



Ascentis Level 1 & 2 Award

Environmental Sustainability

Specification

Ofqual Number	Level 1 501/0419/6 Level 2 501/0420/2
Ofqual Start Date	01/07/2010
Ofqual Review Date	31/07/2020
Ofqual Certification Review Date	31/07/2021

ABOUT ASCENTIS

Ascentis was originally established in 1975 as OCNW, a co-operative scheme between Universities and Colleges of Further Education. Ascentis was the first 'Open College' in the UK and served the needs of its members for over 34 years. Throughout this period, OCNW grew yet maintained its independence in order that it could continue to respond to the requirements of its customers and provide a consistently high standard of service to all centres across the country and in recent years to its increasing cohorts of overseas learners.

In 2009 OCNW became Ascentis - a company limited by guarantee and a registered educational charity.

Ascentis is distinctive and unusual in that it is both:

- **An Awarding Organisation** regulated by the Office of Qualifications and Examinations Regulation (Ofqual, England), Council for the Curriculum, Examinations and Assessment (CCEA, Northern Ireland) and Qualifications Wales

and

- **an Access Validating Agency (AVA)** for 'Access to HE Programmes' licensed by the Quality Assurance Agency for Higher Education (QAA).

Ascentis is therefore able to offer a comprehensive ladder of opportunities to centres and their students, including Foundation Learning, vocational programmes and progressing to QAA-recognised Access to HE qualifications. The flexible and adult-friendly ethos of Ascentis has resulted in centres throughout the UK choosing to run its qualifications.

ASCENTIS CONTACT DETAILS

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Company limited by guarantee. Registered in England and Wales No. 6799564. Registered Charity No. 1129180

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ASCENTIS LEVEL 1 AND 2 AWARD IN ENVIRONMENTAL SUSTAINABILITY

Introduction

The Ascentis Level 1 and 2 Award in Environmental Sustainability qualifications are designed to give learners the knowledge and understanding of the basic principles of sustainability and environmental impacts. These qualifications introduce the learner to key issues in sustainability, raising awareness of the topic and encouraging them to consider their role in helping to make sustainable choices. The qualifications can be used in an induction programme or integrated with a longer programme of study within a vocational area.

There are several features of this qualification that make it very appropriate for its target learners

- Assessment and certification can be offered throughout the year, allowing maximum flexibility for centres
- Can be delivered either as a classroom based course or as a blended learning programme
- Assessment is by a multi choice test, offered on screen or paper based. This will normally be taken at the end of the course
- There are online resources that can be used alongside the teaching

Aims

The aims of these qualifications are to enable learners

- 1 To understand basic concepts in sustainability
- 2 To develop a basic understanding of the environmental impacts of the creation of goods and service
- 3 To understand what makes up a sustainable community

Target Group

The qualification is aimed at a range of learners, including

- Young people wishing to pick up an award as part of another learning programme
- Young people aged 14 – 19 who are in various learning environments

Regulation Codes

Ofqual Qualification Number (Ofqual/CCEA): Level 1 501/0419/6
Level 2 501/0420/2

Award of the Qualification

Learners must complete one unit for the Award in Environmental Sustainability at Level 1 or Level 2. These are single unit qualifications and certification is given for achieving a pass in the external assessment.

Ascentis Level 1 & Level 2 Award in Environmental Sustainability				
Title	Level	Credit Value	TQT	Unit ref
Environmental Sustainability	1	2	21	L/602/1107
Environmental Sustainability	2	2	21	Y/602/1059

Recommended Guided Learning Hours

The recommended guided learning hours for these qualifications is 20.

Total Qualification Time

The total qualification time for the Level 1 and Level 2 Award in Environmental Sustainability is 21.

Recommended Prior Knowledge, Attainment and/or Experience

No recommended prior learning or experience is required.

Age Range of Qualification

This qualification is suitable for young people aged 14-19 and adult learners.

Opportunities for Progression

The qualification gives the learner an introduction to Environmental Sustainability which can be applied in a wide variety of contexts. Learners may use the qualification as a stand-alone course or as part of a longer vocational or academic programme of study. Learners may also use the qualification as an element of their continuing professional development.

Resources to Support the Delivery of the Qualification

There are online resources available to download to support this qualification.

Centre Recognition

This qualification can only be offered by centres recognised by Ascentis and approved to run this qualification. Details of the centre recognition and qualification approval process are available from the Ascentis office (tel. 01524 845046) or from the website at www.ascentis.co.uk.

Qualification Approval

If your centre is already a recognised centre, you will need to complete and submit a qualification approval form to deliver this qualification. Details of the qualification approval process are available from the Ascentis office (tel. 01524 845046) or from the website at www.ascentis.co.uk.

Registration

All learners must normally be registered within 15 working days of the intended test date for paper based assessment and 5 working days for e-assessment.

Registration is via the Ascentis electronic registration portal.

Re-sits

Learners can re-sit the assessment if they do not achieve a pass but should have sufficient time for additional learning. Re-sits for e-assessment are free of charge, but please refer to the pricing structure for re-sits of the paper based tests.

Status in England, Wales and Northern Ireland

This qualification is available in England and Wales. It is only offered in English. If a centre based overseas (including Scotland and Northern Ireland) would like to offer this qualification, they should make an enquiry to Ascentis.

Reasonable Adjustments and Special Considerations

In the development of this qualification Ascentis has made every attempt to ensure that there are no unnecessary barriers to achievement. For learners with particular requirements reasonable adjustments may be made in order that they can have fair assessment and demonstrate attainment. There are also arrangements for special consideration for any learner suffering illness, injury or indisposition. Full details of the reasonable adjustments and special considerations are available from the Resources/Key Documents area of the Ascentis website www.ascentis.co.uk or through contacting the Ascentis office.

Enquiries and Appeals Procedure

Ascentis has an appeals procedure in accordance with the regulatory arrangements in the Ofqual *General Conditions of Recognition*¹. Full details of this procedure, including how to make an application, are available from the Resources/Key Documents area of the Ascentis website www.ascentis.co.uk or through contacting the Ascentis office.

In Northern Ireland it is the CCEA General Conditions of Recognition and Qualifications Wales is the Standard Conditions of Recognition.

ASSESSMENT AND VERIFICATION ARRANGEMENTS

Overview

To gain the Level 1 or Level 2 Award in Environmental Sustainability all learning outcomes and assessment criteria within the unit must be successfully achieved. The full award consists of one unit.

External Assessment

This qualification is assessed through the completion of an Ascentis devised multiple choice test that is carried out at the completion of the course, available as a paper based test or e-assessment.

The grading of this qualification is pass or did not achieve.

Conduct of Assessment

The assessment is through a 40-minute test paper or e-assessment consisting of 20 multiple-choice questions.

Full details of candidate, Examinations Officer and invigilator instructions are available from the Resources/ Key Documents area of the Ascentis website www.ascentis.co.uk or through contacting the Ascentis office.

Note: Dictionaries cannot be used during the assessment.

Quality Assurance Arrangements

As part of ongoing quality assurance arrangements, Ascentis will carry out quality visits to recognised centres using a risk based approach. The focus of quality visits will normally be

- Review of resources; both physical and staffing
- Observation of assessment practice
- Staff development, if required

Further details will be provided prior to a visit taking place.

Ascentis reserve the right to carry out inspections of assessments taking place without prior notice.

The delivery of the knowledge required within this qualification should be carried out by qualified teachers or those working towards a teaching qualification. Delivery staff should also have a theoretical understanding of IT User Skills.

Results

Provisional results are provided immediately after e-assessment. An hour after the e-assessment the e-assessment achievement list report can be run through QuartzWeb

Knowledge, Understanding and Skills required of Assessors and Internal Verifiers

Centres must ensure that those delivering and assessing Ascentis qualifications are occupationally knowledgeable and competent within the relevant subject area.

Centres are responsible for ensuring that all staff involved in the delivery of the qualification are appropriately qualified. Ascentis will not be held responsible for any issues that relate to centre staffing

which could impact on the successful delivery, assessment and internal quality assurance of our qualifications.

Those delivering the qualification should preferably hold or be working towards a recognised teaching qualification. Assessors must be able to make appropriate assessment decisions. Internal Quality Assurers need to have knowledge and experience of the internal quality assurance processes.

Centres are required to ensure that appropriate training and support is in place for staff involved in the delivery, assessment and internal verification of Ascentis qualifications.

Ascentis offers free support for centres. Further information on the support that is available can be found on Quartz Web or the Ascentis website.

UNIT SPECIFICATIONS

Environmental Sustainability

Credit Value of Unit 2

GLH of Unit 20

Level of Unit 1

Introduction

This unit introduces key issues in sustainability, raising the learner's awareness of the topic as well as their role in helping to make sustainable choices.

Learning Outcomes		Assessment Criteria	
The learner will be able to		The learner can	
1	Know the basic concepts of sustainability	1.1	Identify the three strands of sustainable development
		1.2	Define excess consumption and identify the problems this can cause
		1.3	Identify ways that individuals impact on the environment
2	Know the importance of natural resources	2.1	Identify natural resources and explain why they are important
		2.2	Identify the sustainability issues related to natural resources
3	Know about the global environmental impacts of agriculture and industry and how they might be reduced	3.1	Identify how goods and services are created
		3.2	Identify impacts of waste and how they might be reduced
		3.3	Identify impacts of energy usage and how they might be reduced
		3.4	Identify impacts of water usage and how they might be reduced
		3.5	Identify impacts of transport usage and how they might be reduced
4	Know the benefit of sustainable communities	4.1	Identify what is meant by a sustainable community
		4.2	Identify the local and global benefits of sustainable communities

Indicative Content

The three strands of sustainable development

Sustainable development can be defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

Brundtland Report, WCED 1987.

There are three main pillars (strands) of sustainable development: social, environmental and economic. These are informally referred to as people, planet and profits.

Excess consumption and problems caused

Excessive consumption, or over-consumption, is a situation where the use of resource/s has outpaced the sustainable capacity of the ecosystem*

The negative impacts of prolonged over-consumption are depletion of resources, degradation of the environment and reduced health of the ecosystem.

The ways that individuals impact on the environment

The more people on the planet, the greater the consumption of natural resources to support their lives.

However, different individuals affect the environment in different ways according to their wealth, the lifestyle they choose and the pollution they generate.

The Importance of Natural Resources

Natural resources and their importance

Natural resources are materials and components that occur in nature, without the actions of people (i.e. they are not man-made).

On earth they include: sunlight, the atmosphere/air, water, land/soil (including its minerals), along with all vegetation, crops and animal life that naturally live upon the planet.

Every man-made product comprises natural resources.

Natural resources sustain life on earth; without them living things will perish. Therefore, it is extremely important that we protect the environment, and allow it to replenish itself naturally.

Sustainability issues related to natural resources

Depletion of natural resources is a concern for sustainable development; depletion can degrade the current environment and has the potential to affect the needs of future generations.

Global Environmental Impacts of Agriculture and Industry

How goods and services are produced

Manufacturing is the production of goods using labour and machines, tools, biological and chemical processing, or formulation.

The term manufacturing is most often used in relation to industrial production, in which raw materials are transformed into finished goods on a large scale.

Agriculture is the cultivation of land; growing plants and breeding animals to provide food, fibres, medicines and other products to sustain and enhance life.

The world's population constantly consumes goods and services; these include food and drink, clothing and footwear, energy, housing, technology, education, transportation, health and personal care, and financial services.

Production of goods and the provision of services uses raw materials, the earth's natural resources.

The industrial processes used to produce goods and provide equipment and buildings for service industries can cause climate change, pollution to air, water and soil, health issues, extinction of species, and more.

Environmental impacts and how they might be reduced

Waste

Chemicals and plastics are entering our water systems and polluting the reservoirs and seas.

Disposing of waste can cause serious problems and has huge environmental impacts. In the UK much of the waste is buried in landfill sites, e.g. old quarries.

Some buried waste will eventually rot, but not all of it. Rotting waste may smell or generate methane gas which is explosive and contributes to greenhouse gases. As water passes through decomposing waste, 'leachate' is produced which may cause pollution.

Badly-managed landfill sites may cause litter or attract vermin that carry diseases.

Most plastics are not biodegradable; they don't rot like food or paper and can hang around for hundreds of years.

Another way to get rid of waste is to burn it, but this causes problems too. Incinerating plastics can produce toxic substances such as dioxins.

Gases from incineration may cause air pollution, contributing to acid rain, and the ash from incinerators can contain heavy metals and other toxins.

Throwing things away wastes resources! It wastes the raw materials and energy used to make the items in the first place, and it wastes money spent on new items.

The environmental impacts of waste can be reduced by:

- Recycling, so that waste is converted into new materials and objects
- Composting waste organic matter, e.g. vegetable matter
- Reducing the *amount* of waste, e.g. by choosing items with less packaging, and repairing broken items

Remember the 4 Rs:

1. **Refuse** disposable and over-packaged products; only buy items that you need
2. **Reduce** the amount that you buy; buy things made to last; buy products in returnable containers; buy concentrated liquids and items in bulk to reduce packaging
3. **Reuse** containers like bottles and bags - refill them; donate unwanted clothes to charity
4. **Repair** items that are broken rather than replacing them with new, e.g. electrical equipment, furniture

Energy usage (electricity and gas)

Electricity

Electricity is used for heating and cooling; it lights our homes and powers almost all our appliances including refrigerators, toasters, and computers.

All forms of electricity generation have an environmental impact, i.e. on our land, air and water. Using less electricity will reduce the amount that needs to be generated.

Using and producing electricity more efficiently reduces the amount of fuel needed to generate electricity and therefore the amount of greenhouse gases and other air pollution emitted as a result.

Electricity from renewable resources such as solar, wind and geothermal does not usually contribute to climate change or local air pollution since no fuels are combusted.

We can reduce the environmental impacts of using electricity by:

- Reducing the number of electrical appliances that we use
- Turning the power off when appliances, including lights, are not in use
- Using energy-efficient appliances and light bulbs
- Using air-conditioning units sensibly
- Switching to, or incorporating, renewable sources of energy, e.g. solar panels

Gas

Natural gas is the main energy source for heating our homes, and cooking. It is a non-renewable energy source, meaning that it does not form or replenish in a short period of time.

Natural gas is an economical energy source; it is also efficient and relatively clean-burning. However, the use and production of natural gas have some environmental impacts:

- Natural gas is composed mainly of methane, a strong greenhouse gas. Some leaks into the atmosphere from natural gas wells and processing plants.
- Air pollution results from well-drilling activities.

- Well-drilling activities may disturb the wildlife, people and water resources in the area.
- Production of natural gas can also produce large volumes of contaminated water.

We can reduce the amount of gas we use by ensuring that our homes are well insulated and draught-free, and by using our gas cookers efficiently.

Water usage

Water is a valuable resource. Demands on this resource increase as our population continues to grow.

If we use less water, less money needs to be spent on energy, chemicals and additional reservoirs or boreholes needed to treat and pump water.

Reducing the amount of energy used in the pumping of water reduces our carbon emissions; carbon emissions contribute to greenhouse gases and lead to climate change.

The following are ways to reduce the amount of water we use:

- Fix water leaks, e.g. leaking taps
- Replace old toilets and washing machines for more efficient ones (ones that use less water)
- Plant drought-resistant shrubs, flowers, grass and vegetables in your garden
- Take a short shower rather than having a bath to wash

Transport usage

The environmental impact of transport is significant; transport is a major user of energy, burning petroleum products that come from natural gas.

The effect is air pollution that contributes to global warming through emission of carbon dioxide.

The largest contributor to global warming within the transport sector, is *road* transport.

The environmental impacts of transportation fall into three categories:

- **Direct** impacts include noise and carbon emissions
- **Indirect** impacts include respiratory and cardio-vascular problems; indirect because other factors are also involved
- Transportation plays a role in the **cumulative** impact, climate change; a cumulative impact takes into account both direct and indirect impacts

Ways to reduce the environmental impacts of transportation include:

- Drive less and use public transport more; better still, walk or use a pedal bike
- Join a car share scheme
- Maintain your vehicle so that it is in good condition, reducing emissions and energy usage
- Use fuel-efficient vehicles (electric, hybrid) and lawn mowers, rather than petrol-driven
- Switch off your engine when stationary; don't idle

Sustainable Communities

The meaning of a sustainable community

One definition of a sustainable community is, 'meeting the needs of the present, without compromising the ability of future generations to meet their own needs'.

(Source: Extract from Brundtland definition of Sustainable Development, 1987)

Sustainable communities are communities that are planned, built or modified to encourage sustainable living. They do not depend upon outside sources for food, energy, or essential resources.

Using food gardens, solar power, and other alternative means they generate sufficient resources to sustain themselves indefinitely.

In a sustainable community there is a balance and integration of environmental, social and economic components; creating places where people want to live and work.

Sustainable communities are likely to be:

- Safe and secure
- Well planned, well built and well run
- Places that offer equal opportunity for all

Local and global benefits of sustainable communities

Developing sustainable communities requires planning, applying, and encouraging sustainability goals that benefit individuals, the community, and the planet.

The benefits of sustainable communities include independence and self-governance, positive environmental effects, and social benefits.

Sustainable communities promote local food sources, supporting local farmers and providing fresh food to the community.

Community parks and gardens encourage physical activity amongst community members and provide a safe habitat for native wildlife; they foster social interaction and decrease crime rates.

The main benefit of sustainable communities is that they develop the economy without compromising nature. Adopting this ideology globally will bring positive results such as better air quality, more green areas, the subsistence of more species and the preservation of biodiversity of the planet.

References

*Overconsumption, WikiVisually

Sources of information

Brundtland Report, WCED 1987

Brundtland definition of Sustainable Development, 1987

UNIT SPECIFICATIONS

Environmental Sustainability

Credit Value of Unit 2

GLH of Unit 20

Level of Unit 2

Introduction

This unit introduces key issues in sustainability, raising the learner's awareness of the topic as well as their role in helping to make sustainable choices. This unit introduces key issues in sustainability, raising the learner's awareness of the topic as well as their role in helping to make sustainable choices.

Learning Outcomes	Assessment Criteria
The learner will be able to	The learner can
1 Understand the basic concepts of sustainability	1.1 Define the three strands of sustainable development 1.2 Define excess consumption and the '3 planet lifestyle' 1.3 Define 'eco-footprint' 1.4 Describe the problems caused by non-sustainable lifestyles 1.5 Describe ways that individuals impact on the environment
2 Understand the importance of natural resources	2.1 Describe natural resources and explain why they are important 2.2 Describe the sustainability issues related to natural resources
3 Understand the global environmental impacts of agriculture and industry and how they might be reduced	3.1 Explain how goods and services are created and the difference between manufacturing, agriculture and service industries 3.2 Describe impacts of waste and how they might be reduced 3.3 Describe impacts of energy usage and how they might be reduced 3.4 Describe impacts of water usage and how they might be reduced 3.5 Describe impacts of transport usage and how they might be reduced
4 Understand the benefit of sustainable communities	4.1 Explain what is meant by a sustainable community 4.2 Identify the needs of a sustainable community 4.3 Describe the local and global benefits of sustainable communities

Basic Concepts of Sustainability

The three strands of sustainable development

Sustainable development can be defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

Brundtland Report, WCED 1987.

There are three main pillars (strands) of sustainable development: social, environmental and economic. These are informally referred to as people, planet and profits.

To achieve a sustainable world, each of the three pillars must be strong.

- Social sustainability is the ability of a social system, such as a country, family, or organisation, to function at a defined level of social wellbeing and harmony indefinitely.
- Environmental sustainability is the ability of the environment to support a defined level of environmental quality, and natural resource extraction rates, indefinitely.
- Economic sustainability is the ability of an economy to support a defined level of economic production indefinitely.

Excess consumption and the '3 planet lifestyle'

Excess consumption, or over-consumption, is a situation where the use of resource/s has outpaced the sustainable capacity of the ecosystem. ¹

The WWF (Worldwide Fund for Nature) identified more than a decade ago that the burden being placed on the natural world by people had tripled since 1961, and that humankind was using the planet's resources much faster than they could replenish themselves.

One Planet Living is a WWF campaign which aims to make sustainable living easy, affordable and attractive.

The campaign highlights the importance of the government in helping people live within the planet's natural capacity. WWF claims that if everyone in the world lived as we do in the UK, we would need the resources of three planets to support us.

To prevent continued excess consumption, our lifestyles need to change; what we buy and consume, the energy we use and what we do with our waste all need to be addressed.

Ecological footprint

The WWF defines ecological ('eco') footprint as, 'The impact of human activities measured in terms of the area of biologically-productive land and water required to produce the goods consumed and to assimilate the wastes generated. More simply, it is the amount of the environment necessary to produce the goods and services necessary to support a lifestyle.' ² The footprint helps countries improve sustainability and well-being, and individuals understand their impact on the planet.

Problems caused by unsustainable lifestyles

The negative impacts of prolonged over-consumption are depletion of resources, degradation of the environment and reduced health of the ecosystem. Some examples follow:

Mining activity destroys the environment as the excavated land can no longer support plant life, resulting in desertification.

Pollutants from industry are understood to contribute to climate change around the world.

Unsustainable development harms the environment by changing its chemistry and therefore its ecosystems.

Without sensible urban planning, people build on land that is prone to natural disasters because it is cheap; the possible loss of life and communities is a waste of resources.

The more the population grows, and the more forest is cut down to create space for settlement resulting in loss of habitat, and potential endangerment, for animal species.

Pollutants from waste that is disposed of unsustainably can enter the underground water system and later be consumed by humans and other animals.

The ways that individuals impact on the environment

The more people on the planet, the greater the consumption of natural resources to support their lives.

However, different individuals affect the environment in different ways according to their wealth, the lifestyle they choose and the pollution they generate.

The Importance of Natural Resources

Natural resources and their importance

Natural resources are materials and components that occur in nature, without the actions of people (i.e. they are not man-made).

On earth they include: sunlight, the atmosphere/air, water, land/soil (including its minerals), along with all vegetation, crops and animal life that naturally live upon the planet.

Every man-made product comprises natural resources.

Natural resources sustain life on earth; without them living things will perish. Therefore, it is extremely important that we protect the environment, and allow it to replenish itself naturally.

Sustainability issues related to natural resources

Excessive consumption can lead to depletion of natural resources.

Natural resources are commonly divided into renewable and non-renewable resources; use of either of these forms beyond their rate of replacement is resource depletion.

Depletion is most commonly used in relation to farming, fishing, mining, water usage, and consumption of fossil fuels.

Depletion of natural resources is a concern for sustainable development; depletion can degrade the current environment and has the potential to affect the needs of future generations.

Global Environmental Impacts of Agriculture and Industry and How They Might be Reduced

How goods and services are produced and the difference between manufacturing, agriculture and service industries

Goods and services are produced by companies to make a profit. Production requires input in relation to land, labour, capital/money and entrepreneurship.

The first factor of production, *land*, includes any natural resource; common ones are water, oil, natural gas, coal, copper, and forests.

Manufacturing is the production of goods using labour and machines, tools, biological and chemical processing, or formulation.

The term manufacturing is most often used in relation to industrial production, in which raw materials are transformed into finished goods on a large scale.

Agriculture is the cultivation of land; growing plants and breeding animals to provide food, fibres, medicines and other products to sustain and enhance life.

Some of the environmental issues that are related to agriculture are deforestation, climate change, genetic engineering, pollutants, soil degradation, irrigation problems, and waste.

The service industries involve the provision of services to consumers and businesses.

Examples of service industries are accounting, plumbing, computer services, restaurants and tourism. A service industry is an industry that doesn't produce goods.

The world's population constantly consumes goods and services; these include food and drink, clothing and footwear, energy, housing, technology, education, transportation, health and personal care, and financial services.

Production of goods and services uses raw materials, the earth's natural resources.

These industrial processes can cause climate change, pollution to air, water and soil, health issues, extinction of species, and more.

Environmental impacts and how they might be reduced

Waste

Chemicals and plastics are entering our water systems and polluting the reservoirs and seas.

Disposing of waste can cause serious problems and has huge environmental impacts. In the UK much of the waste is buried in landfill sites, e.g. old quarries.

Some buried waste will eventually rot, but not all of it. Rotting waste may smell or generate methane gas which is explosive and contributes to greenhouse gases. As water passes through decomposing waste, 'leachate' is produced which may cause pollution.

Badly-managed landfill sites may cause litter or attract vermin that carry diseases.

Most plastics are not biodegradable; they don't rot like food or paper and can hang around for hundreds of years.

Another way to get rid of waste is to burn it, but this causes problems too. Incinerating plastics can produce toxic substances such as dioxins.

Gases from incineration may cause air pollution, contributing to acid rain, and the ash from incinerators can contain heavy metals and other toxins.

Throwing things away wastes resources! It wastes the raw materials and energy used to make the items in the first place, and it wastes money spent on new items.

The environmental impacts of waste can be reduced by:

- Recycling, so that waste is converted into new materials and objects
- Composting waste organic matter, e.g. vegetable matter
- Reducing the *amount* of waste, e.g. by choosing items with less packaging, and repairing broken items

Remember the 5 Rs:

- **Refuse** disposable and over-packaged products; only buy items that you need
- **Reduce** the amount that you buy; buy things made to last; buy products in returnable containers; buy concentrated liquids and items in bulk to reduce packaging
- **Refill** existing containers
- **Reuse** containers like bottles and bags; donate unwanted clothes to charity
- **Repair** items that are broken rather than replacing them with new, e.g. electrical equipment, furniture

Energy usage (electricity and gas)

Electricity

Electricity is used for heating and cooling; it lights our homes and powers almost all our appliances including refrigerators, toasters, and computers.

All forms of electricity generation have an environmental impact, i.e. on our land, air and water. Using less electricity will reduce the amount that needs to be generated.

Using and producing electricity more efficiently reduces the amount of fuel needed to generate electricity and therefore the amount of greenhouse gases and other air pollution emitted as a result.

Electricity from renewable resources such as solar, wind and geothermal does not usually contribute to climate change or local air pollution since no fuels are combusted.

We can reduce the environmental impacts of using electricity by:

- Reducing the number of electrical appliances that we use
- Turning the power off when appliances, including lights, are not in use
- Using energy-efficient appliances and light bulbs
- Using air-conditioning units sensibly
- Switching to, or incorporating, renewable sources of energy, e.g. solar panels

Gas

Natural gas is the main energy source for heating our homes, and cooking. It is a non-renewable energy source, meaning that it does not form or replenish in a short period of time.

Natural gas is an economical energy source; it is also efficient and relatively clean-burning. However, the use and production of natural gas have some environmental impacts:

- Natural gas is composed mainly of methane, a strong greenhouse gas. Some leaks into the atmosphere from natural gas wells and processing plants.
- Air pollution results from well-drilling activities.
- Well-drilling activities may disturb the wildlife, people and water resources in the area.
- Production of natural gas can also produce large volumes of contaminated water.

We can reduce the amount of gas we use by ensuring that our homes are well insulated and draught-free, and by using our gas cookers efficiently.

Water usage

Water is a valuable resource. Demands on this resource increase as our population continues to grow.

If we use less water, less money needs to be spent on energy, chemicals and additional reservoirs or boreholes needed to treat and pump water.

Reducing the amount of energy used in the pumping of water reduces our carbon emissions; carbon emissions contribute to greenhouse gases and lead to climate change.

The following are ways to reduce the amount of water we use:

- Fix water leaks, e.g. leaking taps
- Replace old toilets and washing machines for more efficient ones (ones that use less water)
- Plant drought-resistant shrubs, flowers, grass and vegetables in your garden
- Take a short shower rather than having a bath to wash

Transport usage

The environmental impact of transport is significant; transport is a major user of energy, burning petroleum products that come from natural gas.

The effect is air pollution that contributes to global warming through emission of carbon dioxide.

The largest contributor to global warming within the transport sector, is *road* transport.

The environmental impacts of transportation fall into three categories:

- **Direct** impacts include noise and CO emissions
- **Indirect** impacts include respiratory and cardio-vascular problems; indirect because other factors

are also involved

- Transportation plays a role in the **cumulative** impact, climate change; a cumulative impact takes into account both direct and indirect impacts

Ways to reduce the environmental impacts of transportation include:

- Drive less and use public transport more; better still, walk or use a pedal bike
- Join a car share scheme
- Maintain your vehicle so that it is in good condition, reducing emissions and energy usage
- Use fuel-efficient vehicles (electric, hybrid) and lawn mowers, rather than petrol-driven
- Switch off your engine when stationary; don't idle

The Benefit of Sustainable Communities

The meaning of a sustainable community

One definition of a sustainable community is, 'meeting the needs of the present, without compromising the ability of future generations to meet their own needs'.

(Source: Extract from Brundtland definition of Sustainable Development, 1987)

Sustainable communities are communities that are planned, built or modified to encourage sustainable living. They do not depend upon outside sources for food, energy, or essential resources.

Using food gardens, solar power, and other alternative means they generate sufficient resources to sustain themselves indefinitely.

In a sustainable community there is a balance and integration of environmental, social and economic components; creating places where people want to live and work.

Sustainable communities are likely to be:

- Safe and secure
- Well planned, well built and well run
- Places that offer equal opportunity for all

The needs of a sustainable community

In order to be sustainable a community needs to make its practices sustainable and climate-friendly, for example: land use and community design, transportation, energy use, waste handling, and purchasing.

A sustainable community's success depends upon its members' commitment and involvement through:

- Social responsibility
- Leadership that is inspiring, effective, and responsive
- Community institutions, services and businesses that are responsible, caring and healthy

Local and global benefits of sustainable communities

Developing sustainable communities requires planning, applying, and encouraging sustainability goals that benefit individuals, the community, and the planet.

The benefits of sustainable communities include independence and self-governance, positive environmental effects, and social benefits.

Sustainable communities promote local food sources, supporting local farmers and providing fresh food to the community.

Community parks and gardens encourage physical activity amongst community members and provide a safe

habitat for native wildlife; they foster social interaction and decrease crime rates.

The main benefit of sustainable communities is that they develop the economy without compromising nature. Adopting this ideology globally will bring positive results such as better air quality, more green areas, the subsistence of more species and the preservation of biodiversity of the planet.

References

1. Overconsumption, WikiVisually
2. Ecological Footprint, WWF
https://wwf.panda.org/knowledge_hub/teacher_resources/webfieldtrips/ecological_balance/eco_footprint/

Sources of information

Brundtland Report, WCED 1987

Brundtland definition of Sustainable Development, 1987

The WWF (Worldwide Fund for Nature) website

Sample Assessment Papers**Level 1**

- 1) Which of the following lowers your carbon footprint?
 - a) driving your car to work after 9am
 - b) keeping to the speed limit whilst driving your car
 - c) turning your car engine off at traffic lights
 - d) riding a bike to work instead of driving**

- 2) Which of the following is **NOT** a renewable energy source?
 - a) wind
 - b) wave
 - c) coal**
 - d) solar

- 3) Which of the following is **NOT** an efficient use of energy?
 - a) turning the television power off completely
 - b) using low energy light bulbs
 - c) boiling a full kettle of water for one cup of tea**
 - d) turning off lights as you leave a room

- 4) Which of the following kinds of transport is the most unfriendly to the environment?
 - a) motorbike
 - b) car with more than one person
 - c) bus
 - d) plane**

- 5) What is 'food miles' a description of?
 - a) the length of a field that crops are grown in
 - b) the distance travelled by food from grower to the supermarket**
 - c) a way of measuring the popularity of certain foods
 - d) the amount of energy gained by the eating of certain foods

- 6) Large companies trading in many countries leads to similar products being available all over the world. This is called:
 - a) free range
 - b) Fair Trade
 - c) globalisation**
 - d) widely available

- 7) Only one of the following is environmentally friendly. Which one?
- a) **sorting items into separate recycling bins**
 - b) making sure as much waste as possible goes into a landfill
 - c) buying a lot of cheap clothes as regularly as possible
 - d) pouring all waste household chemicals down the sink
- 8) Which of the following is a way to save water?
- a) using a water metre
 - b) **fixing a dripping tap**
 - c) washing your car with cold water rather than hot water
 - d) taking long baths rather than quick showers
- 9) Which of the following is **NOT** a benefit of global sustainability?
- a) **we will have access to more goods from abroad**
 - b) resources will be managed so that we can live now and protect the future for our children and grandchildren
 - c) everyone would have access to sufficient food
 - d) the rainforests would be protected from further destruction
- 10) Which of the following contributes to climate change?
- a) water pollution
 - b) flooding
 - c) **fossil fuels**
 - d) excessive amounts of food

Level 2

- 1) On average the country which wastes half of all food that is bought is:
 - a) United Kingdom
 - b) France
 - c) Pakistan
 - d) **USA**

- 2) The 'eco-footprint' measures:
 - a) how much carbon is produced by a specific manufacturing process
 - b) **the amount of resources used by each member of the population across different countries**
 - c) the dimensions of an environmentally sustainable building
 - d) the amount of damage caused by walkers on public footpaths

- 3) What effect does buying furniture made of tropical hardwood have on people in other countries?
 - a) **it affects their water, food and other supplies**
 - b) it allows them to build new roads and buy big cars
 - c) it stops them owning nice furniture themselves
 - d) they need bigger, more powerful machinery to cut wood

- 4) Buying food locally is good for the environment because:
 - a) local farmers will get rich because they can sell more
 - b) **food travels fewer miles so less fuel is used**
 - c) you can eat vegetables in season
 - d) the countryside looks better and more colourful

- 5) Which are the four resources needed to live and to grow food?
 - a) **water, sun, soil and air**
 - b) sun, heat, light and soil
 - c) sun, rain, grass and wind
 - d) coal, soil, water and light

- 6) Which of the following is an agricultural activity?
 - a) selling potatoes
 - b) importing pineapples
 - c) manufacturing farm machinery
 - d) **growing rice**

- 7) The term 'the iceberg concept' means:
 - a) climate change is affecting the polar ice caps
 - b) mass consumerism in the Northern Hemisphere
 - c) **a product uses 20 times more resources and materials than appears in the final product**
 - d) the consumer is unaware of the dangerous processes used in the manufacturing of a product

8) Which of the following will NOT help you reduce energy usage in the home?

- a) **turning the TV volume to mute when you are not watching it**
- b) fitting energy efficient light bulbs
- c) insulating your water tank
- d) fitting good double glazing throughout the home

9) Which of the following uses the least amount of water?

- a) taking a bath after 6pm
- b) showering for 5 minutes in a power shower
- c) **showering for 5 minutes in a normal shower**
- d) showering for 10 minutes in a power shower

10) A 'Fair Trade' product should:

- a) cost the same anywhere in the world
- b) be made out of organic materials
- c) be made and sold locally
- d) **make sure producers get a fair share of the profits**