

# RESPONSES TO CLIMATE-RELATED QUESTIONS

**Questions posed by sixth form students from  
Bartholomew School, Eynsham**

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**March 2020**

From members of the Environmental Change Institute, the Programme on Integrating Renewable Energy, and others in the University of Oxford

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Programme on Integrating  
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Environmental *Change* Institute



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## 1. Could the national grid support 100% of drivers using electric vehicles?

**Yes.**

The strength of the grid is certainly not going to be a major problem, although there may need to be some extra investment to make sure it has enough capacity. There is always some work going on with the grid, in upgrading or replacing particular parts, so this is by no means a problem. Modelling and experience to date shows that grid upgrades are only needed in about 1% of cases, usually to local distribution grid transformers.

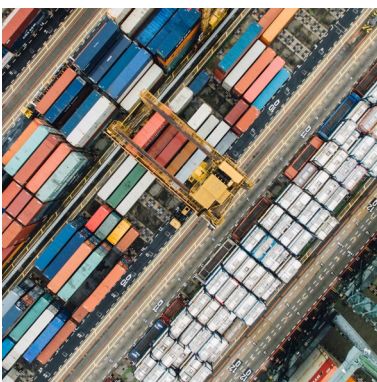
We will need a lot more charging infrastructure for everyone to drive EVs, and most of this will be around the “local” lower voltage distribution networks, especially if there are “charging hotspots”, rather than the main high voltage grid. If we drive less and use smaller, sensibly sized cars, the impact will be reduced.

There is great potential for charging electric vehicles in a smart way i.e. automatically timed to benefit from cheaper electricity prices, or at times when there is more generation than demand for electricity. This does depend on drivers’ willingness and ability for their cars to be charged in this way, which may not suit everyone.

The potential for all the batteries in electric vehicles to help balance the national grid (i.e. match the demand for electricity to the supply of it) is one of the exciting new possibilities being explored right now. Instead of the electric vehicles being considered to be a burden, such “vehicle to grid” approaches could be beneficial in helping to store electricity generated by renewables to then feed it back to the grid a later time. The National Grid Energy System Operator suggest that electric vehicles can have a positive impact, by providing an energy storage capacity, with smart chargers, enabling EVs to store roughly one fifth of GB’s solar generation, for example.

### More information

- National Grid Energy System Operator’s report: [fes.nationalgrid.com/fes-document/](https://www.nationalgrid.com/uk/energy-system-operator/fes-document/)



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## 2. Should we be doing more to limit our trade with China if we are serious about having a global effect on emissions rather than concentrating on purely domestic issues?

Yes, we should be thinking about our consumption profiles holistically. If we all reduced our consumption of manufactured goods, but especially those that have a high carbon content, this would have a significant positive impact.

It is absolutely correct to say that it will not be enough to look just at domestic (i.e. UK based) energy use. In the current international accounting system, greenhouse gas emissions are generally attributed to the country in which they enter the atmosphere, regardless of where the final products go. This can be problematic in that it limits our vision of the issues at hand and the full impacts of our consumption.

This approach needs to be changed so that the greenhouse gas footprint of a product is split between the country of manufacture and the country of consumption.

But we should not demonise China too much. It does currently have a very high share of the world's manufacturing outputs, and the emissions that go alongside that, but it has also been very active in low carbon technologies. Our trade with China includes a lot of solar panels, which they made cheap enough for them and us to displace coal and gas.

China, while having a lot of coal itself, is doing a lot to reduce emissions – not least to solve their own air pollution problems. For example, the Chinese city of Shenzhen, with a population similar to London, currently has 17,000 electric buses (in part to improve air quality), whereas London has 200. If we consider emissions generated per head of population, then China is ranked much lower than Saudi Arabia, Australia, United States and many other countries

Many of the UK's international imports (and their embodied carbon) are not from China. So, while we need to work on all aspects of carbon emissions, Chinese imports may not be as significant as the question suggests.

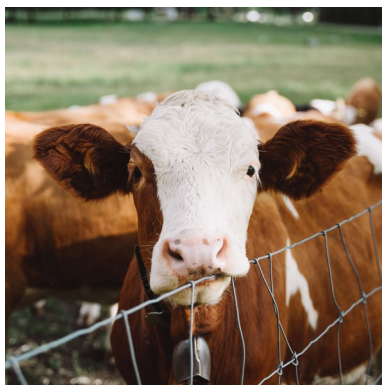
Tackling climate change is a global problem. To fully understand the climate impact of a product, and its 'embodied' or 'embedded' emissions or footprint, it is important to know where and how the item is manufactured, and whether the process would result in more greenhouse gas emissions at location A than if it was manufactured elsewhere in location B.

It is important to trade with countries that have strong environmental policies and are willing to act on climate change, like the European Union. Imposing 'sanctions' against a country or engaging in a trade war is severe. It is much better to be more diplomatic and support a change in thinking and approach, such as 'greening' the supply chain.

Another factor to consider is the transportation element of global trade. The International Maritime Organisation has implemented some new rules aiming to decarbonise shipping fuel by 50% by 2030 but this isn't likely to be fast enough.

### More information

- Analysis of the UK's Carbon Footprint 1997–2016: [assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/794557/Consumption\\_emissions\\_April19.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/794557/Consumption_emissions_April19.pdf)



### 3. What is the single biggest thing an individual can do to reduce their carbon footprint?

The answer will be very different for different people, and very much depends on each person's individual circumstance.

The single biggest thing an individual can do depends on the individual. For example, who has the largest footprint: someone who eats beef every day but who never flies, or a vegan who flies a few times a year? Everyone's circumstance is different so it is not helpful to judge in this way.

Instead, work out what is best for you, by considering the big impacts of your own lifestyle, and prioritise which things to change. Likely big personal reductions will come from food, travel, home energy use (especially heating); and consumer products. Tell people what you do, and why, so that other people understand and may be inspired to make changes in their own life too.

It is clear that eating less meat is potentially one of the biggest ways to reduce your carbon footprint for those people who are not already vegetarian. The calculations suggest that beef has a higher footprint than pork, which is higher than chicken for example. Everyone should try to minimise food waste and avoid excessive packaging.

If you are already vegetarian and fly a lot for holidays, then fewer long-haul flights will be a pretty large reduction in your carbon footprint. Driving with passengers is a lot better than flying, if you have the time. Taking the train is better still.

Adopt the travel hierarchy when you can: walk, cycle, bus, train, then car. Try to minimise flying as much as possible.

There are a lot of things that can be done at home which collectively can have a significant impact. Switch your energy supply to a renewable energy provider for both electricity and gas. Turning down domestic heating down by one-degree C, if possible without discomfort, has been estimated to reduce energy consumption by up to 10%. Not heating the house when people are out will help, as will switching to LED light bulbs. Install water saving devices to reduce water wastage (it takes a lot of energy and chemicals to produce drinking water!).

Switching from gas to a heat pump or heat network to heat buildings is a major challenge but one that would significantly help reduce our carbon footprint.

Consider what you buy, consume and use, and avoid things which are single use. Can you borrow something rather than buy something new? If you have something that is broken can it be fixed rather than just thrown away?

As well as individual actions, we must call for changes to the system in which we live and work, both within the UK but also within the world. So, use your voice (and vote) to push for system change!

## More information

- [www.eci.ox.ac.uk/news/2019/0325-climatechangefaq.html](http://www.eci.ox.ac.uk/news/2019/0325-climatechangefaq.html)
- [www.research.ox.ac.uk/Article/2019-11-16-individual-actions-in-a-time-of-climate-emergency](http://www.research.ox.ac.uk/Article/2019-11-16-individual-actions-in-a-time-of-climate-emergency)
- [www.research.ox.ac.uk/Article/2019-09-20-climate-q-a](http://www.research.ox.ac.uk/Article/2019-09-20-climate-q-a)
- [www.sciencemag.org/news/2017/07/best-way-reduce-your-carbon-footprint-one-government-isn-t-telling-you-about](http://www.sciencemag.org/news/2017/07/best-way-reduce-your-carbon-footprint-one-government-isn-t-telling-you-about)
- [www.imperial.ac.uk/stories/climate-action/](http://www.imperial.ac.uk/stories/climate-action/)
- [en.reset.org/act/12-things-you-can-do-climate-change-0](http://en.reset.org/act/12-things-you-can-do-climate-change-0)
- [teachthefuture.uk](http://teachthefuture.uk)





#### 4. Could the UK potentially shift entirely to renewable energy and how long would it take?

There are two possible scenarios here:

##### a) Can we shift entirely to renewable electricity?

Yes! This is technically feasible and it will certainly happen in our lifetime; we could do it immediately if we are willing to limit our electricity use to times when renewable sources are generating lots of energy!

The share of total electricity generation from UK renewables is the highest ever recorded at 38.9%, over July to September 2019, which exceeds the share of generation from gas for the first time (marginally, but still!). With storage resources and smart meter implementation, 100% renewables is feasible and probably achievable within ten years (alongside policies to reduce demand). Don't confuse this with achieving net zero emissions though, as that includes energy not just electricity.

The continued development of renewable energy projects means that our ability to generate electricity from renewable sources will continue to rise. For example, on Saturday 8 March 2020, 56% of the national grid was powered by renewable energy.

Did you know we can see how the national grid is powered in real time? There are a number of sites, including: [grid.iamkate.com](http://grid.iamkate.com). NB that all such sites underestimate solar capacity due to the lack of export meters on small scale generators, such as houses with solar panels for example.

##### b) Can we shift entirely to renewable energy?

Achieving high levels of renewable energy is the greatest challenge and will take significantly longer than generating electricity completely from renewables. If we can figure out how to do it (e.g. develop medium-long haul electric planes), the renewable resource is here in the UK to make it happen at current technology levels.

How long would it take? This depends completely on government policy, the availability of financial capital (money), and the demand for energy, and the ability for society to switch en masse to electrified forms of heating and transport. The government is aiming for 2050, the Centre for Alternative Technology say we can get there by 2030. In the case of generating electricity completely from renewables(a), it may be technically possible to get it done within 10 years with enough money available to purchase energy storage (batteries) and upgrades to the national and local electricity grid infrastructure. In reality it will take much longer than this as it is not always easy to mobilise people and systems as quickly as technological solutions.

This is because arguably the most difficult problem for the UK is the fact that we use a lot of fossil fuel energy (mostly gas) for heating. Our energy demand for heating is highly seasonal, and currently there are not enough cheap methods to store energy on the scale needed to cover our seasonal needs. A critical thing that we must all do therefore is reduce our energy demand and increase energy efficiency of homes, transport, and consumption.

#### More information

- The composition of the National Grid: [grid.iamkate.com](http://grid.iamkate.com) (Be aware that all such sites underestimate solar capacity due to the lack of export meters on small scale generators, such as houses with solar panels for example.)



## 5. Will there be a climate/carbon tax to achieve these goals?

A big challenge is to implement a global carbon tax that is applied to all countries, on all sectors, so everyone follows the same rules. Such a tax does not currently exist.

There is already a price attaching to carbon emissions under the European Union's Emissions Trading System (EU ETS). The ETS is expressed as an allocation of a quota to emit emissions which can then be traded rather than a financial tax as such. The UK government has also implemented the Climate

Change Levy: a tax applied to electricity and energy used for lighting, heating and power in the business and public sectors.

The ETS scheme has been criticised by some people. Many think that a straightforward tax would be a much more effective mechanism of incentivising industries to reduce their emissions.

A problem with the ETS is that it does not apply to all sectors. For example, aviation and shipping, which are large and growing emitters of carbon, are not part of the scheme, and, unlike domestic road transport for example, do not pay any fuel tax at all. But bringing them into a carbon taxing or pricing framework would require international agreement.

Britain will likely leave the EU ETS due to Brexit and maybe set up its own system.

But should we just rely on carbon taxes? Will it be effective? Will people who can afford the tax just pay it and not change their behaviour?

Taxation is one of many potential mechanisms that need to be deployed. Taxing people & organisations to financially nudge them to move away from using fossil fuel energy can be very regressive (that is, it hits poorer people harder) and can be socially and politically unpopular. It is better to use a range of approaches including information, advice, grants from research and innovation for example so that taxation is just part of the mix.

Sometimes it is better to pass laws and implement regulation to drive, for example, minimum energy standards rather than nudge people to adopt different approaches or behaviours, which might take a long time. Or to simply ban things (e.g. smoking in indoor spaces). Some people would argue that we need stronger regulation now as it is too late to implement taxes and wait for change to gradually occur.

### More information

- [www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2019/05/GRI-POLICY-BRIEF\\_How-to-price-carbon-to-reach-net-zero-emissions-in-the-UK.pdf](http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2019/05/GRI-POLICY-BRIEF_How-to-price-carbon-to-reach-net-zero-emissions-in-the-UK.pdf)



## 6. How bad are the carbon emissions from the 2019–2020 Australian wildfires? Should we be concerned?

We should be concerned as an area nearly the size of England has been burned. It is estimated that the total emissions emitted are equivalent to Australia's annual outputs, and have been released in a large sudden burst which could have an enhanced negative effect in the atmosphere.

Other than the emissions, there is much to be concerned about.

Bushfires are part of the natural ecosystem; the bush is designed to burn in that its seeds and trees (gum) regenerate well after fire. However, these fires are extensive, and the effect of climate change in extending drought conditions and increasing temperatures puts extra stress on the ability and capacity of forest areas to regrow with the same vigour. As a result, the bush's ability to act as a carbon sink is reduced, meaning future emissions cannot be absorbed as much as before.

The impact of the fires in terms of biodiversity loss, and the many deaths of wildlife species (considered to be more than 1 billion by the World Wide Fund for Nature) may pose a long-term crisis.

The human effects should also be considered: people have lost their lives, homes and suffered terrible air quality due to the particulates from the fires. The concentration of particulates will be much higher than what is considered to be appropriate to human health and will remain high for many months. This can induce long term health impacts, particularly on vulnerable people such as the young, old and those with respiratory issues.

The impact of the fires has spread outwards, with smoke, ash and particulate matter being transported all around the world. This type of event is an example of the kind of natural disaster that will become more frequent and intense as a result of climate change.

### More information

- [www.smh.com.au/politics/federal/bushfires-spew-two-thirds-of-national-carbon-emissions-in-one-season-20200102-p53oez.html](http://www.smh.com.au/politics/federal/bushfires-spew-two-thirds-of-national-carbon-emissions-in-one-season-20200102-p53oez.html)
- [www.nasa.gov/feature/goddard/2020/nasa-animates-world-path-of-smoke-and-aerosols-from-australian-fires](http://www.nasa.gov/feature/goddard/2020/nasa-animates-world-path-of-smoke-and-aerosols-from-australian-fires)
- [support.wwf.org.uk/australia-bushfires](http://support.wwf.org.uk/australia-bushfires)
- [www.bbc.co.uk/news/science-environment-51094919](http://www.bbc.co.uk/news/science-environment-51094919)
- [www.worldweatherattribution.org/bushfires-in-australia-2019-2020/](http://www.worldweatherattribution.org/bushfires-in-australia-2019-2020/)





## 7. Do individual actions have a big impact or is it just a case of making us feel like we're doing something to help?

The English writer Sydney Smith once said, "It is the greatest of all mistakes to do nothing because you can only do little; do something."

Al Gore commented, "Use your voice, use your vote, use your choice."

It is important to know that individual actions can, and do, have a large role to play.

Because there are so many people, whatever one person does could be considered very small, compared to the total size of the problem. But that may cause people to think that their actions aren't important, which is not true. So rather than thinking, "is it worth my taking individual action?" consider instead, "What's the most good I can do?" This clarifies the key point that it is better to do something than nothing.

To tackle climate change and achieve a net zero emission society as soon as we can, we all need to make changes to our way of life. The earlier we start, the quicker this will make a difference! We need to reduce emissions as fast as possible, because early reduction is more valuable than future savings in terms of postponing key climate milestones. Individual actions can have some effect quickly and immediately, compared to national policies which take much longer to come into effect.

How many does it take to cause change? Research suggests that if only 1 in 4 people change what they consider to be normal, then this might be enough for everyone, and the system, to change. Other research indicates that it could be as few as 3.5% of a population.

Communication is critical. If an individual silently gets a bamboo toothbrush and does nothing else then this has a tiny impact. But by making changes and explaining what you are doing to your friends, relatives and colleagues, you will help them to realise that it is possible, and they may want to take more sustainable choices. If they in turn change their behaviour then together we will move things in the right direction.

Individual actions can get us a long way but they need to be matched by systemic change across all aspects of our society, not just the UK but globally. Individual change and system change are interdependent: since only individuals can change the system, and without system change most individuals cannot live low- or zero-carbon lives.

System change is driven by institutions, governments nationally and locally (e.g. councils), and businesses; its changing cultural perceptions and expectations of what we eat, buy and how we travel and use energy in our homes and buildings, including schools and work places.

Campaigning for system change without making individual changes could leave individuals open to the criticism that they are hypocrites – plus it feels much better ethically to have made changes in your own life. But it is important to acknowledge that there are limits to what an individual can do practically, given the high carbon, global system we all live within.

So, do the best you can, be aware of personal and communication trade-offs (where you may put people off rather than inspire them), and find evidence regarding the relative impact of different individual actions (toothbrushes versus flying) to help you make decisions.

## More information

- [www.wearepossible.org](http://www.wearepossible.org)
- 1 in 4 people: [www.scientificamerican.com/article/the-25-revolution-how-big-does-a-minority-have-to-be-to-reshape-society/](http://www.scientificamerican.com/article/the-25-revolution-how-big-does-a-minority-have-to-be-to-reshape-society/)
- 3.5% needed to change civil society: [www.youtube.com/watch?v=YJSehRIU34w](http://www.youtube.com/watch?v=YJSehRIU34w)
- This article shows how those people who don't fly are causing others to fly less as a result: [www.theconversation.com/climate-change-yes-your-individual-action-does-make-a-difference-115169](http://www.theconversation.com/climate-change-yes-your-individual-action-does-make-a-difference-115169)



## 8. How plausible is the idea that the world could halt climate change within 12–13 years (IPCC and UN goals)?

The IPCC: “Every bit of warming matters, every year matters, every choice matters.” [www.ipcc.ch/sr15/about/foreword/](http://www.ipcc.ch/sr15/about/foreword/)

The question posed suggest an incorrect interpretation of the IPCC report. The report was stating that climate change is happening now and we need reduce emissions now. If we are able to halve our global emissions by 2030 we may be able to increase the chances of limited the global average temperature increase to below 1.5°C.

The relevance of 2030 come from the results of the “Integrated Assessment Models” – these are the best predictions of the emissions arising if we choose to do one set of things or another, subject to some assumptions and constraints about what is considered reasonable financially. The models suggest that we need to halve emissions by 2030 – an intermediate target to try and limit average global warming to “well below 2 degrees... pursuing efforts for 1.5 degrees”

These results are “probabilistic” i.e. they are not guaranteed to happen. The actual outcome depends on the interplay of many factors including action by people, natural inertia in physical system, tipping points, and feedback loops. Even if we stop emitting greenhouse gases immediately, the gases already in the atmosphere will take years to have their full effect. We cannot halt the changes that are already in motion and will cause numerous subsequent impacts (e.g. melting of ice caps, which will cause higher sea levels, causing tidal flooding etc).

It makes more sense to think of climate change as a risk to manage, not a single event to halt.

We have the technical tools to help us significantly reduce some emissions. Much more work is needed to understand the best way to reduce others. The more difficult challenge, as with many issues, is not technology but people, and changing people’s mindset. Finding the collective personal and political will is arguably a much more difficult and challenging issue we need to resolve.

## More information

- Why protesters should be wary of ‘12 years to climate breakdown’ rhetoric: [theconversation.com/why-protesters-should-be-wary-of-12-years-to-climate-breakdown-rhetoric-115489](http://theconversation.com/why-protesters-should-be-wary-of-12-years-to-climate-breakdown-rhetoric-115489)
- Foreword of the IPCC report: [www.ipcc.ch/sr15/about/foreword/](http://www.ipcc.ch/sr15/about/foreword/)



## 9. Is it true that if everyone became vegan, we could slow down/stop climate change?

Changing to a vegan diet yields many health and environmental benefits, and would significantly reduce emissions that arise from agriculture.

Substitutes to meat, based on soya or gluten, have been used in China for thousands of years, and due to its Buddhist tradition, most probably everyone in the very famous Shaolin Temple (known for Kungfu) are probably vegan or at least vegetarian. But in other regions, like in the Americas, many traditional food does not even depend on meat at all, since cows or sheep have only been around for a couple of centuries.

However, it may not be possible or appropriate for everyone to change their diet. (See answers to question 3). Is it globally feasible, and fair?

In poor or isolated communities, a strict vegan diet may not actually be possible if there are insufficient raw plant-based resources available; in other situations, people may not have the time to prepare vegan food, nor the resources to buy ready-made vegan food.

Not everyone consumes meat at the same rate across the world: The average annual consumption in the US and Australia (about 100kg of meat) dwarfs that of an average Ethiopian (7kg). If we accept that excessive consumption by western countries drives unsustainable farming practices elsewhere would it be fair to suggest every nation should go vegan in order to compensate for the excesses of the West?

### More information

- Fig 1 of this academic study on the environmental impacts of different foods shows how getting the same amount of protein in your diet from beef or lamb emits much more greenhouse gasses and requires much more land than all other sources: [science.sciencemag.org/content/363/6429/eaaw9908](https://science.sciencemag.org/content/363/6429/eaaw9908)
- The Origins of Fake Meat Are Rooted in Chinese Cooking: [www.vice.com/en\\_asia/article/8xyqqz/origin-of-fake-meat-chinese-cuisine](https://www.vice.com/en_asia/article/8xyqqz/origin-of-fake-meat-chinese-cuisine)
- The Game Changers: a thought provoking film about the health and environmental benefits of a vegan diets that challenges the received wisdom about nutrition, athleticism, and dissects marketing pressure: [gamechangersmovie.com](https://gamechangersmovie.com)
- This study suggest that eating a vegan diet could be the “single biggest way” to reduce your environmental impact: [science.sciencemag.org/content/360/6392/987](https://science.sciencemag.org/content/360/6392/987)
- Is universal veganism the answer? [www.oxfordclimatesociety.com/blog/is-universal-veganism-the-answer](https://www.oxfordclimatesociety.com/blog/is-universal-veganism-the-answer)
- Protein can be ‘made from air’: [www.livescience.com/air-protein-meat.html](https://www.livescience.com/air-protein-meat.html)



## 10. To what extent are there generational differences in attitudes towards climate change?

There are some generational differences but seemingly not as much as other issues such as Brexit. Many young people are concerned, but so are a lot of older people, especially if they have children or grandchildren.

Many older people have been pushing this issue for a very long time, certainly for the last 30 years. For example, public pressure precipitated the Earth Summit in Rio de Janeiro from in 1992. It was at this event that the international environmental treaty, the United Nations Framework Convention on Climate Change (UNFCCC), was adopted and signed. This was one of the first frameworks for international cooperation to combat climate change.



## 11. Is cutting back on single use plastic actually making an impact?

Single-use plastic, and the need to better manage plastic waste has recently been talked about much more widely than ever before. Much of the new interest arises from people finding out about the consequences of plastic, and plastic waste and wanting to cut back on single use items.

To match the public's interest in this issues, researchers and manufacturers are developing bioplastics or similar products that can be used to replace oil-derived plastics in the different sectors in which they are used: from food preparation to manufacturing.

What we do with our plastic waste needs to be resolved quickly, as does recycling and finding uses for recycled plastic.



## 12. What is the best way to inspire system change without going to the same extremes as extinction rebellion. Is it the right cause of action to take?

History tends to show that there are times when some kind of dramatic protest is necessary and effective – like the suffragettes for example. But these types of protests also carry a danger of alienating people against the issue.

Acting on climate change can take many different forms. A key action that people can take is to write, meet and talk to their elected representatives, both local councillors, and nationally i.e. MPs, to ensure they know your views and

act accordingly. Request businesses and organisations to take the changes they can.

You can get involved with other like-minded people and work together to making positive change happen locally: from joining local wildlife groups to manage and create new habitats, to partaking in citizen science projects.



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### 13. Would it be possible to help LICs and NEEs to develop in a sustainable way which will mean they start out using clean and sustainable energy sources?

LICS are Low Income Countries; NEES are Newly Emerging Economies.

**Yes.**

This should be a major priority. Some of them are located in tropical countries that have a natural abundance of renewable solar power: one of the least cost and most effective renewable sources when the conditions are right.

For example, carbon emissions and deforestation could be substantially reduced if many poor people were helped to move away from firewood and charcoal for cooking. Such assistance could include financial support to install solar power schemes and batteries, with local training to generate new jobs and businesses.

Providing international support for such opportunities, and to leapfrog fossil-based energy technologies, is absolutely the right thing to do.

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### 14. Other resources

The work of the Programme on Integrating Renewable Energy: [www.renewableenergy.ox.ac.uk](http://www.renewableenergy.ox.ac.uk)

- Video – Nick Eyre speaks to the Citizen Assembly: [www.youtube.com/watch?v=jJrQB3LFam0](https://www.youtube.com/watch?v=jJrQB3LFam0)
- How you can play your part: [en.reset.org/act/12-things-you-can-do-climate-change-0](http://en.reset.org/act/12-things-you-can-do-climate-change-0)
- Climate Q&A: [www.research.ox.ac.uk/Article/2019-09-20-climate-q-a](http://www.research.ox.ac.uk/Article/2019-09-20-climate-q-a)
- EduCCate GlobalTM is a joint initiative between the One UN Climate Change Learning Partnership (UN CC:Learn) and UK based Harwood Education. It aims to build climate change literacy across the world by empowering teachers and students to better understand the issues and to become part of the solution. [unccelearn.org/educate/](http://unccelearn.org/educate/)
- Maths for Planet Earth: GCSE and A level maths tests using data from environmental and climate change topics. The world needs brainy mathematicians to help tackle climate change! [www.mathsforplanetearth.org](http://www.mathsforplanetearth.org)
- Lesson plans and resources exploring the cause & effect of climate change, the controversy behind climate inaction, the emotions and effects of climate change on both human and non-human communities and inspiring empowered actions moving forward. [www.thoughtboxededucation.com/climatecurriculum](http://www.thoughtboxededucation.com/climatecurriculum)
- Lessons resources, similar to the above, from an American site: [sharemylesson.com/collections/climate-change-lesson-plans](http://sharemylesson.com/collections/climate-change-lesson-plans)
- Opportunities from the Leadership in Global Change group in Oxford (LIGC): [www.ligc.co.uk](http://www.ligc.co.uk)