How to pay for energy

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In 1940, John Maynard Keynes wrote a series of articles collected together under the title of "How to pay for the war".[1] Whilst the energy crisis at the moment is not on that scale, net zero does require an economic transformation analogous to that from a peacetime to a wartime economy, howbeit over a longer timeframe. Both the immediate energy crisis and net zero require a fundamental rethink about how to pay for energy.

Keynes never contemplated printing money to deal with the aftermath of a huge negative shock, and we live in the shadow of quantitative easing (QE) and the great monetarisation of debt, which adds a new twist. To work out how to pay for the energy price shock, sight should not be lost of this wider context. If it was just a short-term energy price shock, it would be pretty straightforward to cope with the short-term consequences. But it isn't: it is a cost of living crisis, with multiple causes, including the QE and the inflation it has helped to ignite. It is caused by the supply change constraints created by the pandemic and the huge shift to globalisation and just-in-time deliveries; and it is caused by food and general commodity price inflation due to the lack of investment in oil, gas, nickel, lithium, copper and cobalt, amongst other things.

1. The causes of the energy price shock

In addition to the post-pandemic global supply constraints, British energy markets policy has deliberately contributed to the price shock. There are two obvious reasons. The first is the fast-track closure of coal. The benefits of this move are considerable, but they are not cost-free. The UK has not jumped from coal to renewables, but rather from coal to gas. It is desirable as part of the net zero ambitions, and it is much better than in Germany, where the jump has been a fast-track exit from nuclear to coal – a policy that it would be very hard to make up for a country determined to be green.

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[1] Keynes, J.M. (1940). *How to Pay for the War: A Radical Plan for the Chancellor of the Exchequer*, Macmillan and Co.

In the current crisis, others have an option to boost coal burning to hold down prices. Even in the UK, the government finds itself doing a U-turn and pleading with the three remaining coal power stations to keep going through the coming winter. This is the right thing to do now, but the UK should never have got itself in the position of not having enough gas to back up the renewables.

The second reason is the fast track to wind (and solar) without working out the consequences of the intermittency – and the low-density, disaggregated and peripheral characteristics of the offshore windfarms. This is not an argument against wind, or indeed against accelerating the offshore build, but it does have consequences, one of which is to render the gas power stations intermittent too, and to increase the system costs (and by a lot). This is why I called this the "first net zero energy prices crisis".[2]

It cannot be repeated too often that there are times when the wind does not blow, and, when it doesn't, something else has to fill the gap. In a decade or so there may be options other than gas. There may be hydrogen, batteries that can store weeks of power, and there may be lots more smart demand-side measures. But none of these is going to make much difference for at least a decade, and by 2035 when the UK electricity system is supposed to be net zero, there will still be a lot of gas, and that gas will need a lot of carbon capture and storage (CCS), currently notable by its absence.

The scale of the intermittency problem will get much worse before it gets better. Where once the system required around 70GW of capacity, it now needs over 100GW. Gas capacity will now be made intermittent too, and hence gas supplies will be more expensive since it will need gas suppliers to deliver whenever the wind does not blow, and as the wind has zero marginal costs, it destroys the revenue line for the gas power stations. The government, as a consequence of its wind policy, has to come up with a gas policy, and so far it has not. The Equivalent Firm Power (EFP) capacity auctions I set out in the *Cost of Energy Review* (2017)[3] would do this job, but of course this means that the wind generators would have to pay the costs of the intermittency they cause, and that

[2] Helm, D. (2022). "The first net zero energy crisis – someone has to pay", January 7th.

[3] Helm, D. (2017), "Cost of Energy Review", Independent Review for the Department of Business, Energy and Industrial Strategy, October.

would blow an enormous hole in their claims that they are already cheaper than fossil fuels (and hence presumably, if this were true, would not need the subsidies they are so keen on receiving).

2. It is not a temporary problem

All of this matters because it means that the current price shock is not temporary, even if the gas price falls back. We are not going to get out of gas anytime soon. Indeed with the extra demand for electricity for transport, the digital technologies and heating too, the problem will get a lot worse before it gets better. The cost of energy will keep going up, and the energy strategy and other net zero problems will contribute to this rise in costs. Whilst the public have been led to believe that net zero is a free lunch (or at least a manageable 1% of GDP or less), it is very much not so. Important and worth doing, but a much bigger cost of living rise than our leaders, and the campaigners against climate change generally, would like us to believe. They fear scaring the horses, but they cannot stop us being confronted with the cost.

The more permanent nature of the cost shocks is critical to the design of policy. So far the Secretary of State at BEIS, Kwasi Kwarteng, has consistently made the mistake of seeing the energy price crisis as a short-term problem, and in this the Treasury has followed suit. The Secretary of State responded to the early failure of suppliers by saying that around five or six suppliers go out of the markets every year. He apparently had no idea that 29 would, and that all the rest will be close to bust if action is not taken over the bills – the bad debts will just overwhelm them.

When it comes to trying to ameliorate the gas price rises (the key period for which was autumn 2021, *before* Putin's brutal actions), the belief in the temporary nature of the problem led to quick short-term fixes. The customers would get loans, which they would pay back over several years, presumably easier to do as and when the prices fell back, as BEIS and the Treasury must have assumed. They refused to socialise the legacy costs of the renewables – a recommendation of the *Cost of Energy Review* – and the addition of the Council Tax adjustment and the further Warm Homes Discount Scheme adjustments are all examples of moving the deckchairs on the Titanic.

The enthusiasm for windfall taxes plays into this short-term temporary analysis of the problems of energy prices. A bad idea in itself; none of the advocates of windfall taxes explains what happens if the problem is still here in a year or two years' time, or longer. There is a good case for revisiting the structure of North Sea energy taxation, and the terms of the new licences, but very few reasons for an opportunist profit grab (and no offers of windfall subsidies if oil and gas prices fall).

It is slowly dawning that the cost of living crisis is not going away, that inflation is going to push towards 10%, that interest rates are rising, and that of all the bills which citizens face, the energy bills are the ones that really stick out.

The important point here is not the prediction that gas prices are going to stay high. There is scant evidence that this is going to be the case after the coming winter. Energy forecasters and consultants who confidently predict high gas prices persisting to 2030 are on very shaky ground. The military and economic crises will probably pass, moving into new equilibria. The real threat is the sum of all the causes of energy prices adding up to increasing bills – or at least bills that are going to stay high. *Net zero and the related policies are what are going to push the prices ever higher.* Though there are always the optimists, it is probable that the costs of offshore wind developments are levelling out, and indeed they are currently rising quite strongly as all the costs of materials and their manufacture and transportation are rising. The costs of managing the increasing problem of intermittency are not going away – they will get worse before they might get better. Renewables will need subsidies for a long while yet.

3. Permanent solutions

What all this means is that a temporary fix is unlikely to work, and if sticky plaster is applied, it will come off. What is more, the clock is ticking: lots of people cannot pay their bills now, let alone those that are coming. Even if they want to pay, and even if they are threatened by the suppliers with legal action, bailiffs and enforced prepayment meters, they just will not pay. Faced with higher mortgage and rent costs, food costs and the general impacts of inflation, the household budgets will not be sufficient to cover basic needs for many households. The number of people in fuel poverty is already high. Those with pre-payment meters are going without.

The obvious conclusion from the observation that the bills are not sustainable is that they will not be sustained. The choice for the government is to get ahead of this crisis and put in place permanent solutions now, or wait and take lots and lots of *ad hoc* and panic-driven reactive steps.

It is a relatively new idea that the costs of energy should equal the price for all customers. Prior to privatisation, governments decided what people would pay and which groups of people would pay what amounts. They could do this because the electricity and gas industries were state-owned statutory monopolies. There was no switching, no sitting in front of computer screens trying to work out which offering was best and dealing with the sheer complexity and sometimes bad practices of the competing suppliers – many of which have now gone bust.

The way it worked in the "bad old" days of the Central Electricity Generating Board (CEGB) and of the Area Boards was that the CEGB set a Bulk Supply Tariff (BST) to the Area Boards. The BST had an energy price (then the system marginal cost, today the wholesale price) and a capacity charge. The Area Boards charged this on to citizens, with an energy charge and a standing charge, and could adjust this tariff to take account of location and customer types. They owned both distribution and supply, and those at the periphery were effectively cross-subsidised in versions of the postage stamp approach. No one could escape by switching.

The rationale was pretty clear, though long forgotten in the enthusiasms for privatisation, liberalisation and competition. When the Welfare State was set up after the Second World War, some of the things that citizens needed in order to participate in society and the economy were provided directly by the state and free at the point of use. The NHS and the schools (and indeed most of the universities) fell into this category. Then there were the subsidised citizens' needs, notably housing. Transport was cross-subsidised, energy was cross-subsidised, and local government provided water services (later regionalised). These together formed the great social primary goods.

As part of this broader implicit social contract, the energy industry worked on a *pay-as-you-go basis*: each generation paid for investment out of current income. Citizens had obligations to the next generation to leave them the infrastructures that they would need to be able to participate in their society and economy. Privatisation reversed this

and moved to *pay-as-you-go* – making sure that current voters in the 1980s and 1990s did not pay for current investment, and could kick the costs down the road.

4. The gradual end of the privatisation model

The privatisation model as originally set up was designed to take electricity and gas out of this social context, to treat it as just another commodity business, and to make prices equal costs for each and every customer, and for the customers to be able to switch suppliers. These suppliers in turn could pick and choose amongst the generators to get the lowest costs. The model was now very much all about *customers*, not citizens, and the language of economics and competition replaced the language of social inclusion and ability to pay. It also introduced the idea that everything would be in terms of short-term spot markets, with the gas long-term contracts deliberately broken up (one more reason why we are now so exposed to European spot markets now).

That model ran out of steam in the first decade of this century. Energy Market Reform (EMR) broke the artery of the competitive system, making the government not the consumers the central buyer. The state now buys almost all electricity generation. The coming of more and more zero marginal cost has undermined the wholesale price and hence the focus of switching, leading to less and less to switch from. Increasingly, switching from one supplier to another is really all about switching from one company collecting the costs of the contracts for differences (CfDs), distribution and transmission, and the social and legacy costs. Suppliers are increasingly bill collectors not genuine drivers of the generation market. That element of competition is dead, or if not soon will be. There is nothing much left to switch from.

The energy price shock of autumn 2021 has arguably finished the privatisation model off. It is no longer the case that cost equals price, and now the government has resumed the task it had under the CEGB of deciding how much the citizens will pay. The gap between cost and price falls to the Treasury, as it is gradually discovering, and more and more of the net zero costs are coming its way – for CCS, hydrogen and nuclear. The cost of new transmission systems, especially offshore, and the creation and development of local decentralised electricity networks are all monopoly costs (there are no competing longer-term suppliers for these), and again there is public choice as to who pays what.

Admit it or not, the electricity industry is returning towards a monopoly – monopoly of generation contracting (the electricity system operator, ESO), monopoly of transmission, monopoly of supply, plus in effect an oligopoly of similar suppliers passing on these costs. In the process, the energy system looks much more like the CEGB again (starting with EMR), and it is the state directing and, in the case of nuclear, investing in generation. The CEGB did not build power stations. It let contracts to do so – as the state does now via the auctions it backs. Ironically it is a decade of Conservative-led governments that have reintroduced much of the old CEGB monopoly (statutory) model.

5. Recognising the citizens' interests and the cost of net zero

Decarbonisation is a massive national project, on a scale not really seen since rearmament in the run-up to the Second World War. This time we are turning a carbon-intense economy into a low-carbon one; then it was a peacetime economy into a wartime one. It is huge national undertaking. The UK economy, like the rest of the world, is around 80%-dependent on fossil fuels, and decarbonising this in just 28 years is a massive undertaking.

No one would argue that, faced with a war, prices should equal costs. Keynes certainly did not. There would be burden sharing – between customer classes, and between taxpayers and consumers. All citizens would be carried along, and the ability to pay would be crucial to the degree of social and political coherence necessary to push this all through. (Keynes argued in his 1940 paper that universal benefits should be introduced, compulsory savings, and a capital levy on the rich, amongst other things.)

Arguably some of that is where we are now. Years of half-truths about the costs of net zero are being revealed for what they are. The far right is starting to have a field day. They can point to the costs and say that the UK citizens are being asked to pay the costs of mitigation and at the same time will face the costs of the climate change over which the UK has very little influence. They can point to the inconsistencies and inefficiencies of reducing carbon territorial emissions but not applying the same measures, costs and carbon prices to imports, and thereby undermining the UK economy and weakening or even perversely increasing climate change in the process.

This backlash is coming. Opinion polls may show that the public broadly wants to tackle climate change and cares a lot about it, but only when it will not cost them much. They have been repeatedly told that it will not, that renewables are already cost-competitive, and that fossil fuels are going to get ever more expensive. Indeed, the backlash is already surfacing, and cannot be disguised by blaming the energy costs all on Putin and the war in Ukraine. The Conservatives have their Net Zero Group, with Farage in the wings.

For those of us who do care about climate change, and recognise we have an historical responsibility for quite a lot of the carbon concentrated in the atmosphere, the risks of this backlash are all too apparent.

6. Getting on the front foot

So how to solve the energy price crisis? The answer is to reconstruct the tariffs and charges with an eye to the ability to pay, and to introduce a comprehensive social tariff. That tariff could have several formats. It could be directly related to income, building on the databases for income support and welfare payments. We know broadly who is poor and who is not.

This would address the citizens' entitlement to the basic social primary good – energy. But it would not address the rest of the distribution of citizens. Remember that net zero is a national project and, like the Second World War, we are in this together, whether we like it or not.

This requires the government to decide what prices should be charged. Fortunately this is aided by the fact identified above that the costs are increasingly fixed and sunk, and they are monopoly costs. Allocating out the capacity and use of system costs is a matter of choice. That is why a social tariff is now plausible. There can be no switching. We are contracted through the state and the regulatory regime to the monopoly costs, and they are most of the costs now.

Some of these fixed and sunk costs are best treated as national investments, and some of them should be passed to the taxpayers. These include the legacy costs. One of the most ludicrous features of the energy bills (the prices) that customers face is that whilst

the cost of renewables has been going down, the price of renewables has been inflated by the earlier legacy costs from the much more expensive early investments in renewables. It is like going online to buy a new mobile phone and being told that the price is made up of the sunk costs of making one of the first-generation Nokia models. As costs fall, prices fall in competitive markets.

Market reform is part of this reorientation of pricing. The wholesale market is less and less important (though balancing is more important), as more and more zero marginal costs generation comes onto the systems. The EFP auction approach set out in *the Cost of Energy Review* can replace the current emphasis on the wholesale market, which in turn means that customers will not be paying the marginal cost of gas on all the electricity they use, irrespective of whether it is zero marginal cost or not.

7. How to pay for energy

Energy has to be paid for. It is beholden on governments to sort out a sensible market structure to address this, and put some stakes in the ground. Gas should go into a strategic reserve, there should be gas storage, and there need to be long-term contracts. The current licensing rounds in the North Sea provide an opportunity to do some of this, as does reopening the Rough storage field. The government needs to decide about nuclear and to recognise that the cheapest way of raising the capital is the state. The wholesale market needs to be replaced by an EFP auction, leaving the intermittency generators to sign up balancing arrangements to get an equivalent firm rating.

These steps point towards some restatement of the BST – the capacity charges and the energy charges (they have in fact never gone away). There needs to be a comprehensive social tariff based upon an allocation of the total capacity and system costs between the three classes: those who should be eligible for the social tariff; the other customers; and the taxpayers. The taxpayers should absorb the legacy costs.

In this calculation, there is always a residual – that not paid for by social tariffs and other customers. That falls to the Treasury. Recognising this is a big step, and potentially opens up an intermediate liability to the Treasury. It is understandable why this should be resisted. The UK has not convincingly demonstrated an ability to properly control and limit public spending, and QE demonstrated a desire for easy – and

ultimately costly – short-term fixes. In the great UK growth period of 1945–70, when electricity demand rose at 7% per annum (and GDP at 3%) and the industry was rebuilt after the Second World War, the Treasury played a key role. The project ahead in the next 28 years is much bigger than that of 1945–70 and on around the same timeline.

The alternative is not attractive one. It is to cave into the political backlashes about the costs, and abandon or slow down the path to net zero. That is the default position if the government does not face up to the permanency of the net zero energy price crisis, and if it does not stop treating it as a temporary shock.

Like it or not, the government is being reminded that energy is a social primary good, and it is one of the keys to giving the citizens the capacity to participate in society and the economy. It is not just another commodity, as some of the enthusiasts for the UK privatisation model espoused. Citizens need more than health and education as a right. Net zero is a great national undertaking. It is an obligation of citizens, and we are all in this together. We should pay for energy accordingly.

Net Zero: How we stop causing climate change

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