Climate change in 2020

Opinion **Renewable energy**

The costs of tackling climate change keep on falling

Investments in a zero-carbon economy should boost economic growth

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The writer chairs the Energy Transitions Commission

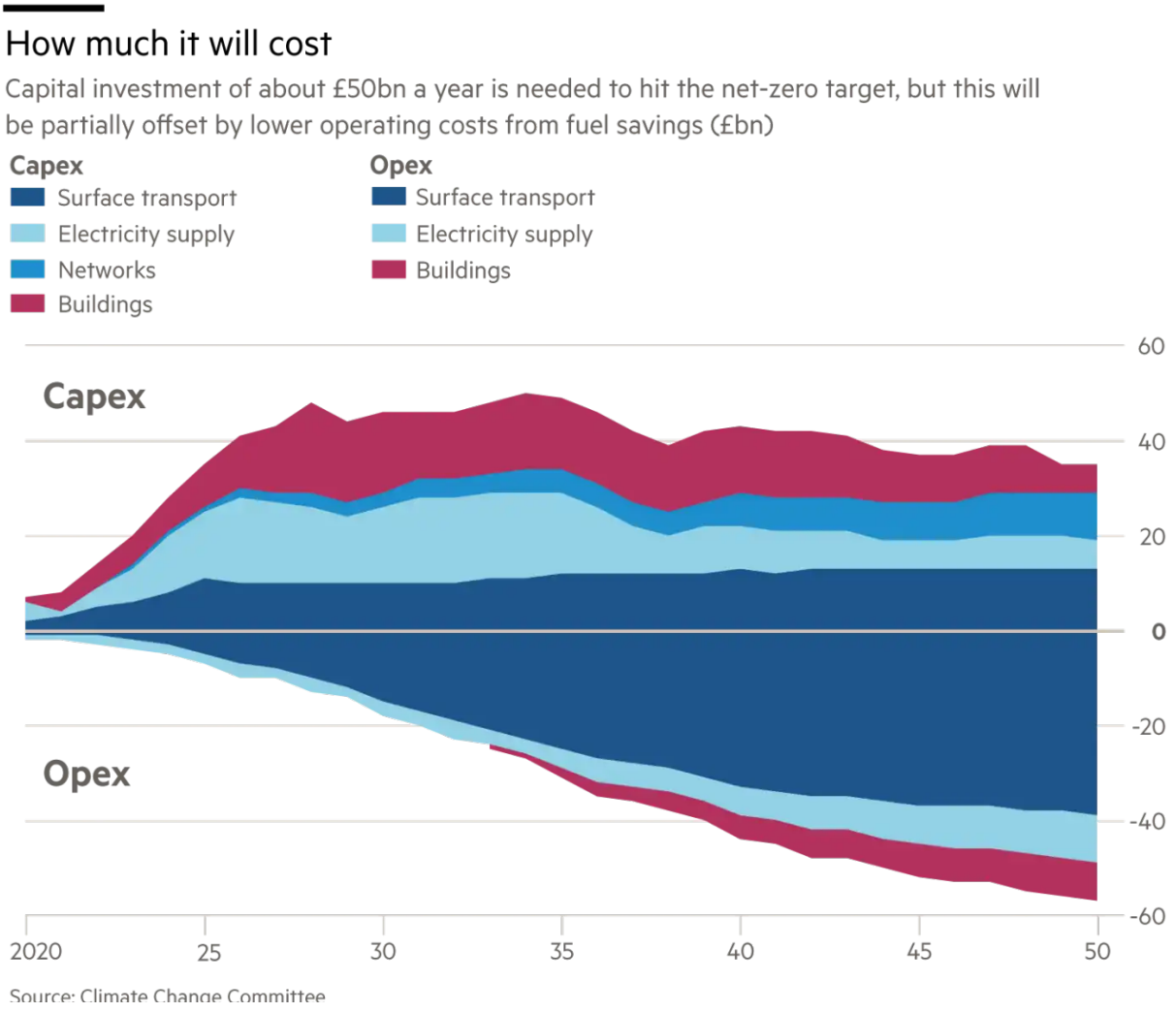
In 2008 the UK Climate Change Committee, which I then chaired, estimated that reducing Britain's greenhouse gas emissions by 80 per cent below 1990 levels by 2050 would cost 1-2 per cent of gross domestic product in that year. In its latest report, it reckons a 100 per cent cut will cost just 0.5 per cent of 2050's GDP.

Global cost estimates have also collapsed. In 2006, the Stern Review of the Economics of Climate Change foresaw a cost of 1 per cent of global GDP to reduce global fossil fuel-related emissions from 25 gigatonnes to 18 Gt by 2050, with zero emissions only achieved after 2075. A recent report from the Energy Transitions Commission suggests a cost below 1 per cent to achieve net-zero emissions globally by mid-century. This is a trivial sum to save the world from catastrophic climate change.

The estimates keep dropping because key technologies keep getting cheaper. Solar electricity costs have fallen 80 per cent in 10 years, and even more in favourable locations such as India and the Middle East. Wind costs are down around 60 per cent, and batteries are 85 per cent cheaper.

In road transport, electrification will make consumers across the world better off. In other sectors, such as steel, aviation and shipping, decarbonisation will increase costs but far less than once assumed. Ten years ago most studies did not even try to price a 100 per cent emissions reduction, since the "last 20 per cent" seemed prohibitively difficult. We now know that total decarbonisation is technically feasible at very low cost.

However, most published estimates still make conservative assumptions about future costs. Offshore wind costs have fallen 60 per cent in five years, but the CCC assumes only an 11 per cent fall over the next 30. I will bet that in 12 years' time the current CCC chair will need to explain why the committee's latest estimates are again too pessimistic.



Source: Climate Change Committee
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Summary “percentage of GDP” figures typically seek to capture in one number both initial capital investments and subsequent cost savings, using an assumed cost of capital to express the former on an annualised basis.

But the economics of transition are best understood by considering the two components separately. In the UK’s case, the CCC shows additional investments rising to reach about £50bn or 2 per cent of GDP by 2030, but subsequently declining and with cost savings exceeding new investments by the mid-2040s.

Britain, for instance, will invest in up to 125 gigawatts of wind, mainly offshore, by 2050, but once the green electricity system is built, running it will cost much less than today’s system. Households will invest in improved building insulation or heat pumps, but by 2050 will be paying smaller annual heating bills.

That pattern is reflected across the world. By the 2050s, the transition to a zero-carbon economy will have increased living standards in most countries, even before allowing for the benefits of avoided climate change and reduced local pollution. Over the long term, humanity does not face a trade-off but a clear win-win.

But we must invest to get there, and in absolute terms the amounts seem huge — about $1.5tn-$2tn a year globally on average over the next 30 years. But that will be only about 1.5 per cent of global GDP. It can be easily financed in a world of negative long-term real interest rates. Indeed, given those low rates and the need to drive recovery from the Covid-19 recession, additional investment to build a zero-carbon economy could boost economic growth. For the UK, the CCC suggests a possible 2 per cent GDP boost by 2030.

Higher investment will create jobs during the transition. In the long term, lower costs to consumers must reflect fewer people employed in specific sectors. Once in operation, solar and wind farms employ almost no one. If electric vehicles are easier and cheaper to make, that means fewer jobs in car plants. But building new power systems, improving building insulation and installing more energy-efficient equipment will create additional employment across the world for at least two decades.

Lower decarbonisation costs imply a reduced long-term need for carbon trading. Until recently, most companies in harder to abate sectors thought a large share of their emissions cuts would come from buying carbon credits from other sectors or countries, including “offsets” from reforestation or other nature-based solutions

But leading steel, shipping and cement companies are now making commitments to reach zero emissions by 2050 within their own operations, and the CCC sees the UK reaching net zero by 2050 almost entirely by domestic action.

In the shorter term, however, purchased offsets have a vital role to play. Limiting climate change requires not only net-zero emissions by 2050 but big reductions in the 2020s. In some sectors, these cannot be achieved by internal action alone. Purchased offsets could contribute to the big financial flows needed to limit and reverse ecosystem destruction before it is too late.

Since 2008, technological advance and collapsing costs have made it possible to reduce emissions far faster and at lower cost than we dared hope. We must seize this opportunity.