

Slides from my Net Zero lecture

Please see below my lecture at All Souls College, Oxford, titled 'The Long Road to Net Zero':

Slide 1

Solutions to CO₂ output have to be multilateral not unilateral. With the exception of China, no country is big enough to make a difference to world output by its own actions without buy in from others.

Reducing CO₂ substantially will only be possible if people want the new green products and services. It cannot be delivered by bans, subsidies and taxes.

Current net zero policies rely heavily on making the use of fossil fuels dearer running the danger of increasing inequalities and allowing the rich to buy themselves pardons for continuing use of fossil fuels.

Slide 2

From UN Report October 2021:

Total estimated Green House Gas emissions	2025	54.7 Gt	58% above 1990 level
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2030	54.9Gt	58.7% above 1990 level	15.9% above 2010
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UN says GHG emissions need to be 43% lower than 2010 by 2030 to hit 1.5 degree C increase, or 25% lower to hit 2 degrees.

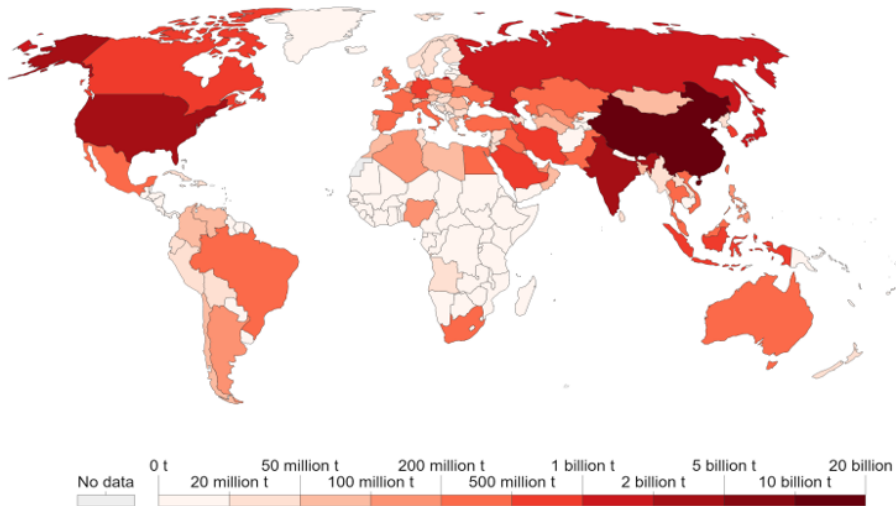
This decade will see a further increase in the amount of CO₂ generated by the world economy with an increase in the annual use of fossil fuels.

The main producers will be China, India and other emerging economies. The USA and the EU accounting for a quarter of current CO₂ will reduce their output a bit.

Slide 3- The Scale of the Problem

Annual CO₂ emissions, 2020

Carbon dioxide (CO₂) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.



Source: Global Carbon Project

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY

Slide 4 – The main sources of CO₂

China	30.65%	10,670,000m tonnes
USA	13.5%	4,700,000m tonnes
EU	9%	2,600,000m tonnes
Germany	2%	644m tonnes
Russia	4.5%	1,580,000m tonnes
UK	1%	329m tonnes

Slide 5

Sources of energy for China

Coal – 57%

Oil – 20%

Gas – 8%

Main fossil fuels total – 85%

Sources of energy for USA

Oil – 37%

Gas – 32%

Coal – 11%

Main fossil fuels total – 80%

Sources of energy for EU

Oil – 37%

Gas – 25%

Coal – 11%

Main fossil fuels total – 73%

Slide 6 – Gas – a transition fuel?

Natural gas versus coal

EU designation

Mixing hydrogen with natural gas

Blue and green hydrogen

Slide 7 – How do you power homes and factories when the wind does not blow or blows too hard?

The dangers of over reliance on wind energy – the UK has days when wind only supplies 2% electricity

Need for electricity storage

Pump storage systems

Green hydrogen as an energy store

Battery storage

Time shifting of power use

Slide 8 – Carbon accounting

Is it sensible to shift from a petrol to an electric car?

Total carbon generated by manufacture of new vehicle and destruction of old vehicle.

Over what time period do you amortise that excess carbon

What mileage would you need to do each year to make the vehicle switch worthwhile?

How do you guarantee that your battery is only recharged with renewable power?

Slide 9

Carbon accounting

Putting in a heat pump

CO₂ produced in manufacture of equipment and installation

Nature of the electricity to fuel the heat pump system

Need for heating and immersion heating back up to secure sufficient temperature to water and air ?

Slide 10

Carbon accounting for wind energy

The carbon dioxide produced during fabrication and installation of the turbines and towers

The carbon dioxide generated for replacement turbines and parts

The carbon dioxide generated for the stand by power capacity needed

The carbon dioxide produced when stand by generation is used during low or high wind periods

Slide 11 – What would make the green products fly off the shelves?

Cars – range, refuelling and recharging, cost, style

Heating systems – Average temperatures, cost, degree of intrusion

Diets – taste and appearance of alternatives to meat/ social acceptability

Slide 12

Technologies for the 2030s and 2040s

Green hydrogen for storage of renewable power

Green hydrogen to drive internal combustion engines

Nuclear power and small nuclear reactors

Nuclear fusion?

Large battery storage

More use of water power and pump storage

Hydrogen for home heating and industrial processes

The U.K. needs to look to its national security

NATO were right. The Intelligence reports, shared widely with the public, pointed to a major invasion of Ukraine. Putin assembled the majority of his country's substantial military forces around the borders of Ukraine for a purpose. We had to await the ending of the winter Olympics and the interviewing of a succession of western leaders, presumably to reassure him that NATO would not go to war. Only now has Putin decided to set some aims for his violent mission. He says he wants Ukraine to change its government to become a neutral state that would effectively be a puppet of Russia. If he does not get his way easily he may well turn to complete conquest to enforce his will.

Putin has revealed the strategic weakness of the European position. Short of energy, reliant on Russian gas, the Europeans gave the Minsk Agreement and a possible new settlement their best efforts. It was in vain. Putin did not want to see Ukraine remodel its constitution as a single state looking towards the West. He ripped up what remained of Minsk by recognising the rebel states as independent countries.

The UK is right to work with our US and European allies in NATO to do the best we can in a grave situation. What this must now do is make the UK take some hard and good decisions about our future national security. It should start with a National Security Council review of our energy supply with a view to re establishing self sufficiency as soon as possible. It needs to include a further military review to expand our forces. We could spend the extra tax we collect on producing more of our own oil and gas to pay for a larger military. It needs further work on our cyber defences, on protecting our networks for utilities and better defence of core technologies and industrial competences. We have been too free with our best ideas, and too careless about keeping domestic production and intellectual property in core areas like steel, special metals, ceramics, electronic chips and the rest.

My intervention to the Minister at the Opposition Day debate on Non-commissioned Exempt Accommodation

Rt Hon Sir John Redwood MP (Wokingham) (Con): Has the Minister made sure that all future contracts are properly set up and policed at the beginning, so that the Government know what they are buying?

Eddie Hughes (Parliamentary Under-Secretary of State, Department for Levelling Up, Housing, Communities and Local Government): My right hon. Friend makes an interesting point, but we leave those decisions to councils that are commissioning locally. I guess it is up to us to try to ensure appropriate standards against which such accommodation is measured and then to give them the necessary powers to enforce that. Personally, I think that councils already have a considerable number of powers. I am not disagreeing with Opposition Members about what powers are required; I am just saying that I would like to see the existing powers used to the absolute max before we necessarily go reaching for others. If people feel they do not have the necessary powers, I would consider it not inappropriate for the Government to legislate, but we need to consider that carefully.

We are committed to finding the right approach to this issue, and we invested £5 million in a number of pilots in recent months to support the worst-affected areas, including Birmingham, Blackburn with Darwen, Blackpool, Bristol and Hull. Through the injection of those funds, we have been working with local authorities to test approaches to improving the quality of this type of accommodation. We chose these specific areas partly because of the existing commitment to tackle these issues, and I pay tribute to the local authorities, which have worked collegiately and collaboratively with us during the pilots.

To take Bristol as an example, it has been conducting thorough assessments of new schemes and providers for some time. The council was able to use its funding to complete its work in summer last year. Meanwhile, Hull's supported accommodation review team was implemented in 2019, and the council has already shown a strong commitment to making the changes needed to solve the problems besetting exempt accommodation. Through the pilot, it was able to fund a large part of its programme and to take its approach to that programme one step further. As the House would expect, we know that the need stretches beyond these pilot areas and that local authorities in other parts of the country want to invest in tackling these problems, too.

[The long road to net zero](#)

Tomorrow I will give my lecture at All Souls College Oxford on net zero policies at 11 am.

If you would like to attend in person or by on line link please contact the College at <https://www.asc.ox.ac.uk/event/long-road-net-zero>

President Biden takes on President Putin

President Biden suffered a major reversal when he left Afghanistan with too much haste and secrecy, failing to inform or win over his allies to his chosen course of action. Afghanistan soon fell to the Taliban once US forces had gone, reversing the hard won gains of many years of strife and loss of life in a few days.

He has been more willing to consult NATO allies over Ukraine, and has warned Mr Putin of serious adverse consequences if he presses ahead with an invasion. The President and the US intelligence and military services have kept the whole world advised of Russian troop and weapon deployments near to Ukraine and have forecast early invasions. They seek to win the information war and to make it more difficult for Russia to seek to occupy Ukraine. President Biden did let slip the view that the retaliation would not be so tough were Mr Putin to make a limited incursion into Ukraine. Although his staff did their best to correct this and he himself changed his words, it looks as if Mr Putin decided the US President meant what he had let slip. So Russia has made a more limited incursion than a direct invasion with massed forces aiming at the capture of Kiev and the toppling of the Ukrainian government by force. The US has led a response based on targeted sanctions against individuals and certain banks, whilst stressing there would be much worse to come for Russia if she plans a bigger military attack.

The USA is still concerned about a further Russian attack using the large firepower Mr Putin has assembled. It is possible that Russia will foment the strife and tensions within the two provinces that she has now recognised as independent, seeking to drag Ukraine into a war in the east. It is also likely Russia will look at how to destabilise the government of Ukraine, adding political pressures to military challenges created in Donbas. What is clear is the Franco-German initiative to reach a diplomatic peace through creating two self governing provinces within Ukraine is now badly damaged by pre-emptive Russian action. What do you think the USA should do next?