



Sustainable future Lesson 6

This guide is designed to accompany and complement:

- Presentation: **Sustainable future**
- Single page lesson plan: **Sustainable future**
- Worksheet: **Sustainable future** (including activities and possible extension tasks or

The guide goes into greater detail than the single page lesson plan and includes suggested resources and elaborates on each slide in the presentation.

Presentation Tips:

- When opening the PDF presentation, you can select how it is displayed. If you wish to **click through** as opposed to scrolling (which gives you more control as you progress and is more like a conventional ppt) it is best to show it in **'full screen mode'** (press 'escape' to exit).
- All associated documents are attached to the presentation. To find these, click on the **paperclip icon** in the left-hand toolbar.
- When viewing the presentation, presenter notes from this delivery guide are also available for reference if you hover the cursor over the small orange callout icon in the top left corner. **Fig.1**

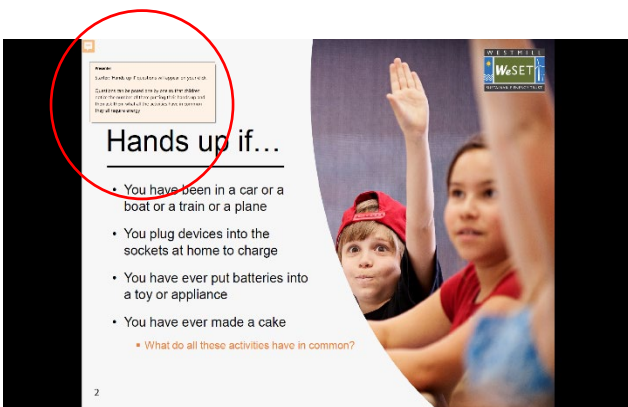
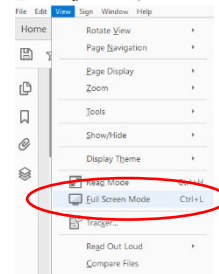


Fig.1

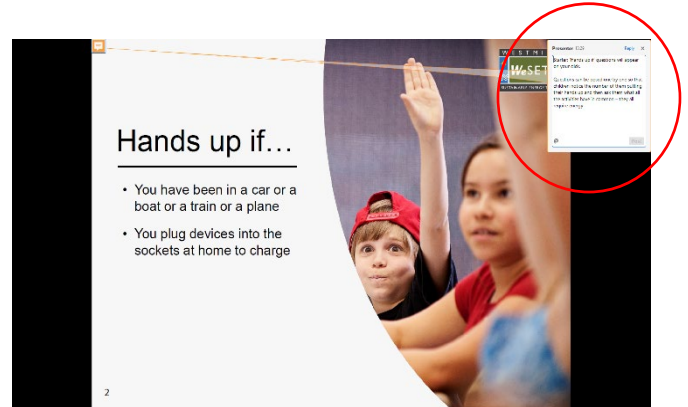


Fig.2

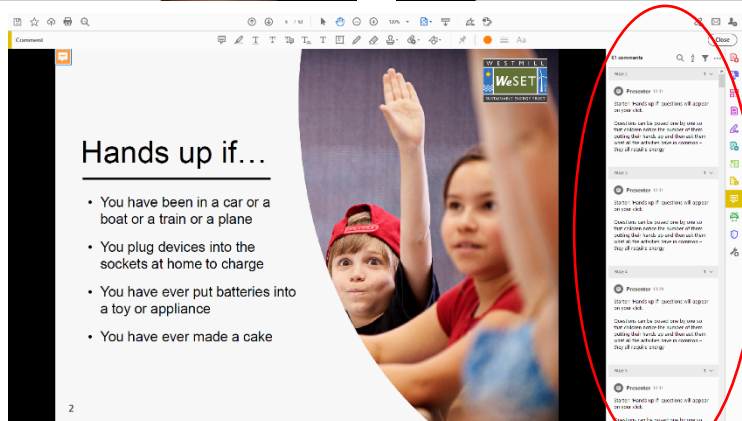


Fig.3

- If you **right click** on that icon it will open a small window showing presenter notes in the top right of the page. **Fig.2** If you right click and scroll down, you can also choose to click **'show comment app'** which opens a panel on the right of the page showing all the presenter notes as you scroll through. **Fig.3**

20 minutes to fill?

You could show the video clip 'Joel Sartore at TEDx De Extinction' [5m48s] which looks at his distinct approach to the issue of extinction as a photographer and discuss the impact it has and how children feel they could draw attention to the issue.

Slide 9

Slide number	Suggested resources	WeSet resources
2	<p>This presentation is designed to allow the presenter/teacher to pitch it as appropriate to KS2 or KS3. Questions that are on the slides have been differentiated by colour in this guide, with red being most challenging.</p> <p>🏆 Those marked with this icon may not appear on the ppt slide and are optional, higher level questions.</p> <p>🌀 Points marked with this icon can be used as a starting point for a personal investigation activity and for extension where appropriate.</p> <p>These notes can also be viewed in the ppt 'presenter view' which is accessed by right clicking on the ppt in slideshow mode.</p> <p>Starter: Revise the topic of sustainability.</p> <ul style="list-style-type: none">• Which of the sentences below defines 'sustainable development'? – A society where everyone's needs are met whilst the needs of future generations are always considered and so provided for <p>The answers will be highlighted at the click of the mouse.</p> <p>The first sentence defines what we call a 'consumer society', a society driven by competition and commerce where 'consumer pull' (the desire for more choice, cheaper etc) drives development.</p> <p>A good definition for sustainable development as in the society in sentence 2 is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'</p> <p>🌀 You might like to discuss with the children if and why they think it is important to consider the needs of future generations</p>	PPT presentation, worksheet and lesson plan

3

Ask children to imagine a green and sustainable future and ask them to discuss or to make notes as to what they think that could look like.

You might like to prompt discussion and ideas by asking children to describe what they see in the featured image – where do they think the architects got their inspiration?

The video clip (right) looks at buildings of the future featuring 'Aequorea' a concept design [1m53s]

Once they have an idea in mind, ask them to consider the questions listed and discuss their responses with an emphasis on the following:

- 🌀 **How would we make electricity** – look for answers around sustainable/renewable energy sources for example wind, solar, hydro, geothermal, biomass etc
- 🌀 **What type of jobs would we be doing** – this is something we will look at later in this lesson, at this stage look for evidence of an understanding that the jobs need to be sustainable and how that might be for example, a job in farming or agriculture might look different and may be based around growing crops for biomass or insect farming or organic arable farming
- 🌀 **What type of buildings might we live in** – buildings should be highly energy efficient and may be self-sufficient for example they may incorporate means of energy generation like solar panels, water collection facilities, smart materials like light reactive glass etc they should also be made from sustainable and or recycled/repurposed materials
- 🌀 **What methods of transport might we use** – they may discuss use of EVs or the use of biofuels as well as increased infrastructure for public transport, cyclists and pedestrians. Children may also suggest futuristic means of transport, if so, prompt them to discuss how these might be fuelled. Interestingly several companies are currently exploring and developing airships both fuelled by the traditional (but greatly improved) hydrogen in fuel cell and solar powered
- 🌀 **What other benefits would your green future offer** – their greener future may have knock on benefits like cleaner air (leading to better health and lower rates of respiratory diseases like asthma), conservation of animal and plant species, better quality of life/longer life expectation etc

<https://www.youtube.com/watch?v=Spk3W6Zs53U> [1m53s] Buildings of the Future

4

To reinforce discussion elicited by the previous slide, emphasise these key aspects of a sustainable future.

- **How do you think universal access to green energy could help to put an end to hunger and poverty?** – ‘energy poverty’ decreases chances of education and prosperity and increases, access to reliable low cost green energy enables communication, education, better living conditions (contributing to fewer health issues) and importantly modern farming methods including use of machinery and irrigation
- 👉 **Ask children if they can think of an example of this from previous lessons** – William Kamkwamba building a turbine to ‘harness the wind’ to bring electricity to his farm and village. Little sun bringing low cost solar powered lighting to remote places


You might like to explain the ‘Energy trilemma’ to children and how these three factors must be balanced to ensure sustainable access to green energy

(The definitions below are taken from world energy website)

1. Energy security –management of primary energy supply from domestic and external sources, reliability of energy infrastructure, ability to meet current and future demand.

2. Energy equity – accessibility and affordability of energy supply across the population.

3. Environmental sustainability – reduction in energy and CO2 intensity, transition to renewable and low-carbon energy sources

5	<p>This is a good opportunity to stress the positive fact that we are all in a position to act and contribute towards sustainable development. We have already looked at well known campaigners like Greta Thunberg, David Attenborough and Jane Goodall but each of us can make our voices heard.</p> <ul style="list-style-type: none"> • How do you think we can get our governments and leaders to listen and act? - this can be done through joining groups like Friends of the Earth or Youth Strike for Climate, supporting formal petitions, writing to MPs Note: be very careful when using and reading social media remember not everything on there is trustworthy and other users may respond negatively to your opinions if you use these forums to voice them! <p> Is demonstration a good way to get your voice heard? – Demonstration and organised safe and peaceful protest can be very effective in sending a message however this should be discussed with parents, carers and teachers (the website link (right) has some useful information) it is important to be aware that some people will not share your ideals and so it is always important to be open to peoples questions, have a clear understanding of what you hope to achieve and discuss differences calmly, however passionately you feel</p>	https://ukscsn.org/a-guide-for-our-adult-allies/	
6	<p>You can choose to chow the video clip as it will only commence once you have clicked on the ‘play’ icon.</p> <p>The clip runs for [3m40s] and gives an overview of sustainable development</p>	https://www.youtube.com/watch?time_continue=3&v=7V8oF14GYMY&feature=emb_logo [3m40s]	Embedded clip in ppt

7

Encourage children to think about how looking after the environment and working towards healing our planet is integral to sustainable development.

You may like to recap ecosystems – **an ecosystem can be defined as a community of living organisms, their physical environment and the relationships between all the organisms and their environment, how they support and benefit one and other**

- **But what does 'carbon neutral' mean?** - That our carbon emissions should be zero or that any carbon we produce should be able to be taken out of the atmosphere (for example by forests, certain types of arable agriculture as well as some more complex methods – see 'carbon capture',) which is known as 'carbon offsetting' ultimately resulting net zero Note: this is why managed forestry, re-forestation and managed agriculture are so important
- **Where does the carbon in fuels like crude oil, coal and gas originally come from** – crude oil, coal and gas are fossil fuels and were formed from the remains of dead organisms (coal was formed from dead trees and plants, crude oil and gas come from dead marine organisms) it took millions of years for these to form and yet we have used much of these resources in just hundreds of years!
- **In what key ways can we all work towards reducing pollution?** – answers may include but are not limited to: Energy use – using renewable energy where possible (this might mean changing provider), being aware of energy use, so turning off lights and gadgets, showering instead of having a bath, using low energy light bulbs etc. Food – eating less meat and more vegetables, reducing food miles by shopping locally, cutting down on packaging for example by buying from markets or taking your own storage boxes to refill. Travel – walking or cycling for short journeys, using public transport, reducing air travel

The video clip (right) looks at the subject of carbon neutrality [2m52s]

<https://www.youtube.com/watch?v=xsh-erZGIR0> [2m52s]

<p>8</p>	<p>Having discussed ecosystems, you might like to discuss what an animals habit is and how and why habitats may differ.</p> <p>Habitat destruction has had an impact on animal numbers all over the world.</p> <p><i>✍</i> What human actions cause this type of destruction (pollution, deforestation, desertification) and so threaten wildlife? - clearing areas of land for agricultural development is the biggest cause of habitat destruction. Other human actions that cause habitat destruction include illegal logging, mining (pit and surface), urban growth, landfill and inappropriate waste disposal etc. Note: Habitat destruction is currently the primary cause of animal extinctions worldwide</p> <ul style="list-style-type: none"> What does the term 'extinction' mean? – where all known individuals in a species, family, or group of animals or plants has died out <p>This is both a sad and worrying topic and it is important to stress that as long as we act now, we can reduce the rate of extinction in animals currently at risk including tigers, rhinos, whales and elephants</p>		
<p>9</p>	<p>You can choose to chow the video clip as it will only commence once you have clicked on the 'play' icon.</p> <p>The clip runs for [5m48s] and looks at the issue of extinction from a different perspective, that of photographer Joel Sartore.</p>	<p>https://www.youtube.com/watch?v=z4fSN1D-EVYk&feature=emb_logo [5m48s]</p>	<p>Embedded clip in ppt</p>
<p>Hand out Worksheet 6 Sustainable Future</p>			
<p>10</p>	<p>Task 1 This slide can be used alone or in conjunction with the differentiated worksheet where pupils can write their answers in the table provided for recorded formative assessment. Discuss ways in which can take a positive approach to this issue through education.</p> <p><i>✍</i> Ask children to select and research an endangered species of your choice and design a campaign poster to raise awareness, they will need to consider the facts listed - there is a section in the worksheet where they can make notes before designing their poster and an example of a possible animal choice is given in the worksheet with answers</p>		<p>Worksheet 6 Sustainable Future</p>

11

This is an interesting conversation to have with children. In the country we are increasingly used to buying fast and cheap and often, from abroad. Whilst companies vary and this is not always an indicator of ethical standards, it is important to be aware of several factors when buying products which include:

- Who made them – **what conditions did they work in, how well were they paid, what hours did they work, did they receive any benefits (healthcare etc)?**
- How they are made – **are they made using quality materials, are operatives able to take time and care in their production or do they have high targets to meet, what is the level of quality control?**
- What materials they are made from – **most materials and fibres have a natural origin, natural resources are not limitless so materials used should be sustainable. The materials and resources used are not just those used in the product itself but also those used in the factory and production line for example fuels, water etc**
- How far have they travelled to reach us – **it's all very well ordering online or buying in a shop but how far has the product actually travelled to reach you? Many products make several stops with the materials being produced in one location and manufacture taking place in one or more other locations and that's before packing and transportation!**
- **Discuss with children: if they can buy a T-shirt in a UK high street store for as little as £2, what do they think this might tell them about the T-shirt's manufacture – it should cause them to stop and even do a little research into the retailer. Whilst some companies are able to keep things 'no frills' and purchase in bulk, keeping prices low, a low price point may also be a red flag! Companies are increasingly publicising their ethical credentials, H&M and Primark among them. It is important however to get an independent view. Ethical Consumer is a very useful sight to gain more insight.**

The video clip (right) takes a look at the problem with 'fast fashion' [5m23s]

<https://www.ethicalconsumer.org/company-profile/primark#:~:text=Primark%20receives%20a%20middle%20rating,the%20whole%20product%20life%20cycle.> Ethical consumer shop assessments
<https://www.youtube.com/watch?v=1q0--DfC2Xk> [5m23s]

12

It is worth discussing why it is that it is the poorest and most vulnerable that are hit first and hit hardest by factors like climate change and the resulting deforestation, desertification, pollution, drought, flooding etc.

- **How does drought caused by lack of rain fall affect people's livelihoods? - access to water for drinking (both people and farm animals), basic hygiene (washing and cleaning) and importantly agriculture loss of crops or livestock leading to lack of food, loss of work, loss of income, ill health**

Social sustainability is about several key factors:

- **Equality – making sure people have equal opportunities and access to a range of things including education, work, clean water, health care and energy**
- **Diversity- reducing division and ensuring that we are inclusive and create ways for people of all backgrounds to contribute, learn about one another and celebrate both commonalities and differences**
- **Community – creating supportive, pro-active, diverse communities in which everyone can participate and work towards shared goals**
- **Fairness – ensuring that fair prices are paid to producers and workers, that working conditions are good and human rights are upheld**
- **Healthcare – making access to healthcare available and accessible to all both geographically and economically**
- **Safety – providing safe drinking water, safe working conditions and offering protection asylum and refuge for those affected by war or displacement**
- **Empowerment – through the provision of the above factors, empowering people of all nationalities to work, lead, plan and make decisions that will positively affect the sustainable development of their communities**


13

- **Is universal access to healthcare and sanitation a basic human right?** - the World Health Organisation's constitution of 1946 stated that "...the highest attainable standard of health as a fundamental right of every human being."

The WHO website goes on to say that **"Understanding health as a human right creates a legal obligation on states to ensure access to timely, acceptable, and affordable health care of appropriate quality as well as to providing for the underlying determinants of health, such as safe and potable water, sanitation, food, housing, health-related information and education, and gender equality."**

Increasing access to healthcare is a key measure of the success of any sustainable development program. This may be done in a number of ways including within communities, at specialist centres, via regular visiting services or by giving access to online services.


<https://www.who.int/news-room/fact-sheets/detail/human-rights-and-health> WHO constitution

<p>14</p>	<p>Education is an integral part of sustainable development and creating a sustainable future.</p> <ul style="list-style-type: none"> • Ask children if they think every young person has access to education and if they don't, ask them why they think that might be – there are many reasons why children don't have access to education, these include, lack of money to pay for schooling, proximity to schools, obligations to work at home (for example on farms or caring), gender (in some situations girls education is a lower priority, they are required to work at home or expected to marry young), due to disabilities, because they live in an area that is dangerous due to natural disasters or war <p>If children are fortunate enough to have access to education then it is worth considering how sustainable their school (or home if home schooled) is.</p> <ul style="list-style-type: none"> • How do you think you could help your school become more sustainable? – thinking about the building itself: How well insulated is it? Is the energy used sustainable and what about the possibility of generating energy using solar panels? Is waste limited and does the school recycle efficiently? Are all single use plastics banned? Are lights, computers and appliances turned off every day? Is all the lighting low energy? Does the school encourage cycling to school? Have they tried to reduce paper usage and do they recycle printer and photocopier cartridges? Do they compost food waste? Is your school part of the Green Flag Eco-School scheme? <p> You might like to use a School Sustainability Audit (available via Eco-schools https://www.eco-schools.org.uk/primary-pathway/seven-steps/) or the great audit template on this page https://en.seacs.eu/pupil-led-audits-templates/ as an extension task or for an Eco-committee or school council</p>	<p>https://www.eco-schools.org.uk/about/howitworks/the-awards/green-flag-award/ Eco-School scheme</p>	
<p>15</p>	<p>Task 2 This slide can be used alone or in conjunction with the differentiated worksheet where pupils can write their answers in the table provided for recorded formative assessment.</p> <ul style="list-style-type: none"> • Ask pupils to match the sustainable topics in the green boxes with some of the subjects they may study – once you have gone through the task, the answers will re-order one by one on the click of the mouse • Ask pupils to think about and discuss how sustainability might be covered in some of their other subjects 		<p>Worksheet 6 Sustainable Future</p>

16	<p>It is important to stress again that we are all in a position to make a difference and making the right choices at home and at school is a good place to start.</p> <ul style="list-style-type: none"> • Can you think of one sustainable lifestyle change you or your family have made recently? – these could be many and varied and may include things like stopping buying packaged items, using shops and brands that offer refill options, upcycling, using charity shops, walking to school, going plastic free, choosing a renewable energy provider etc 		
17	<p>We have used the 6 Rs here as it is a good place to start and they are relatively easy to remember however if you look online you will find a variety of sites with a variety of numbers of Rs!</p> <p>Again, they are little steps or actions that each child can initiate pro-actively in their day to day life.</p> <ul style="list-style-type: none"> • Which of the following words do you think the 6 Rs might be? – reuse, recycle, refuse, rethink, repair and reduce. The correct answers will be highlighted in green one by one at the click of the mouse 🔊 Ask children if they can think of any other ‘Rs of sustainability’ - other Rs include repurpose, rot, re-gift, rent, re-plant, respect, replenish, reinvent, restore, responsibility, repurpose 		
18	<p>Although for some, the word ‘refuse’ is associated with stubbornness, it is infact, an empowering action that can have genuine impact.</p> <p>Children may feel that they are not buying a product may have little impact on what is a huge issue but what if they and all their friend take action? What is word gets around and 100s and the 100s of people act? In these days of social media and sharing, word can get around! – In response to consumers refusing to buy some unnecessarily packaged products and asking for less or more easily recycled packaging several supermarkets are making changes. WHICH have an interesting review of this in the link (right) There is also a useful video clip (right) looking at Supermarkets in Oxfordshire who are reducing plastic packaging [2m57s]</p> <ul style="list-style-type: none"> • Why might we choose to refuse to buy some cheap fashion that is made abroad – thinking back to ‘economic sustainability’ do we know who is making the product, how much they are paid, what conditions they work in, what is the level of quality, how far has the product travelled etc 	<p>https://www.which.co.uk/reviews/recycling/article/what-are-supermarkets-doing-about-plastic-ahzAC2s22tXv WHICH https://www.youtube.com/watch?v=067qGgcJBP4 [2m57s]</p>	

19	<p>We are becoming more familiar with the practice of reuse, repurposing and upcycling. Not only can it be enjoyable and very satisfying but it makes economic and environmental sense.</p> <p>There are lots of videos online with ideas for reusing household items and packaging.</p> <ul style="list-style-type: none"> • What are the other benefits of reusing or repurposing objects we may already have? – saving money buying new items, saving space, the satisfaction of creativity, developing problem solving skills etc <p>☞ You might like to invite children to bring in and present an item they have upcycled at home, to keep things simple the theme could be ‘repurposing packaging’</p>		
20	<p>Many of us have been recycling for years and, whilst this should not necessarily be the first action we take (reducing and refusing should come first) recycling is an important part of any ‘circular economy’ as it put the material back into the production process.</p> <p>Some materials are more easily recycled than others for example, aluminium can be recycled time and time again whereas plastics and paper will degrade the more they are recycled. This doesn’t mean the resulting materials cannot be reused but they will be used for a different purpose, a plastic detergent bottles may end up as children’s outdoor play equipment and recycled printer paper may end up as newsprint.</p> <ul style="list-style-type: none"> • Is recycling a carbon neutral solution? – Recycling is not a carbon neutral process as processing plants require energy and resources like water however increasingly these plants are looking to reduce their carbon footprints. Whilst recycling should not necessarily be the first action we take (reducing and refusing should come first) recycling is an important part of any ‘circular economy’ as it put the material back into the production process 		

<p>21</p>	<p>It is not just producers and designers who need to rethink the products they make; we also need to rethink the way we consume.</p> <p>We may ask ourselves questions like, do I really need this, do I already have something that will do the job, should I buy from this supermarket or from a street market where they don't use packaging, can I take my own packaging when buying certain foods etc</p> <ul style="list-style-type: none"> • Can you think of any initiatives introduced into shops that have had a positive impact on the amount of waste we generate? – initiative may include the 5p bag scheme, wonky veg, refill schemes, reduced packaging/plastic free schemes etc The video clip (right) looks at the impact of the 5p bag charge [1m50s] 	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"> https://www.youtube.com/watch?v=QrKtScy204 [1m50s] </p>	
<p>22</p>	<p>The slogan 'Make do and Mend' was coined during WW2 when clothes rationing was introduced, and mending favourite clothes remained a way of cherishing loved items for years to come. You may like to discuss how it is only recently that the price of clothing has come down so far that we have become a nation who buy new virtually every season. As much as it may feel exciting to buy new, trends change so quickly, if you have a favourite coat or pair of jeans, you may well find that when they being to wear you are unable to replace them with the same style....so why not mend them instead?</p> <p>If a product is made not to last, either to break or fail or to become outdated, that is called 'built in obsolescence'. Children may be surprised to hear how often obsolescence is built into the products they buy!</p> <ul style="list-style-type: none"> • Children may be encouraged to think of a product they own that has become 'obsolete'. Why was that? Did it break or did a specific part fail or did the company bring out a newer smarter version of that product? How do they feel about this? • Can you suggest a fun and attractive way to mend a hole in a pair of jeans? – answers may include using an attractive readymade patch, use coloured thread to stich the hole up or creating their own patch from a contrasting fabric 		

23	<p>So many of us in the western world now have more than we need however there are plenty of people both here and in other countries who do not have enough, whether that is food, access to energy, water, housing etc.</p> <p>It is all too easy, especially when it comes to food shopping, to buy more than we can consume and so end up creating waste.</p> <ul style="list-style-type: none"> • What measures can we take to reduce the amount of food waste we generate? – answers may include planning our shopping more carefully and plan meals in advance, doing more smaller shops, buying food as we go using local shops or even growing some of our own food <p> Children may like to write a week of meal plans and see if they can save money on a weekly shop</p>		
24	<p>Task 3 This slide can be used alone or in conjunction with the differentiated worksheet where pupils can write their answers in the table provided for recorded formative assessment</p> <ul style="list-style-type: none"> • Ask pupils to use the words in the list to fill in the gaps in the sentences – once you have gone through the task, the answers will appear one by one on the click of the mouse 		Worksheet 6 Sustainable Future
25	<p>It might seem like a long way away for many children however, some may be dreaming of the types of jobs they would like to do one day. It important to stress that sustainable jobs come in all shapes and sizes.</p> <ul style="list-style-type: none"> • How might a fashion designer play a vital role in a sustainable future? – as a fashion designer you could choose to use sustainably sources fabrics, design high quality items that are made to last or to be disassembled and reused after their first life. You could choose to make sure your items were manufactured sustainably, locally and by paid fairly and looked after operatives. You could change the way the consumer thinks about their clothing and offer advice on care and mending • Why do you think there may be more jobs available in sustainable energy in the future? – sustainable energy is a growing industry and, as more solar and wind farms are built, more hydropower and geothermal plants created there will inevitable be more jobs in all areas from engineering, design and construction to marketing, management, monitoring and many, many more 		

26	<p>Using EV design and development as an example as it is a growth industry.</p> <ul style="list-style-type: none"> • Do you think that more employers will be looking for people with these types of skills in the future and if so, why? - as our needs change, technologies change too and employers will look for creatives who can put the two together finding technologies that meet our needs and changing life styles 🔊 EV manufacturers are also developing EVs that can drive themselves, what are these called? – autonomous vehicles. The video clip (right) by Smart car makers Mercedes/Daimler shows a concept autonomous vehicle [2m03s] 	https://www.youtube.com/watch?v=JCy3aHt2nhM [2m03s]	
27	<p>Task 4 This slide can be used alone or in conjunction with the differentiated worksheet for recorded formative assessment.</p> <p>This can be done individually, in pairs or larger teams for brain storming.</p> <ul style="list-style-type: none"> • Invite children to Design your ultimate sustainable 'green' job. Thinking about what they would really like to do and how that job could be made to contribute to a sustainable future! <p>This is an opportunity to run wild as a whilst a huge range of existing jobs could be made to be more sustainable, they may also create their own new concept.</p> <p>An example is given in the Worksheet Answers however children will inevitably be far more creative than me!</p>		Worksheet 6 Sustainable Future
28	<p>All images used are royalty free, 'Creative Commons' and free to use for non-commercial purposes</p> <p>Sources include: https://www.freeimages.com https://pixabay.com https://unsplash.com http://westmillsolar.coop/ http://www.weset.org/ Microsoft online pictures search (Creative Commons only)</p> <p>To arrange a site visit, please go to http://www.weset.org/?page_id=126</p> <p>Or email education@weset.org</p> <p>These materials are free to use and reproduce however we respectfully ask that you do not edit them.</p>		