v=6s8iilFgPMU&feature=relmfu			
The number of food bags by over 80 percent, profits goes to Groundwork, supporting 79 projects			
1 million people taken part into Oxfam exchange scheme has raised 2.5m for Oxfam to help alleviate poverty.			
Reduced food packaging by 20 percent and over 90 per cent of it is widely recyclable			
Source our products sustainably and responsibly on sustainable fishing we became the first UK Company to sign WWF seafood charter			
We are also working hard to ensure all out wood is sourced sustainably and right now over 70 percent of it is			
Climate change, we have reduced our carbon emissions by 20 percent per sq ft of sales floor and received the carbon trust standard in recognition of our work			
And helped our suppliers to develop 5 eco factories using less energy and water and producing less waste we also support suppliers with their environmental work			
Pay dairy farmers with a fixed amount and reward with premium payment to look after their herd			
We sold 8 million fair-trade cotton products last year - that's more than any other UK retailer			
Last year we supported our charity partners by 20 million pounds			
Healthy choices make up 40 percent of our food and all our own branded food has no additives.			
Target – the world's most sustainable major retailer by 2015 – we can only make that happen with your continued support.			
Plan A – Marks and Spencer - http://www.youtube.com/watch?v=6s8iilFgPMU&feature=relmfu			

Activity 6 – ESDGC awareness questions for use in reviews

Background

Here are a number of questions which can be added to learner reviews to assess learning in a number of areas of ESDGC. They are targeted at key areas which are often not understood or misunderstood, such as peak oil, biodiversity and eco-footprinting.

Five principles of teaching\ESDGC, this activity:

- Teaches that sustainability is complex, through a number of questions which highlight the main issues related to ESDGC
- Helps learners understand the issues for themselves through encouraging individual research and discussion in reviews
- Makes it relevant to young people today by using up to date material
- Has awareness of the barriers involved in accepting change, encouraging them to understand the topic, not just be told and accept facts
- Challenges existing ways of thinking and doing through their own insight and discussion in the review

1. What is "peak oil"?

The point in time when the maximum rate of global petroleum extraction is reached, after which the rate of production enters terminal decline.

2. What is the definition of sustainability?

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland definition).

The capacity to endure. In ecology, the word describes how biological systems remain diverse and productive over time. Long-lived and healthy wetlands and forests are examples of sustainable biological systems. For humans, sustainability is the potential for long-term maintenance of well being, which has environmental, economic, and social dimensions.

3. What does ESDGC stand for?

Education for Sustainable Development and Global Citizenship

4. What does "biodiversity" mean?

The degree of variation of life forms within a given ecosystem, biome, or an entire planet. Biodiversity is a measure of the health of ecosystems. Greater biodiversity implies greater health. Biodiversity is in part a function of climate. In terrestrial habitats, tropical regions are typically rich whereas polar regions generally support fewer species.

5. Can you name the 3 national parks in Wales?

Snowdonia, Brecon Beacons, Gower Peninsula

6. If everyone in the world consumed resources (land, water, oil etc) like the people in Wales, how many planets would we need?

3 planets

Supplementary question: If everyone in the world consumed resources (land, water, oil etc) like the people in (a) China or (b) the USA, how many planets would we need?

(a) China – 1 planet

(b) USA – 5 planets

7. Name 3 products that can be recycled

e.g. card, paper, cans, clothing, plastic

8. Is it more eco friendly to reuse or recycle? Can you say why?

Reuse – if you can't reuse something then recycling is the next option. It is better to reuse if you can, because:

(a) reusing saves the materials and energy that went in to making the product originally,

(b) recycling uses energy (in transport, processing and producing new products) and

(c) inevitably the quality of many materials is gradually degraded if they are recycled over and over again.

9. What is the difference between endangered and threatened species in relation to extinction threats?

The threatened species:

This is that category of species that are adequate in numbers, but are facing high-risk in their natural surroundings that can lead to the probability of extinction. Examples of such species are the eastern indigo snake and the red kangaroo. In the UK there are over 1,000 threatened species, including the water vole, minke whale, and the (once) "common" toad.

The endangered species:

This category includes species that are in the immediate probability of becoming extinct. These species require protection to exist. Examples of such species are the Siberian tiger, the southern sea otter, the snow leopard, or in the UK, red squirrels, dormice and the horseshoe bat.

10. What is a greenhouse gas?

Any gas that contributes to global warming (climate change).
Supplementary question: Can you name 3 different greenhouse gases?
Carbon dioxide (CO2), methane (CH4), water vapour (H2O), nitrous oxide (N2O)

11. What is a carbon footprint?

A measure of the impact our activities have on the environment, and in particular climate change. It relates to the amount of greenhouse gases produced in our day-to-day lives through burning fossil fuels for electricity, heating and transportation etc. It is measured in the weight of "carbon dioxide equivalent" eg 1 tonne of CO2(e).

12. What is an ecological footprint?

Measure of human demand on the Earth's ecosystems. An ecological footprint is a standard measurement of a unit's influence on its habitat based on consumption and pollution. It compares human demand with planet Earth's ecological capacity to regenerate. It differs from a carbon footprint in that it is a measure of our total environmental impact on the planet; a carbon footprint only measures our impact on climate change.

13 What is meant by the "cradle-to-cradle" design (as opposed to "cradle to grave" design?

"Cradle-to-cradle" design is based on fundamental re-design that mimics the natural cycle in terms of energy and resource use. Powered by renewable energy, waste is designed out of the system; products are made largely from renewable resources that can easily be returned to the system through re-use or recycling. Our current economic system can be described as a 'cradle-to-grave' economy – it is based on consumption starting with energy-intensive extraction of raw materials and ending with waste on a massive scale.

Business Admin

Tips

Below are general ideas of where you may include ESDGC into the qualification. It gives activities as pointers for Assessors to complete as part of their CPD to help them understand the issues and find links and resources they can point learners towards. There is also a quiz which you can offer to learners to highlight some of the main issues related to ESDGC – Activity 6 ESDGC questions for use in quizzes and reviews. You will also find a matrix mapping some ideas of how you may point learners towards particular ESDGC themes linked to the units they are completing. These are by no means exhaustive but aim to get you thinking and developing your own thoughts and ideas.

Positive practices within the workplace eg:

- Recycling consumables and other materials;
- Implementation of energy saving measures;
- Reduction of fuel consumption.

Learners' personal activities eg:

- Volunteering, local community, fund-raising

Wealth and Poverty	Key concepts to consider: Fair Trade, procurement. The complexity of who benefits along the supply chain from your purchase. Activities to support your learning: Activity 1 - What is it better to do?/Activity 3 – eco and carbon footprinting)
Climate Change	Key concepts to consider: Energy use, transport choices the carbon emmissions (carbon footprint) and resource usage (eco footprinting) related to your plans or activities. Activities and resources to support your learning: Activity 3 Eco footprinting and Carbon footprinting
Natural Environment	Key concepts to consider: Taking action for biodiversity is a legal requirement. Ultimately everything is linked back to some kind of resource from the natural environment and can potentially deplete or effect biodiversity. Understand cradle to cradle design or the virtuous circle. Activities and resources to support your learning: see introductory powerpoint and video link 'not another nature film'.
Healthy Living	Key concept to consider: Healthy eating, stress management. Exercise and how they integrate into your company policies/plans. Key activities and resources to support your learning: Activity 4 looks at shared values as a way of linking groups and created shared social responsibility.
Identity and Culture	Key concepts to consider: International partnerships, race equality. Welsh identity, Wales place in Europe the World the organisational profile and social responsibility. Key activities and resources to support your learning: Activity 5 greenwash or greenheroes – videos of sustainability plans from Marks and Spencers (Plan A) and McDonalds.

Consumption and Waste Key concepts to consider: How you dispose of waste, whether you have opportunities to re-use or re-cycle and what impacts your product or service has on consumption and waste. Key activities and resources to support your learning: Activity 5 greenwash or greenheroes – videos of sustainability plans from Marks and Spencers (Plan A) and McDonalds.

Choices and Decisions The consequences of your plans / changes / use critical thinking on all areas of the above themes, on the environment, the community, the individual. Particular attention to how decisions need assessment of conflicting impacts. Key activities and resources to support your learning: Activity 1 – What is it Better to do looks at how we balance the various issues related to our decisions.

The Business Admin Matrix

Matrix mapping seven themes to qualifications

Tips and ideas for ESDGC and Business Admin

Click here to download the matrix

ESDGC themes found within the Business Administration framework.

Business Administration Level 2	ESDGC Themes							
	Wealth & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
BA L 2 Unit 3 Work in a business environment	Fair-trade / procurement	Land fill Solar energy renewable energy	Bio diversity	Healthy lifestyles, eating	Company values, equality & diversity	Refuse collection, recycling policy,	What would happen if we didn't change? What would be the impact? How do staff feel?	identity policy on waste / recycling does it work, what difference has it made. Some large organisations have initiatives such as 'Green Zone' charity support, and do these have a positive impact on staff morale?
15 Support the organisation of Business travel and accommodation			√	Lunch choices /tea / coffee fairtrade?		Travelling to meetings Lift sharing	Evaluations, of meetings and training sessions how did people feel. What was the venue / lunch like?	Project on effective travel to work / meeting, use of video conferencing, handouts cost of materials, effective forms of communication
20 upport the Organisation of meetings			venue	Lunch choices /tea / coffee fair-trade?	lunch choices / tea / coffee fair-trade?	Travelling to meetings	Evaluations, of meetings and training sessions how did people feel. What was the venue / lunch like?	Project on effective travel to work / meeting, use of video conferencing, handouts cost of materials, lunch provided distance travelled and cultural needs.
6 Work with other people in a business environment	Local impact who can they help / support and why		Where they work or at home have they changed anything		Does it make people become more active citizens		How did staff feel?	Charity committee, community projects, team sponsorships, charity events, voluntary day off working in schools. Analyse the impact of these on team spirit / team building.
46 order products and services	Procurement policy, use of goods / tea / coffee or in canteen or at lunch		Do they have a policy, what is the office environment like		Opportunities for all	√	Cost vs. need	Resources, procurement policy, managing budgets, sustainability, recycling
EDW Communication	Impact on people does it cost more? What is the impact?	What do we need to change? what does the business do now	Is there an area that could be developed for bio diversity	Staff opportunities, gym membership, healthy eating promotions	Volunteering days/ sponsorship / staff awareness of different cultures	Recycling what has been the impact/ what do they change in the office	How do staff feel about some of the changes, what does your evaluation show	How does the business provide information on recycling, healthy living, equality, to staff and clients, is it effective, what is the impact / result.

Hospitality

Tips

Below are general ideas of where you may include ESDGC into the qualification. It gives activities as pointers for Assessors to complete as part of their CPD to help them understand the issues and find links and resources they can point learners towards. There is also a quiz which you can offer to learners to highlight some of the main issues related to ESDGC – Activity 6 ESDGC questions for use in quizzes and reviews. You will also find a matrix mapping some ideas of how you may point learners towards particular ESDGC themes linked to the units they are completing. These are by no means exhaustive but aim to get you thinking and developing your own thoughts and ideas.

Positive practices within the workplace eg:

- Recycling consumables and other materials;
- Implementation of energy saving measures;
- Reduction of fuel consumption.

Learners' personal activities eg:

- Volunteering, local community, fund-raising

Wealth and Poverty	Key concepts to consider: Fair Trade, procurement. The complexity of who benefits along the supply chain from your purchase. Activities to support your learning: Activity 1 - What is it better to do?/Activity 3 – eco and carbon footprinting)
Climate Change	Key concepts to consider: Energy use, transport choices the carbon emmissions (carbon footprint) and resource usage (eco footprinting) related to your plans or activities. Activities and resources to support your learning: Activity 3 Eco footprinting and Carbon footprinting
Natural Environment	Key concepts to consider: Taking action for biodiversity is a legal requirement. Ultimately everything is linked back to some kind of resource from the natural environment and can potentially deplete or effect biodiversity. Understand cradle to cradle design or the virtuous circle. Activities and resources to support your learning: see introductory powerpoint and video link 'not another nature film'.
Healthy Living	Key concept to consider: Healthy eating, stress management. Exercise and how they integrate into your company policies/plans. Key activities and resources to support your learning: Activity 4 looks at shared values as a way of linking groups and created shared social responsibility.
Identity and Culture	Key concepts to consider: International partnerships, race equality. Welsh identity, Wales place in Europe the World the organisational profile and social responsibility. Key activities and resources to support your learning: Activity 5 greenwash or greenheroes – videos of sustainability plans from Marks and Spencers (Plan A) and McDonalds.

Consumption and Waste Key concepts to consider: How you dispose of waste, whether you have opportunities to re-use or re-cycle and what impacts your product or service has on consumption and waste. Key activities and resources to support your learning: Activity 5 greenwash or greenheroes – videos of sustainability plans from Marks and Spencers (Plan A) and McDonalds.

Choices and Decisions The consequences of your plans / changes / use critical thinking on all areas of the above themes, on the environment, the community, the individual. Particular attention to how decisions need assessment of conflicting impacts. Key activities and resources to support your learning: Activity 1 – What is it Better to do looks at how we balance the various issues related to our decisions.

The Hospitality Matrices

Matrices mapping seven themes to qualifications

Tips and ideas for ESDGC and Hospitality

Click here to download the Customer Service matrix

ESDGC themes found within the Customer Service framework.

Customer Service Level 2	ESDGC Themes							
	Health & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
NVQ Units Unit 1 – Communicate using Customer Service language				Promote and offer welsh food and outdoor activities	√		√	Promoting welsh business and culture
Unit 2 Follow the rules to deliver customer service	Take into consideration the diversity of the workforce and how to adapt yourself to the different needs				Organizations values and culture			Organizational policies and procedures. Legislation including diversity and discrimination
General theme throughout the qualification can be focusing on delivering and promoting Welsh Culture and activities								

Customer Service Level 3	ESDGC Themes							
	Health & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Unit 3 – Demonstrate understanding of Customer Service	Discussing ethical issues with colleagues	Explaining the service chain	Explaining the service chain		Communication with diverse groups of customers. Speaking in Welsh?	Explaining the service chain	√	The differences between public, commercial and third sector organisations and how they meet customers expectations. Customer service doesn't cost anything or damage anything but can provide a competitive advantage
Unit 4 – Demonstrate understanding of the rules that impact on improvements in customer service					Communication with diverse groups of customers. Speaking in Welsh?	Getting it right 1 st time avoids waste.	√	Legislation to follow – Discrimination laws, Trades description, sale of goods act

Click here to download the Food & Drink matrix

ESDGC themes found within the Food and Drink framework.

Food and Drink Level 2	ESDGC Themes							
	Health & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Unit 4 – Maintain Food Safety when storing, preparing and cooking food		Maintaining storage conditions, closing fridges	Recycling Food Waste		Linked to food culture	Managing waste Disposing of waste Stock rotation	Consequences of choices and decisions re hygiene	Managing food hygiene.
Unit 2 Work effectively as part of a hospitality team					Organizations values and culture	Keeping waste to a minimum		Organisational policies and procedures. Legislation including diversity and discrimination
Unit 9 – Serve alcoholic and soft drinks		Evaluation footprint of different drinks. Energy management of equipment	Managing waste and where it goes		Relay to local drinks and products	reducing and managing waste	consequences of different choices (eg promoting local vs national drinks)	Up-selling local drinks, managing waste, cleaning lines, maintaining equipment making sure equipment switched off when not in use and energy kit visited.
Unit 12 – Prepare and Serve dispensed and instant hot drinks	Fairtrade products	Monitoring and managing equipment – waste energy	√	Offering low fat alternatives – skimmed milk	Using local products e.g. welsh cake with coffee	√	√	How is table linen managed?
Unit 15 – Prepare and clear areas for table service		√	√			√		Condiments – minimise waste

Click here to download the Hospitality Supervision matrix

ESDGC themes found within the Hospitality Supervision framework

Hospitality Supervision Level 2	ESDGC Themes							
	Health & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Unit 1 – Provide Leadership for Your Team		√		√	Company values, equality & diversity	Refuse collection, recycling policy	What would happen if we didn't change? What would be the impact? How do staff feel?	The unit is about recognising creativity within the team and steering them through problems/changes. We could use this throughout the themes if they use the ESDGC topics
Unit 2 Develop Productive Relationships with Colleagues	Take into consideration the diversity of the workforce and how to adapt yourself to the diverse needs	√			Organizations values and culture	√	Evaluations, of meetings and training sessions how did people feel.	Performance Criteria 7 – Exchange information and resources with colleagues to make sure all parties can work effectively. This can be linked with the 7 themes to show sustainability. Also Performance criteria 8 – provide feedback, the feedback could be linked with good knowledge and compliance with ESDGC themes
Unit 3 – contribute to the control of resources	√	√	√	√	√	√	√	Unit is responsible for making sure that resources are used effectively without undue waste. All themes can be covered in relation to – Food waste, recycling, reuse of equipment materials, booking meetings, monitoring methods e.g. electronic, using local suppliers, opening and closing of workplace – switching equipment off, getting equipment maintained

Click here to download the Food Production and Cooking and Kitchen Services matrix

ESDGC themes found within the Food Production and Cooking and Kitchen Services framework.

Food Production and Cooking Level 2	ESDGC Themes							
	Wealth & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Unit 1 – Maintain Food Safety when storing, preparing and cooking food		Maintaining storage conditions, closing fridges	Recycling Food Waste		√	Managing waste Disposing of waste Stock rotation	√	Managing food hygiene.
Unit 2 Work effectively as part of a hospitality team					Organisations values and culture	Keeping waste to a minimum		Organisational policies and procedures. Legislation including diversity and discrimination
Unit 5 – Produce Basic Meat Dishes		Carbon/eco footprint of different dishes	Effects of different dishes on land use/biodiversity	Healthy eating options	Local dishes/products and dishes from other cultures	Waste management (reduce and control waste)	Consequences of decisions	Using local suppliers, storing food correctly not wasting energy, controlling waste, state healthy eating options
Unit 6 – Produce Basic Poultry Dishes		Carbon/eco footprint of different dishes	Effects of different dishes on land use/biodiversity	Healthy eating options	Local dishes/products and dishes from other cultures	Waste management (reduce and control waste)	Consequences of decisions	Using local suppliers, storing food correctly not wasting energy, controlling waste, state healthy eating options
Unit 7 – Produce Basic Vegetable dishes		Carbon/eco footprint of different dishes	Effects of different dishes on land use/biodiversity	Healthy eating options	Local dishes/products and dishes from other cultures	Waste management (reduce and control waste)	Consequences of decisions	Using local suppliers, storing food correctly not wasting energy, controlling waste, state healthy eating options
Unit 21 – Produce healthier dishes	Financial impact of food wastage	Correct storage conditions for food, ensure not wasting energy/leaving fridges open	Resources are created from and disposed back into the environment consider effects	Healthy options		Food wastage	√	Managing food and resources to ensure that there is no wastage

Click here to download the Front Office matrix

ESDGC themes found within the Food and Drink framework.

Front of house reception level 2	ESDGC Themes							
	Wealth & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Unit 43 – Deal with arrival of customers					Being able to deal with different cultures and	Reports and paper work printed double sided use of recycled paper	Consequences of choices not decisions re other themes	Promoting welsh activities, greeting in Welsh, printing reports on recycled/used paper.
Unit 46 – Prepare customer accounts and deal with departures					Being able to deal with different cultures and	Reports and paper work printed double sided use of recycled paper	Consequences of choices not decisions re other themes	Promoting welsh activities, greeting in Welsh, printing reports on recycled/used paper. Only printing bills if customers want them, don't put them in envelopes
Housekeeping Level 2	**ESDGC Themes**							
	Wealth & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
EDW ADN	√	√	√	√	√	√	√	Monitor waste, staff working hours, cost of local vs distant supplier, recycling costs, best promotional methods
EDW Communication	√	√	√	√	√	√	√	How does the business provide information on recycling, healthy living, equality, to staff and clients, is it effective, what is the impact / result.

Click here to download the Professional Cookery Services matrix

ESDGC themes found within the Food Production and Cooking and Kitchen Services framework.

Professional Cookery Level 2	ESDGC Themes							
	Health & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Unit 1 – Maintain Food Safety when storing, preparing and cooking food		Maintaining storage conditions, cooling fridges	Recycling Food Waste		-/	Managing waste Disposing of waste Stock rotation	-/	Managing food hygiene.
Unit 2 Work effectively as part of a hospitality team					Organizations values and culture	Keeping waste to a minimum		Organizational policies and procedures. Legislation including diversity and discrimination
Unit 5 – Produce Basic Meat Dishes		Carbon/eco footprint of different dishes	Effects of different dishes on land use/biodiversity	Healthy eating options	Local dishes/products and dishes from other cultures	Waste management (reduce and control waste)	Consequences of decisions	Using local suppliers, storing food correctly not wasting energy, controlling waste, state healthy eating options
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Unit 21 – Produce healthier dishes	Financial impact of food wastage	Correct storage conditions for food, ensure not wasting energy leaving fridges open	Resources are created from and disposed back into the environment consider effects	Healthy options		Food wastage	-/	Managing food and resources to ensure that there is no wastage
Unit 22 – Maintain an efficient use of food resources	Financial impact of food wastage	Correct storage conditions for food, ensure not wasting energy leaving fridges open	Resources are created from and disposed back into the environment consider effects	Healthy options		Food wastage	-/	Managing food and resources to ensure that there is no wastage
Unit 23 – Maintain an efficient use of resources in the kitchen	Financial impact of food wastage	Correct storage conditions for food, ensure not wasting energy leaving fridges open	Resources are created from and disposed back into the environment consider effects	Healthy options		Food wastage	-/	Managing food and resources to ensure that there is no wastage

Management

Tips

Below are general ideas of where you may include ESDGC into the qualification. It gives activities as pointers for Assessors to complete as part of their CPD to help them understand the issues and find links and resources they can point learners towards. There is also a quiz which you can offer to learners to highlight some of the main issues related to ESDGC – Activity 6 ESDGC questions for use in quizzes and reviews. You will also find a matrix mapping some ideas of how you may point learners towards particular ESDGC themes linked to the units they are completing. These are by no means exhaustive but aim to get you thinking and developing your own thoughts and ideas.

Positive practices within the workplace eg:

- Recycling consumables and other materials;
- Implementation of energy saving measures;
- Reduction of fuel consumption.

Learners' personal activities eg:

- Volunteering, local community, fund-raising

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Choices and Decisions The consequences of your plans / changes / use critical thinking on all areas of the above themes, on the environment, the community, the individual. Particular attention to how decisions need assessment of conflicting impacts. Key activities and resources to support your learning: Activity 1 – What is it Better to do looks at how we balance the various issues related to our decisions.

The Management Matrix

Matrix mapping seven themes to qualifications

Tips and ideas for ESDGC and Management

Click here to download the matrix

ESDGC themes found within Management

Level 5 NVQ Diploma in Management	ESDGC Themes							
	Wealth & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Develop and Evaluate Operational Plans for own Area of Responsibility	Procurement - Fair Trade Products/local products Where are products sourced from / eg furniture Timber. Activity 1 – what is better to do	Will your plans have an effect on the environmenty (carbon emissions) Activity 2 Eco footprinting	Plan to use natural products Take local Biodiversity into account what are the effects of our plan. Activities: Intro job biodiversity video		How will you / your organization be perceived by others- social responsibility. Activities: Activity 5 videos Sustainability policies M&S and Macdonalds	Plan to cut down / recycle or find a re-use for waste. Understand cradle to cradle design or the vituous circle where waste becomes a resource.	How are our environment, communities and individuals affected by our plans and choices Activity 1 – what is better to do	Managing food hygiene.
Provide Leadership and Direction for own Area of Responsibility		Implementation of energy saving measures; Activity 2 Eco footprinting				Lead by example, recycle Understand cradle to cradle design or the vituous circle where waste becomes a resource.	Show consideration of social, economic and environmental impacts of your decisions Activity 1 – what is better to do	
Plan Change in Own Area of Responsibility			Account for impacts of changes upon the environment. Activities: Intro job biodiversity video	Identify opportunities to improve working environment/social responsibility	Consider impacts on staff. How do you promote Welsh culture & identity?	Plan to cut down / recycle or find a re-use for waste. Understand cradle to cradle design or the vituous circle where waste becomes a resource.	What would happen if we didn't change? What would be the impact? Difficulties of change	Plan to improve Environmental Practices linked to any changes
Work Productively with Colleagues and Stakeholders				Effectively working as group to support health. Stress – management Aspirations.	How will you / your organization be perceived by Stakeholders			
Level 3 NVQ Certificate in Management.	**ESDGC Themes**							
	Wealth & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Manage Own Professional Development Within an Organisation	Improved Lifestyle / Salary improvements in health/well being			Image. Stress -management Aspirations. Looking after own wellbeing as part of plan	Status. Seen as a successful person. Promote Welsh Qualifications Welsh Bac etc.		The Choice / decision to progress or not and implications	
Set objectives and Provide Support for Team Members				Promote healthy life style. Keep self and others safe. Activity 4 looks at shared values as a way of linking groups and created shared social responsibility.	Realise that staff from minority cultures may have specific needs and require additional support.	Control of resources and time effectively to preserve materials and maintain well being.	If objectives are not met Choices / Decisions will need to be made	

Health & Social Care

Tips

Below are general ideas of where you may include ESDGC into the qualification. It gives activities as pointers for Assessors to complete as part of their CPD to help them understand the issues and find links and resources they can point learners towards. There is also a quiz which you can offer to learners to highlight some of the main issues related to ESDGC – Activity 6 ESDGC questions for use in quizzes and reviews. You will also find a matrix mapping some ideas of how you may point learners towards particular ESDGC themes linked to the units they are completing. These are by no means exhaustive but aim to get you thinking and developing your own thoughts and ideas.

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The Health & Social Care Matrix

Matrix mapping seven themes to qualifications

Tips and ideas for ESDGC and Care

Click here to download the Health & Social Care matrix

ESDGC themes found within the Health and Social Care framework.								
	ESDGC Themes							
	Health & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Introduction to Communication in Health, Social Care or Children's and Young People's Settings	Socio / economic background / upbringing / opportunities/ resources/ availability of services i.e. speech therapy			Encouraging communication about dietary needs / encourage individuals to communicate / promoting healthy choices and promotion of exercise.	Communicate in methods reflecting identity, culture & preferences.	Use a white board and electronic aids to encourage communication avoiding paper waste / electronic care plans, charts, accident books, supervision notes.	Allowing individuals to communicate in the method of their choice. Maintaining confidentially	Assignment of confidentiality and the importance of this to different groups
Introduction to Equality and Inclusion in Health, Social Care or Children's and Young People's Settings	Equal treatment regardless of social standing, class or wealth	Encouraging awareness about benefits available i.e. cold weather payments and winter fuel payments	Encourage well being of client by encouraging familiar layout / personalised to each individual.	Ensure adequate availability of foods to suit all wants, needs and beliefs.	Equality despite culture, nationality, ability, ethnic origin, gender, age, religion, beliefs, sexual orientation, social class		Valuing Diversity. Avoiding discriminating against others. Reporting labelling; lack of opportunity; stereotyping, harassment; bullying; inappropriate language	Exercise on the range of options available dependent on ability to afford it and how different cultures have preferences.
Introduction to Duty of Care in Health, Social Care or Children's and Young People's Settings	Ensure the same standards of care are delivered to all individuals regardless of setting i.e. hospital private/shiro, care home private/shiro.			Ensure staff are encouraging healthy diet and exercise and adequate periods of rest and relaxation	Involving complaints and procedures are available in various formats and languages		Dilemmas around duty of care, human rights, safety, freedom, children rights to make care choices, tensions between choice and keeping them safe from harm	Discuss the health and safety risks to individuals and your role in minimising these
"Principles of Safeguarding and Protection in Health and Social Care"	Ensure individuals have access to and awareness of POVA and whistle blowing policies			Ensure staff are encouraging healthy diet and exercise and adequate periods of rest and relaxation. Know how to recognise abuse. Understand safeguarding and protection	Ensure workers are aware of cultural differences regarding personal space and use of touch		Make the choice to recognise and report unsafe practices to the benefit of others	Discussions on the impact of neglecting safeguarding and whether those in poverty are at greater risk
"Implement Person-Centred Approaches in Health and Social Care"		When delivering person centred care fully encourage the individual to be more energy aware in their environment	Ensure individuals are aware of choices relating to environmental issues such as travel choices.	Support individuals to make choices regarding their environment that encourages personalisation. Encourage individuals to participate in hobbies and interests	Religious, cultural, language or morale preferences		Be able to support the individuals right to make choices	Discussion and questioning on ensuring individuals are involved fully in their care

Hairdressing and ESDGC

Section 2: Two activities looking at integrating ESDGC into Essential Skills

1. Product analysis and design
2. Looking at uses of hair and links to ESDGC

1. Product analysis and design

Aims

- To identify a number of product ingredients and evaluate their impact on the environment and on health
- To identify links between product ingredients and the natural environment and develop understanding of complex links within biodiversity
- To compare and evaluate the use of 'natural' ingredients vs. chemicals
- To apply understanding to making their own hairdressing product
- To identify and evaluate wider impacts of product ingredients and manufacture to climate change, identity and culture, consumption and waste and choices and decisions
- To use ESDGC activities to fulfil requirements for key skill activities

Activity	Resources	Key skill	ESDGC themes
Provide selection of products Choose a product Read and list ingredients Look at comparing natural ingredients and chemical ingredients and their properties Get them to compare natural vs. chemical looking at cost and ease of use. Get them to look at the impact of product in terms of packaging, production, energy use in manufacture (where's the impact resource is good for this) Do a presentation and/or run a debate, getting them to look at the pros and cons of natural vs. chemicals. Set a written assignment on the above Get them to design a leaflet highlighting people's different choices	Number of shampoo products http://www.cat.org.uk/education/ed_content.tmpl?subdir=education&SKU=ED_62 - where's the impact useful resource to use to look at impact of products – start with a kinder egg and then move on to hairdressing products http://www.ethical-company-organisation.org/the-good-shopping-guide.htm - gives background information on product ingredients http://www.greenpeople.co.uk/default.aspx includes articles on product ingredients and information about natural products http://news.bbc.co.uk/1/hi/health/6319875.stm news story on increasing number of people allergic to hair colouring	**Communications** (research, presentations, powerpoint, discussion, take part in debate, written assignment, design leaflet) **IT** PowerPoint and leaflet design	Health Natural Environment Climate change Consumption and waste Choices and decisions
Work together in groups to make their own shampoo. Look at and evaluate what ingredients they could use – also look at costing and effectiveness and evaluate.	http://www.brighthub.com/environment/green-living/articles/15787.aspx one article I found on how to make your own natural shampoo	**Working with others** **Problem solving** **Application of number**	The natural environment (biodiversity)

Look at products in relation to specific ESDGC themes eg: Biodiversity and hair products Run the web of life game to identify the connections that exist in nature and then look at certain products (eg honey) and their links to nature. Consider how they could use different ingredients to create less detrimental effects.	http://www.amnh.org/ology/features/stufftodo_bio/weboflife.php - description of web of life game http://www.youtube.com/watch?v=XL-A8Apn1_s trailer for vanishing bees	**Working with others** **Communications** and others depending on activities developed	The natural environment (biodiversity)
Poverty and wealth – look at Fairtrade products and how they would make a difference	http://www.ethicalsuperstore.com/products/urtekram/urtekram-brown-sugar-shampoo-250ml/#product_ethics – example of a fair-trade shampoo http://www.fairtrade.org.uk Fairtrade chocolate game (handout provided at workshop, digital version attached) Fairtrade PowerPoint attached	**Communications** **Application of number** (consider cost breakdown of fair-trade pricing to non-fairtrade)	Poverty and wealth Choices and decisions
Wealth and Poverty/climate change/biodiversity/global citizenship. Look at sister of Planet video and the impact of what we do, what is happening in different countries and what we can do about it	Sisters on the planet is available with resources from: http://www.oxfam.org.uk/get_involved/campaign/climate_change/sisters/dvdform.html	**Communications** and others depending on activities that are developed	Wealth and poverty Choices and decisions, biodiversity, global citizenship generally

2. Looking at uses of hair and links to ESDGC

Aims

- To identify ways in which hair can be linked to biodiversity and consumption and waste via the latest oil spillage disaster
- To consider ways in which the learner could act to support campaigns/initiatives such as the collection of hair for the oil spillage disaster
- To research and evaluate the ethical background to the use of hair from other cultures in the beauty industry to make the link between this and the ESDGC theme of poverty and wealth, in equality and choices and decisions
- To consider representations of other cultures using Slumdog Millionaire and evaluate how this compares to their own stereotypes
- To evaluate different cultures and the effects of climate change on their lives, on their environment and the ways they have worked together to overcome these.
- To develop ideas which could be used in their own jobs and lives to overcome climate change issues in this culture

Activity	Resources	Key skill	ESDGC themes
Work together to find out ways to collect hair to send for oil spillage, discuss, explain, research why. Show film flip – discussion Research – find out how we send it and where we send it, (weight and cost of sending it) are there any other resources that would also work Weigh hair weekly and work out average for a month (AON) Produce a graph over the year to find the busiest month (AON IT) Research – could hair be sold to vehicle dept for oil spillages (enterprise activity/welsh baccalaureate)	http://www.youtube.com/watch?v=2Q0cL4GsSqw You tube link to hair boom video http://www.youtube.com/watch?v=d0m1ertXPPM&feature=fvw you tube video on US salon campaign to get hair for oil spillage http://news.bbc.co.uk/local/essex/hi/people_and_places/newsid_8693000/8693936.stm news article on Essex salon sending hair to help with oil spillage	**Working with others** **Communications** **Application of Number** **IT**	Biodiversity Consumption and waste
Look at uses of hair and ethics behind it Where does hair for dolls come from/hair for hair extensions? Look at films and do further research, discussion/debate issues. Would you still use hair extensions? Include looking at stereotypes of India – use Slumdog Millionaire and exercises included on film education.	http://www.dailymail.co.uk/femail/article-1036155/Why-lll-wear-hair-extensions-pop-star-Jamelia.html - article from daily mail on hair extension http://www.youtube.com/watch?v=A9rXFskeFRM part one of you tube films from BBC three programme whose hair is it anyway? http://www.youtube.com/watch?v=TGigLa23vuA 20 minute Australian video including Jamelia looking at where hair extensions come from http://www.filmeducation.org/slumdogmillionaire ideas for activities on Slumdog Millionaire http://www.miniature-earth.com/me_english.htm Miniature earth video demonstrates issues of wealth and poverty via short film.	**Communications**	Poverty and wealth Identity and culture Consumption and waste
Finally making the links to other cultures and climate change and the choices we have. Sisters of the planet – discuss in terms of salon services (difficult/problem youth) showing how people live differently/different values/quality of life and money. Look at how we could work together in this culture to address issues related to climate change and its effects	Sisters for the planet is available at the following web site. http://www.oxfam.org.uk/get_involved/campaign/climate_change/sisters/dvdform.html	**Communications** **Problem solving** **Working with others**	Climate change, poverty and wealth, culture and identity.

Tips for applying ESDGC to hairdressing qualification

Adapting Newspaper and string activity to hairdressing

Newspaper and string activity

Activity description – digital version of lesson plan and supporting handouts attached. Learners familiarise themselves with descriptions of themes and then go through journals/newspapers to find relevant articles to themes and make a collage on flip chart paper to present to fellow learners. Then use string to visually link the different flip chart collages (themes) to each other to demonstrate links and complexities. This activity could then be developed in a number of ways described below.

Induction activity – modify activity by including more relevant magazines – hairdressing journals etc

Essential Skills – could use for all Essential Skills activities eg: Communications – debate issues arising from activity, choose one or two issues which arise and research further in newspapers, on internet). Written – produce a leaflet (level 1) or a PowerPoint and 4min talk (level 2) on some of the issues raised – will also go towards IT key skill. Application of Number – look at articles which are chosen and choose some to analyse more in depth in terms of statistics, fractions, percentages (eg: climate change, weather, waste)

Problem solving – look at what we are using now, how can we change what we use to make it more sustainable eg: use of tint, peroxides, recycling, buying only what you need, looking at cost (this would also fit in with AON), buying locally, bio degradability, how is it disposed of, difference between cheap and expensive shampoo.) Use resource links below to develop this further, mapping out impact of different products.

http://www.cat.org.uk/education/ed_content.tmpl?subdir=education&SKU=ED_62 – this resource works well to help students assess the impact of a product. Cost of resource £31.

http://www.wrap.org.uk - includes information on recycling and waste reduction and links to other sites

http://www.greenpeople.co.uk/default.aspx - includes articles about the ingredients of shampoos/ beauty products and why we may want to consider using different ones.

http://www.ethical-company-organisation.org/the-good-shopping-guide.htm - includes information on beauty products, which are the most ethical/sustainable and what to look out for.

Newspaper and string session – More ideas for activities

Following newspaper and string introduction ask learners to walk around the centre and identify things that are relevant to the seven ESDGC themes and any areas they think work well or need improving or do not even exist. These could include looking at

Products – can we get eco friendly products, organic products (health, climate change, consumption and waste), fair-trade products (wealth and poverty)

Waste – can we waste less? (consumption and waste)

Decor – can we get eco friendly floor coverings/carpets/paint/decor/light fittings etc (consumption and waste, health, climate change)

Ask learners to identify where products are from and where the packaging is from. Is the product fair trade? (poverty and wealth) – one product per group. Give them a week to do it and then give a presentation to class followed by group discussion (for communications Essential Skill)

Take learners on trip to Centre for Alternative Technology http://www.cat.org.uk (National Botanic Gardens http://www.gardenofwales.org.uk/en/13.html also offers talks, educational resources related to ESDGC) so that they can see the wider issues and not just the salon environment.

G1 – health and safety

Encourage learners to be water aware, turn off water between shampoos, product use awareness (minimising waste), turn straightners off, not just for safety reasons but to conserve energy. Look at energy use of hair straighteners and hairdryers – all linked to consumption and waste and climate change here are a couple of links to start them off:

http://crave.cnet.co.uk/greentech/0,250000598,10001662,00.htm

http://www.gooshing.co.uk/hair_straighteners-shrink/367/

Recycling – do a chart to show what can be recycled and re-used. Links to consumption and waste.

Hazardous chemicals, looking at effects on natural environment, look at effects of manufacture on climate change.

G5 – Positive impressions

Links well to all seven themes can be used for discussions and wealth and poverty

G7 – Advice and consultation

What products to advise on – the amount of product people need links to consumption and waste. What can different people afford – link to poverty and wealth.

Looking at needs of different types of hair – links to identity and culture

Health - use of backwash – elderly and neck problems, allergies and use of products, effects of chemicals on health (debate issues)

H9 – shampoo and conditioner

Identity and culture – different types of hair and what different types of product they need

Consumption and waste - turning off water when shampooing, not using excessive shampoo or conditioner

Health – researching shampoo and what is in it and any reported effects on health (eg sodium laurel sulphate as allergen)

Natural environment (Biodiversity) – and effects of production of shampoo/product ingredients on biodiversity

G6 – promoting products

Link to choices and decisions, products and services, see Essential Skill task on making product (above) to understand what is involved in production process.

The Hairdressing Matrix

Matrices mapping seven themes to qualifications

Tips and ideas for ESDGC and Hairdressing

Click here to download the Hairdressing matrix

ESDGC themes found within Hairdressing								
Level 2	ESDGC Themes							
	Wealth & Poverty	Climate Change	Natural Environment	Healthy Living	Identity and Culture	Consumption and Waste	Choices and Decisions	NOTES
Unit G4 fulfils salon reception duties	explore the buying of sundries e.g. Tea, coffee, sugar etc fair-trade or local?				The qualities of a salon receptionist, being aware of the cultural diversity of clientele, (clients booking appointments may have specific issues linked to cultural differences). Communicating effectively with clients with English as a second language or having communication difficulties.	understanding the legal requirements when providing retail products.	understanding the legal requirements when providing a service.	learner project. Produce a shopping list of items. Look at how far the items have travelled
Unit G 20 make sure your own actions reduce risks to health and safety		the use of electrical equipment and energy consumption	the control of substances hazardous to health regulations. The safe use of chemical and the reporting of dangerous occurrences.	personal well being manual handling , personal protective equipment and hygiene.		disposal of waste in a safe and responsible manner . Reduce energy consumption, turn off appliances in the salon		this unit focuses on the Health and safety regulations and procedures within a salon environment. There are many opportunities to discuss the
Unit G 7 Advise and consult with clients	the impact of pricing structure and the long term cost of treatments.			carrying out hair testing. Discuss the general factors that contribute to healthy hair condition. E.g adverse skin and hair conditions. Allergies.			data protection and client confidentiality	Learner Project make a leaflet for clients explaining how them can have healthy hair.
Unit 17 Give clients a positive impression of yourself and organization also G 3	Explaining to customers the salons environmental and positive ethics	provide information on the products which are environmentally friendly e.g. the use of pumps instead of sprays (No C F C 's)	recognising the choices made will have an effect on the natural environment		Communicating effectively with clients with English as a second language or having communication difficulties. Standards of appearance and behaviour may differ depending on location		responding to clients expectations appropriately	Learner Project. Design a poster / advert promoting the use of environmentally friendly pumps
Unit G480 Shampoo, condition and treat the hair and scalp. G 10 Promote additional services or products to clients also links to unit G 3	cost of products to the client. Value of the item to the people making the items. Jobs in the cosmetic industry. Logistic etc.	provide information on the products which are environmentally friendly e.g. the use of pumps instead of sprays (No C F C 's)			look at hair styles around the world, explore the style of hair linked to culture			Learner Project make a scrap book of hair styles from around the world.

Resources

Event Organizer

Rachel Lilley and Bob Jacques - Ymlaen Ceredigion

Ymlaen' s work is about behaviour change at all levels – individual, community, organisational and strategic - embedding sustainability in our culture so it becomes the natural way of living and running organisations.

Ymlaen has led in Wales on Education for Sustainable Development and Global Citizenship in the post 16 education (FE and WBL) for the past four years. Initially we worked hand in hand with Coleg Ceredigion and then with the wider Wales FE sector to share good practice. We then assessed the first SAR completed by the WBL Sector and were funded by the Welsh Government to develop a series of training events and resources to support the integration of ESDGC into Work Based Learning.

Our work on the ground in Ceredigion innovates projects which engage the community. Healthy Heart and Iachus Gyda'n Gilydd, bring healthy food or new opportunities for physical activities to communities facing inequalities and deprivation. Transition Llambed; enables a community to develop their vision and engage a wider audience and our Communities at One project successfully targeted and empowered the elderly to engage with the internet and IT. www.ymlaenceredigion.org.uk

Key Welsh ESDGC Websites

ESDGC Wales
http://www.ngfl-cymru.org.uk/esdgc.htm
The purpose of this website, based on the national grid for learning website, is to provide teachers and educators with ready access to information and support.

Climate Change Wales
http://www.climatechangewales.org.uk
Educational web site populated mainly by West Wales Eco Centre

Welsh Government — climate change
http://wales.gov.uk/topics/environmentcountryside/climatechange/?lang=en
Information on relevant Welsh Government guidelines and policies linked to climate change strategy in Wales.

Welsh Government — Sustainable Development
http://wales.gov.uk/topics/sustainabledevelopment/?lang=en
Information and relevant Welsh Governmnet documents on sustainable development

Centre for Alternative Technology
Education and tourist centre promoting sustainable development.See general site at: http://www.cat.org.uk and educational resources at: http://learning.cat.org.uk/en/resources also see site with specific footprinting activities for key stage 3 and 4 which you may be able to adapt at: http://www.footprintfutures.org.uk

West Wales ECO Centre -education
http://www.ecocentre.org.uk/en/education
West Wales ECO Centre, pioneering sustainable energy charity in Wales, delivering energy and environment education within the community. Supporting communities and householders to implement low carbon lifestyles.

Energy Saving Trust Wales
http://www.energysavingtrust.org.uk/Wales
The Energy Saving Trust in Wales works closely with the Welsh Government and others to provide advice and to stimulate debate on the policies and programmes that are needed to significantly reduce personal emissions in Wales.

World education Centre - Bangor
http://addysgbyd.bangor.ac.uk/index.php.en?menu=0&catid=0
Offers support teaching about Human rights, Conflict Fair Trade Aid Sustainable development School to school linking Community understanding Locality studies?

Bangor University Sustainable Development
Supports businesses wishing to become more sustainable
http://www.cazs.bangor.ac.uk/ccstudio/AboutUs/cazsstaff_Details2.php?name_id=3

Fair Trade Wales
http://www.fairtradewales.com
Leads on the Fair Trade Nation campaign in Wales and supports and develops grassroots Fair Trade activity- from town and county groups, to schools. Produces a bilingual website and materials Works with the Welsh Government to influence pro Fair Trade change.

Keep Wales Tidy
http://www.keepwalestidy.org/index
Keep Wales Tidy works to encourage local action to protect and enhance the environment of Wales. They also run the Eco Schools iniative in Wales.

Cynnal Cymru
www.sustainwales.com
Cynnal Cymru-Sustain Wales is a membership organisation that promotes sustainable development and raises awareness of good practice within Wales. It is an independent, not-for-profit company, limited by guarantee. It plays a key role in communicating and promoting sustainable development across Wales.

Oxfam
http://www.oxfam.org.uk/applications/blogs/cymru
Oxfam Cymru works as part of the UK wide organisation to end poverty and suffering, locally and globally. They add the Welsh dimension and their education department has a number of resources to support ESDGC, with a particular focus on Development Education.

Cyfanfyd
www.cyfanfyd.org.uk
Cyfanfyd is a national organisation working to promote ESDGC in Wales. It supports organizations working in all fields of education helping them to incorporate a global dimension into their work. They offer training and advice on resources and will be running a follow up session on the critical analysis of ESDGC resources.

iEARN UK
http://www.iearnuk.com
iEARN UK is a registered charity that works with young people in schools, colleges and other youth organisations. Through projects and forums we aim to bring young people together to increase common understanding, to share ideas and to celebrate cultural identity - similarities and differences. We are part of the global family which has members and representatives in over 160 countries.

Ellen Macarthur Foundation
http://www.ellenmacarthurfoundation.org/education
The foundation recently set up by Ellen Macarthur to support iniatives towards sustainable development. Includes lots of educational resources linked to design and industry and re-thinking design in terms of cradle to cradle instead of cradle to grave.

COIN Network
http://coinet.org.uk
Climate Outreach and Information Network (COIN) is a charity formed in 2004 to directly engage the public about climate change. COIN inspires lasting changes in attitudes and behaviour through the use of innovative action learning methods and by assisting people to communicate their own messages to their peers. George Marshall who part runs COIN lives and works from his home in Llandrindod Wells.

General ESDGC / Sustainable Development Websites

There are many many websites in this area, listed below are some that Ymlaen Ceredigion has come across or used in the last 12 months.

The Story of Stuff
http://www.storyofstuff.com/
Excellent video showing the 'systems' or cradle to cradle approach we need to use to address the planets current challenges.

Sus it Out – working together for our sustainable development
www.susitout.org.uk/
Sus it Out Plus a website to support individuals and communities lead more sustainable lifestyles. Sustainable communities are not the result of a one-size-fits-all plan imposed from outside, they grow from within. Sus it Out Plus™ enables community and voluntary organisations to work out how they already contribute to sustainable development and to decide how they can build on this for the future.

Low-Impact Living Initiative (LILI)
http://www.lowimpact.org/
Low-Impact Living Initiative (LILI) is a non-profit organisation whose mission is to help people reduce their impact on the environment, improve their quality of life, gain new skills, live in a healthier and more satisfying way, have fun and save money

One Hundred Months
http://www.onehundredmonths.org/
Time is slipping away, we have one hundred months to save our planet..... This site has some great links to information which could be used for themes, resource materials or questions.

The Miniature Earth Project
http://www.miniature-earth.com/
The idea of reducing the world's population to a community of only 100 people is very useful and important. It makes us easily understand the differences in the world. There are many types of reports that use the Earth's population reduced to 100 people, especially in the Internet. Ideas like this should be more often shared, especially nowadays when the world seems to be in need of dialogue and understanding among different cultures, in a way that it has never been before.

Recipes From Around The World
http://www.therainiervalley.com/recipes.html

Global Dimension
http://www.globaldimension.org.uk/
Global Dimension is a unique website for teachers. A helpful guide to books, videos, posters and websites which bring a global dimension to teaching. From climate change to poverty, water to fair trade, you can find teaching resources for all age groups and subject areas.

Groundwork in Wales
http://www.wales.groundwork.org.uk/
Groundwork in Wales is a leading local, regional and national environmental regeneration agency building sustainable communities across Wales. Working to support place shaping, Groundwork in Wales uses both traditional and innovative ways to help local people get involved in making decisions and managing improvements in their communities.

Global Footprint Network
http://www.footprintnetwork.org
Creating a world where everyone can live well, within the means of one planet, is going to take all of us pulling together toward this common goal.The scale of our challenge is enormous. Nothing short of a revolution in our economies, societies, energy choices and lifestyles is required. At Global Footprint Network our programmes are designed to influence decision makers at all levels of society and to create a critical mass of powerful institutions using the Footprint to put an end to ecological overshoot and get our economies back into balance.

The Age of Stupid
http://www.ageofstupid.net/
The Age of Stupid is the new four-year epic from McLibel director Franny Armstrong. Oscar-nominated Pete Postlethwaite stars as a man living alone in the devastated world of 2055, looking at old footage from 2008 and asking: why didn't we stop climate change when we had the chance?

10:10 Global
http://www.1010global.org/
An organisation which came out of the film The Age of Stupid 10:10 has grown in success as it works to support individuals and organisations to reduce their carbon emmissions by 10 per cent. Website includes lots of information and resources.

Practical Action
http://practicalaction.org/
Practical Action works alongside communities to find practical solutions to the poverty they face. We see technology as a vital contributor to people's livelihoods. Our definition of technology includes physical infrastructure, machinery and equipment, knowledge and skills and the capacity to organise and use all of these. Website includes lots of case studies and ideas on development education, climate change and sustainability.

Avaaz.org-The World in Action
http://www.avaaz.org/en/
Internet campaigning site includes lots of potential themes to use for discussions.

EcoSapiens : Smart Solutions for a Living Planet
http://ecosapiens.squarespace.com/
If you've got an idea worth spreading.... this blog mainly written by Andy Middleton who is based in St David's Pembs, includes initiatives happening across Wales, ideas and resources. A good way to keep up with innovation in Wales.

nef: economics as if people and the planet mattered
http://www.neweconomics.org/
nef (the new economics foundation) is an independent think-and-do tank that inspires and demonstrates real economic well-being. Aims to improve quality of life by promoting innovative solutions that challenge mainstream thinking on economic, environment and social issues. Website includes useful articles and reports.

Cambridge Carbon Footprint
http://cambridgecarbonfootprint.org/about/
Cambridge Carbon Footprint is a local, voluntary organisation concerned with climate change. Has interesting case studies and resources.

Greenpeace UK
http://www.greenpeace.org.uk/autofrontpage
Ever since we bought our piece of land on the site of the proposed third runway at Heathrow, we've been receiving suggestions for what to do with it. We've already sunk our roots into it by establishing an allotment and planting an orchard, but now we want to go one step further and for that we want to get your ideas. Watch the video above for more details, and read on for the full lowdown on how to enter the competition.

Trillionthtonne.org
http://trillionthtonne.org/
Estimating the release of carbon into the atmosphere this site gives information about what we can do to reduce carbon emmissions.

WWF UK
http://wales.wwf.org.uk/
WWF Cymru is the Welsh office of WWF-UK, which in turn forms part of the world's largest environmental network. Our main base is in Cardiff Bay and we also have a small office in north Wales. Our team focuses on policy work and lobbying, and aims to ensure that the environment and sustainability are high on the political and media agendas.

Christian Aid
http://www.christianaid.org.uk/resources/games/
Christian Aid is a Christian organisation that insists the world can and must be swiftly changed to one where everyone can live a full life, free from poverty. We provide urgent, practical and effective assistance where need is great, tackling the effects of poverty as well as its root causes.

Environmental Practice @ Work
http://www.epaw.co.uk/
Environmetnal Practice at Work supports employees to improve environmental practice in the workplace. Environmental practices are "those actions people at work can take to improve the organisation's environmental performance". Our quizes, surveys, and workplace activities help you to identify who can do what to improve environmental practices.

Useful Books and DVDs

Again there are hundreds of books on climate change, sustainability and lifestyle, below are a few that Ymlaen has come across in the last year or two.

Footprinting and green lifestyle

Carbon Calculator - Easy ways to reduce your carbon footprint, Mark Lynas, March 2007
Go Green The Easy Way by Hugh Bowring (2 Oct 2008)

Improving your home - A climate change guide Welsh Government download at: http://wales.gov.uk/topics/planning/policy/guidanceandleaflets/ccguide/?lang=en

The Good Shopping Guide: Certifying the UK's Most Ethical Companies and Brands - by Charlotte Mulvey (12 Aug 2010)

The Low Carbon Diet - Wise up, chill out and save the world by Polly Ghazi & Rachel Lewis May 2007

The Three Tonne Club Handbook - Women's Environmental Network for information se http://www.wen.org.uk/your-wen/climate-change/the-three-tonne-club-handbook

DVDs

Crude - The real price of oil, Dogwoof DVD by Joe Berlinger

Food Inc. - You'll never look at dinner the same way again (DVD Dogwoof. Robert Kenner.

The Yes Men Fix the World - Dogwoof DVD

Vanishing of the Bees - Dogwoof DVD
Information about the films above, along with a number of other films to challenge and inspire debate can be found at: http://dogwoof.com/films

It's up to us! - Climate change from a Welsh perspective SDF, ECO Film (CD)

Our daily bread - Nikolaus Greyhalter DVD

Slumdog Millionaire - Danny Boyle DVD

Super Size Me - Morgan Spurlock DVD

The 11th Hour - Turn Mankind's Darkest Hour into its finest Leonardo DiCaprio (DVD)

The Age of STUPID - Why didn't we save ourselves when we had the chance? UK Film council

Welsh Government guidelines and policy

One Planet: One Wales - The Sustainable Development Scheme of the Welsh Government, May 2009 download at http://wales.gov.uk/topics/sustainabledevelopment/publications/onewalesoneplanet/?lang=en

Climate Change Strategy for Wales - Welsh Government October 2010. Download at: http://wales.gov.uk/topics/environmentcountryside/climatechange/tacklingchange/strategy/walesstrategy/?lang=en
Education for SD and Global Citizenship Further Education Sector in Wales (Guidelines)
Education for SD and Global Citizenship Toolkit for Work Based Learning Providers (Guidelines)
Education for SD and Global Citizenship Teacher trainees and new teachers in Wales

All the above documents are available to download at: http://www.ngfl-cymru.org.uk/esdgc/esdgc-commitment_and_leadership.htm

Wales Ecological Footprint - Scenerios to 2020 - Stockholm Environment Institute

Education and educational resources

Power Down. Save Energy - ActionAid tookit for secondary schools see ActionAid website.

Sense & Sustainability - Educating for a low carbon world Ken Webster & Craig Johnson.

Sisters on the Planet - Four inspirational women and the fight against climate change Oxfam. Be humankind. (Booklet & CD) see Oxfam website.

The Sustainability Handbook for Design & Technology Teachers - CAT, EU, CCW, LU, PA (Paperback) see CAT website.

Where's The Impact? - Centre for Alternative Technology, hands on pack to look at eco-footprinting. See CAT website.

General Climate change and sustainability

The Rough Guide to Climate Change - Robert Henson (Paperback)

Gaia The Practical science of planetary medicine - James lovelock (Book)

Our Choice. A Plan to Solve the Climate Crisis - Al Gore

The Weather Makers. **Our changing climate and what it means for life on earth -** Tim Flannery

Zero Carbon Britain 2030 - A New Energy Strategy - Centre for Alternative Technology see CAT website.

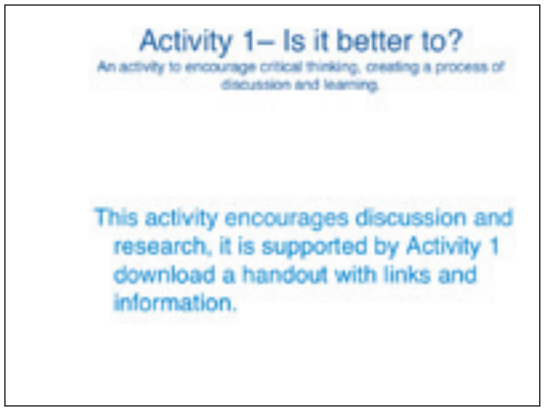
Group Facilitation

The World Cafe - Shaping our futures through conversations that matter Juanita Brown with David Isaacs & the World Cafe Community (Paperback)

Powerpoint Presentations

ESDGC introductory

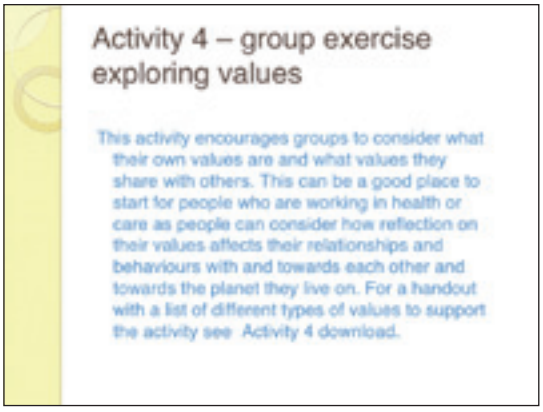
Introduction to Activity 1



Introduction to Activity 2

Introduction to Activity 3

Introduction to Activity 4



Introduction to Activity 5

Sector Matrices

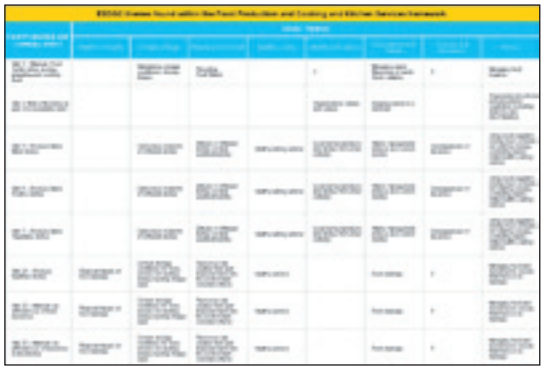
16 Business Admin Matrix

17 Customer Service

18 Food and Drink

19 Hospitality Supervision

20 Food Production and Kitchen Services



21 Front-Office

22 Professional Cookery Services

23 Health and Social Care

24 Management

25 Hairdressing