Reflections on the UK's energy policy

By Marcus Coetzee, March 2026

Here are the concepts that have been floating around my mind over the past year. I'm not an engineer or energy analyst, or someone involved in the energy sector, but merely someone who tries to pay attention to what's happening around me. What follows is what seems fairly obvious and makes sense to me. I wrote this essay in the early mornings before work, and at Costa in the late afternoons, and in the evenings over a one-week period. I hoped to get the ideas out of my head and become more coherent in my thinking.

1. Who I am and why this matters

1.1. My background

I moved from South Africa to the UK in 2021, during lockdown. This gives me a fresh perspective relative to people who have lived in the UK their entire lives.

My background is in strategy and economic development consulting. I have also conducted some research work around community ownership of renewables and the recycling of windfarm turbines, and those conversations have helped inform my thinking.

I have always read a lot of science fiction books, which often explore interesting future scenarios and technologies, as well as methods of building settlements in adverse conditions.

1.2. Living through an energy catastrophe

I have lived through almost a decade of an overwhelmed energy grid. South Africans are accustomed to experiencing between 2-8 hours of daily electricity blackouts over several years, a phenomenon which the government deceptively labels as "loadshedding". In some rural areas it even reached 10-12 hours each day.

We had apps on our smartphones that became fairly good at telling us when our blackouts were scheduled, which enabled us to plan our travels, work, meetings and visits around these events. I also knew which cafes and offices were in which loadshedding zones, and which ones had petrol generators and gas stoves. Everyone had UPS devices for their computers, and all magnetic locks on properties were replaced with mechanical equivalents. Desktop PCs became almost extinct due to their power consumption and lack of built-in batteries.

This energy catastrophe resulted from poor energy policy and political ideology, combined with intense and widespread corruption and criminal syndicates in the energy value chain. Hence, I'm very attuned to energy policy. I want to live in a United Kingdom with stable and affordable energy.

1.3. My environmental values

I agree that global warming is occurring and will have widespread consequences for the environment and society. However, I disagree with any suggestion that carbon emissions are the sole indicator of concern. I prefer an ecological approach where all species and their interactions are valued, alongside influences like global warming, pollution and habitat erosion. I disagree with attempts to ringfence concern to a single continent, as the UK's net zero approach is inclined to do. Pollution, carbon emissions, fish and birds all operate outside national boundaries.

I also value the environment personally. I'm a member of our local RSPB birdwatching group and our local natural history society, and we have regular talks and go on fieldtrips together into nature. I've also done some occasional botanical recording and helped with bird surveys and a badger survey.

1.4. The taboo problem and the importance of open conversations

I have learned to censor myself significantly more in the UK than when I lived in South Africa and worked across East and Southern Africa. It feels like so much is taboo here. A taboo is a custom whereby people avoid discussing certain topics for social, cultural or religious reasons, and the UK has more of them than in other places I've stayed.

I experienced significantly more free speech in South Africa, possibly because most people there remember how the Apartheid government restricted it. I remember very clearly how the Apartheid government would arrest or threaten journalists, or send police to knock on people's doors, if they said the wrong thing or were associated with the 'wrong' people. I myself was cautioned a few times by public officials about being perceived as too friendly with non-white people, especially during compulsory military service and in conservative areas. I'm very proud of what South Africa has achieved in this regard, having learned its lesson.

In contrast, in the UK it seems more difficult for people to challenge and interrogate dogma, ideology, or poor policies without fear of negative consequences. This in turn restricts our ability to understand and respond to problems. Surprisingly, and unfortunately, I tend to have more open discussions in my gym in the evenings than during my workday.

Conversations about energy policy in the UK should be open and should welcome criticism and debate. That is the only way to achieve something robust.

2. What good energy policy should achieve

I believe a multi-dimensional appraisal of energy production and supply is required. I hope that policymakers are doing this properly, or we're all in big trouble. There is no time for dogma or ideology when developing an energy policy, because the results could be catastrophic for many years, potentially amounting to economic suicide with far-reaching social consequences.

I want to live in a thriving UK, hence the time taken to set out my thoughts and hopefully contribute to the broader conversation about the UK's energy policy. I

believe that a good energy policy should aim to achieve the criteria below. I accept there are complex trade-offs involved and systemic interactions between them.

- The energy grid can withstand economic, environmental and physical shocks and stresses.
- Energy prices are affordable and internationally competitive.
- Fuel poverty is an anomaly.
- Carbon emissions are assessed and mitigated across the entire value chain and globally, with equal weightings.
- A broad set of environmental impacts is assessed and mitigated across the entire value chain and globally, with equal weightings.
- Energy production has dense local supply chains and provides employment and tax revenue.
- Energy availability and prices support economic growth, i.e. growth of businesses, increased employment and tax revenue.
- Reasonable working conditions are maintained across the entire energy production value chain, with no child or slave labour being used.
- Energy supply can withstand global conflict, embargoes, sanctions, cyberattacks and terrorism, since critical supply chains are not exposed.
- Energy infrastructure can be decommissioned and recycled responsibly.
- Community ownership and local benefit are actively enabled.

3. The technical realities of the grid

These criteria are easy to list and hard to achieve simultaneously. The place to start is with the technical realities that any honest energy policy has to confront, because a great deal of public debate skips past them entirely.

3.1. The problem with instinct

Many people are fairly simplistic in their analysis of the different types of energy production and rely on instinct or gut reaction. For example, nuclear energy is instinctively considered morally bad because of nuclear bombs, Chornobyl and Fukushima. (By the way, there's a lovely walled garden in Barshaw Park in Paisley, which I regularly visit, containing a memorial to nuclear peace. It says "May Peace Prevail on Earth" in several languages.)

Conversely, wind and solar energy are instinctively considered good because wind blows and the sun shines naturally, without any negative byproducts apart from annoyance or sunburn. None of these instinctual evaluations considers the details of building, producing and transporting the energy source in question. It's like when people see bugs and spiders: many have an instinctual reaction to them, which learning more about them can help to overcome, and even lead people to appreciate these creatures.

3.2. When the wind doesn't blow

An obvious challenge for windfarms and solar farms is what happens when the wind doesn't blow and the sun doesn't shine. Battery storage can't yet power the grid over long periods (i.e. days), although grid-scale battery storage is rapidly improving and is useful for smoothing over interruptions.

The UK also isn't as large as Europe or South Africa, where weather patterns can be completely different in different parts of the country, and where there's a high probability that some renewable power medium will be operating at capacity somewhere in the broader geographical area.

Therefore, the UK must always have sufficient production capacity on hand, ready to ramp up at a moment's notice. This can create duplicate infrastructure, which is an expensive setup. Alternatively, the UK must buy electricity from a private energy producer at prevailing and expensive market prices, often importing energy from Europe using undersea cables and pipelines.

3.3. The physics of grid stability

In an illuminating interview I listened to last year, energy analyst Kathryn Porter explained the delicate technical balance required to maintain a stable power grid. Traditional power plants use large, spinning turbines that provide system inertia and act as a physical buffer, resisting sudden changes in frequency.

Renewable sources like solar, by contrast, produce Direct Current (DC) that must be converted to Alternating Current (AC) via inverters. Wind turbines produce high fluctuations in alternating current that must be converted into direct current and then back into alternating current again. These electronic inverters lack the natural "weight" or inertia of heavy machinery and are more likely to produce fluctuations in the grid.

This vulnerability was demonstrated in the Iberian Peninsula in April 2025, where a sudden voltage surge, originating near a solar farm according to early investigations, triggered a cascading failure because the grid lacked enough conventional spinning generation to absorb the shock. Within just 20 seconds, the entire Spanish and Portuguese systems tripped and disconnected from the European grid.

This collapse highlights that while renewables are essential, they currently rely on the stable foundation provided by traditional thermal or nuclear plants to maintain the fine tolerances required for a functional energy grid. Furthermore, alternating current transformers are best able to manage voltage in a way that enables electricity to be transported efficiently over long distances. While I'm not an engineer or electrician, it does seem that both renewables and non-renewables are necessary for a stable grid, with the foundation provided by nuclear energy or hydroelectric power, which can deliver a stable output regardless of the weather.

4. Environmental impact beyond carbon

One of the things that frustrates me most about energy debates in the UK is the narrowness of the environmental lens. Carbon emissions matter. But they are only

one of many indicators of ecological health, and treating them as the only one leads to some serious blind spots.

4.1. The full value chain

When evaluating means of energy production, both renewable and non-renewable, we must consider carbon emissions and other negative environmental, economic and social impacts across the entire value chain.

In other words, we need to look at the mining of metals for batteries (e.g. lithium), rare earth elements (e.g. neodymium) for magnets in turbines and electric vehicles, solar and electrical components (e.g. copper), fuel for nuclear fission (e.g. uranium), and other construction metals (e.g. iron). Even inputs like the mining of shale and limestone for cement must be considered. These mining operations all have negative social and environmental impacts that vary according to the countries where they take place. Cobalt mining in the Congo, for example, is especially notorious from the perspective of child labour.

These inputs must undergo primary processing to produce base materials, and then secondary processing to construct the items for power infrastructure and production. They must also be shipped and transported by road or rail. Next, we must consider any byproducts and pollutants caused during the power generation process itself, an area where renewables are clearly the best, followed by nuclear.

And finally, we must consider how the infrastructure and materials will be disposed of. There are over 11,000 wind turbines across the UK, and I haven't yet seen any good plans to recycle the estimated millions of tons of concrete and hundreds of thousands of tons of fibreglass once they are decommissioned at the end of their lifespan of typically 25 years. (I'm not worried about the metals, because there's existing demand and infrastructure to recycle them.) Analysis of the pros and cons of each energy source should consider environmental impacts (not just carbon emissions) across the entire value chain. Social, economic and geopolitical impacts must also be taken into account by policymakers.

4.2. The zero-emissions bus

I was driving behind a double-decker bus one Sunday morning with a big sign saying "zero emissions" on the back. I applaud the sentiment. However, I immediately find myself wondering where the battery came from, where the components were sourced, who developed it and how, which country was involved, and how it will be disposed of. I don't have the immediate answers, but I believe this is the direction we should all learn to think in when evaluating renewable and non-renewable energy sources.

I did some digging when I got home and discovered that approximately 75% of e-bus batteries are produced in China, with heavy metals being sourced throughout the world, including contentious countries like the Democratic Republic of Congo (DRC) and Russia. I've also subsequently learned that these batteries can thankfully be recycled and are even in demand by recyclers.

4.3. Corrupt ecologists and real ecological damage

Evaluations of environmental impact must be broader than simply carbon emissions. I recently attended an evening talk with an experienced and esteemed ecologist who consults for energy companies and local authorities, and often helps community groups with environmental activism.

I was astounded by her many examples of corrupt or negligent ecologists who were giving construction businesses and developers the environmental reports they wanted, rather than ones that were thorough or accurate. It's criminal how many rare and critical species were overlooked in the studies she cited. I hope these fake ecologists are blacklisted by national and local authorities and have any licences stripped away. She also explained how much mitigation is required to prevent environmental damage when doing any sort of construction.

I remember reading last year that Forestry and Land Scotland estimated that approximately 17,005,100 trees were cut down between 2000 and 2024 to make space for wind farms in Scotland. Although these figures are being contested, as they might include some normal forestry activity, I cringe when I think about how many other species were killed or lost their habitat, and how much CO2 absorption capacity was lost.

In another example, the BBC reported that SSE Renewables estimates that over 31,000 birds are expected to collide and die with its 307 large offshore turbines at Berwick Bank over their 35-year lifecycle. These turbines will stand 355 metres above sea level and occupy a collective space of roughly 1,000 km², about four times the area of Edinburgh. The RSPB Scotland and four other conservation charities strongly objected to the project. Consider how many birds will lose their mates, and how many chicks will never be born, across multiple generations.

I've chosen the example of windfarms to illustrate that energy production isn't as simple as sentiments like "the wind blows" and "it's natural" and "carbon emissions is all that matters." And remember my earlier point about the supply chain of impacts before any energy source starts producing energy, and the importance of responsible recycling or disposal at the end of its lifecycle.

4.4. The limits of Net Zero

I agree with the sentiment of Net Zero and the idea that we should reduce our net carbon pollution. This policy makes intuitive sense at face value, and it has a catchy title. However, in practice, I'm concerned with the unintended consequences and some of the workarounds that have emerged.

I disagree with the geographical nature of Net Zero as applied in the UK, i.e. that calculations should be based on net emissions produced in Britain and Northern Ireland. Pollution and climate change don't have geographical boundaries. Carbon calculations should instead consider global supply chains. This would prevent businesses from simply outsourcing operations to other countries to improve their Net Zero scores, countries that often have weaker environmental and labour standards. The unintended consequence of the current approach is a reduction of employment, tax revenue and self-sufficiency in the UK, as these benefits are shifted into other countries.

Furthermore, we must be mindful that carbon sequestration calculations (i.e. the offset of carbon emissions by protecting natural assets that absorb or trap carbon) should generate additional environmental benefits, rather than simply harnessing existing assets like parks and wetlands. For example, it shouldn't be possible for me to give some money to my local park for improvements and then purchase the carbon absorption of the grass and trees that already exist. That is simply an accountancy workaround.

I've also felt, ever since reading George Monbiot's article on this topic back in 2006, that carbon credits are a modern version of the indulgences the Catholic Church sold in the Middle Ages, since they allow companies to pollute more.

4.5. What policy can actually achieve

People seem to overlook the power of policy and standards to protect the environment and reduce pollution. Governments have other mechanisms available to them. Consider four of the biggest environmental gains I've seen over my lifetime: eliminating CFCs, leaded petrol and single-use plastic carrier bags, and getting rid of coal power stations.

We have also introduced standards for air, water and food quality, and for the protection of marine areas and wildlife like birds and badgers. We have an evolving policy in the form of Extended Producer Responsibility subsidies to fund the recycling of products as part of the circular economy. Even motor vehicles have emission standards, and Glasgow introduced a low-emissions zone in 2018, where only certain vehicles are permitted in the city centre.

Clear standards, developed in consultation with industry and matched with R&D and investment, can bring about positive systemic changes without weakening a country's economy.

One big challenge is monitoring and enforcing agreed standards. I believe fines and other penalties should be significantly greater and more onerous, resulting in serious negative consequences for companies that contravene them and for negligent directors. I'm tired of reading about companies that willingly damaged the environment and even tried to hide or cover up their activities, only to face insignificant consequences.

We need to recognise that the proper use of policy, technology and investment, combined with suitable penalties, has been a critical tool for environmental protection when used correctly, and can continue to be so.

5. Energy security, geopolitics and resilience

Energy is not just an economic or environmental question. It is a strategic one. And I think the UK has been dangerously slow to recognise this.

5.1. A lesson the UK has forgotten

Britain committed to developing and maintaining a level of military, agricultural, industrial and energy independence after World War 2, having discovered the consequences of being vulnerable to global unrest and invasion.

I grew up in South Africa with widespread embargoes and sanctions aimed at ending Apartheid, which gave me a similar appreciation of what economic independence requires: cultivating critical industries such as power production, developing local supply chains, building reserves and offering incentives and protections where appropriate.

However, it seems that the UK has forgotten this principle, increasingly finding it easier and cheaper to rely on imports. This makes sense when global conditions are optimal, but it is shortsighted when global turbulence and shortages emerge, as is currently happening with wars in Ukraine and in the Middle East.

Any historian will tell you that this is inevitable over the long term and that extended periods of peace are a historical anomaly. We will most likely see further conflicts in our lifetime that impact the Western World, possibly involving Greenland, the Arctic, Europe, Cuba and Taiwan. Sadly, it's impossible to develop critical industries and their supply chains overnight. This often takes a decade of focused investment, sometimes longer.

This principle applies directly to the UK's reliance on renewable energy, which is significantly dependent on China, and to our gas-powered turbines, which are dependent on gas and oil from Norway and the United States. The Russian invasion of Ukraine taught the world how straightforward it is to blow up undersea gas pipelines such as Nord Stream between Germany and Russia. Subsequent events have also shown how easy it is for ships to drag anchors and "accidentally" destroy undersea cables. I imagine offshore wind farms are easy pickings for airborne and underwater drones. And the conflict in the Middle East, currently surrounding Iran, has shown how ships can be blocked from travelling through the region.

Therefore, the UK's energy policy team should liaise with the Department of Defence to understand and mitigate the impacts of future probable conflicts. The potential for large-scale urban unrest with local terrorist action is also something to consider. Professor David Betz, a professor in modern war studies from King's College London, makes a convincing argument that conditions are optimal for civic conflict involving large-scale and persistent unrest and terrorist activity akin to the troubles in Northern Ireland. He has outlined how easy it is for terrorist groups to significantly disrupt and damage the UK's power infrastructure, which could set the country back by years. This risk also needs to be assessed and mitigated by energy policy.

5.2. The scramble for critical minerals

I also wonder about resource constraints for scaling electricity production. When I did my master's degree in socio-economic development back in 2007, and studied with an amazing professor, we learned about modernisation theory and resource constraints. The theory holds that there's an expectation that all developing countries will follow a similar growth path to developed countries, but we now know this is not realistically possible.

The growth of developed countries required the exploitation of less developed countries for resources, and developed countries all went through a messy era of industrialisation that would not be possible under today's environmental and labour standards. Furthermore, there are simply too few resources for everyone on earth to live the lives of wealthy people in developed countries.

I've recently been reading about how the availability of critical metals constrains future energy production and supply. My research for this essay shows that forecasts anticipate huge projected increases in demand for metals like copper, lithium, cobalt, nickel and graphite, all of which are essential for electric vehicles, batteries, energy grids, wind turbines and solar panels. Electric vehicles, for example, consume six times as many rare minerals as petrol vehicles do, which illustrates the scale of renewable energy's dependence on these materials.

Massive shortages and supply constraints are forecast. According to the International Energy Agency's critical minerals report in 2025, copper mining is forecast to produce only two-thirds of global demand by 2040, leading to serious shortages. Similar constraints apply to rare earth metals. China is responsible for over two-thirds of rare earth mining and mineral processing, which, combined with its investment in supplying the components for renewable energy production, gives it incredible geopolitical advantages and leverage. This is a long-term strategy it is no doubt deploying. Russia is also in a strong position from this perspective.

This is why I don't think it's far-fetched to imagine a future where hydrogen-fuelled electric vehicles replace EVs, since they use far fewer rare minerals, and where cities and towns use decentralised mini-nuclear power stations that require less cabling and can provide a consistent supply of electricity without traditional lithium batteries.

As shortages emerge for these rare metals, I also expect to see more criminal syndicates emerge. I've already observed this in South Africa, where more than 1,000 miles of copper cabling gets stolen each year, ripped up from underground, cut down from overhead cables and stolen from railway lines, all of which is expensive and time-consuming to replace and has serious knock-on effects.

5.3. Planning for exponential demand

I believe the UK should plan for an exponential or rapidly accelerating increase in energy demand, and I hope this scenario is taken seriously. By exponential, I mean we should aim to double energy production within the next decade.

Technologies like data centres, AI and crypto-mining require massive supplies of electricity. I've recently read how the big tech giants such as Microsoft, Google and Amazon are scrambling to secure sufficient power to run and cool their datacentres, and are quietly starting to fund nuclear power because renewables can't guarantee the consistent supply they need. If AI is still in its infancy and not yet fully integrated into our economy and lives the way the internet, Google and social media are, then significantly more power will be required. The same applies to electric vehicles, which currently account for under 5% of registered vehicles in the UK. What will happen to energy demand when significantly more people drive electric cars?

We have already seen the unexpected shocks produced by crypto-mining and how it significantly impacted the supply and price of graphics processing units. The same is now happening with RAM supply and costs, something which will impact many aspects of the economy. Fortunately, the supply of computer components will adjust within a few years, certainly much quicker than it will take to produce additional energy for the national grid. And even if supply is overestimated, this will help to reduce energy costs for everyone.

Unfortunately, from what I've seen, most official forecasts in the UK are not exponential enough. They are usually based on safe assumptions of moderate economic growth, energy efficiency improvements, and electrification of transport and heating. Even the most ambitious official scenarios, such as the "Electric Engagement' pathway in the National Grid's Future Energy Scenarios 2024", project demand doubling by 2050. That is over 25 years. My argument is that the pace of change driven by new technologies and bold reindustrialisation could compress that timeline dramatically, requiring a doubling within a decade rather than across a generation.

The danger of trend extrapolation is that it assumes the future resembles the past. Scenario planning, by contrast, envisions different futures. I believe we need to guard against normalcy bias and the planning fallacy, both common cognitive biases in strategic planning.

I worry about the UK finding itself in a situation similar to South Africa, where the ANC government inherited an effective energy grid in 1994 and then grossly underinvested in it, failing to anticipate the increased energy demand of a growing middle class combined with the technological and industrial demands of the modern era. President Zuma's lame excuse in 2015 was to say, "We don't feel guilty about the energy issue. It's not our problem of today, but a historic problem, one of apartheid [which ended 21 years previously], that we are resolving." The result has been a decade of scheduled blackouts. I've lived through it once in South Africa. I don't want to repeat the experience in the UK.

6. The economics of energy: prices, ownership and payment

The geopolitical risks feed directly into the economics. And the economics of UK energy, when you look at them honestly, are not a minor inconvenience. They are a serious structural problem.

6.1. Energy poverty in a wealthy country

People can die in the colder parts of the UK without suitable heating. Central heating can be an issue of life or death, a novel concept for me arriving from hot Africa. Some charities and local authorities have created "warm spaces" where people in poverty can spend part of their day. I've met many people on pensions and disability benefits who can only afford to heat their homes for a few hours each day.

This entire concept is absurd in a wealthy country like the UK. It is an attempt to mitigate a systemic failure that would easily have been predicted, and it represents a gross failure of energy policy. Furthermore, cold spaces tend to be damp, humid and smelly, and give rise to various moulds, which in turn present several health risks.

6.2. Why UK energy costs so much

UK energy costs seem unusually high relative to those in other countries. Energy costs, namely for gas, electricity and petrol, consume a significant proportion of our monthly expenses, and we live in a 75m² two-bedroom flat and share a 1.2-litre fuel-

efficient car. Expensive household energy costs intensify fuel poverty. They also put pressure on household budgets, reduce disposable income and undermine savings, none of which is good for the well-being of households or the economy.

Unfortunately, the UK's household electricity prices are among the highest in Europe. According to Statista data, UK households in the fourth quarter of 2025 paid approximately $0.40 per kWh for electricity, equal to Germany and significantly above France at $0.28, the United States at $0.18, Norway at $0.16 and China at $0.08. Even though electricity prices fluctuate considerably, it is clear that UK households pay more than double the American rate and two and a half times the Norwegian rate, while Chinese households pay one-fifth of the UK's. This represents a fundamental policy failure with serious consequences for household wellbeing and poverty levels.

The UK also has some of the highest industrial energy prices in the developed world. According to data published by the ONS, the UK's price per kWh is 25.85 pence, compared with France (17.84 pence), South Korea (9.82 pence), Norway (6.54 pence) and the United States (6.48 pence). The UK can't develop an industrial economy or modern sectors that consume high levels of electricity, such as AI and data centres, at these uncompetitive prices. This is one of the reasons so much of the economy has been outsourced, which has negatively impacted tax revenue, employment and relative self-sufficiency, with knock-on effects for money distributed to local authorities and charities.

My reading suggests several reasons why these costs are so high. First, there is an ageing transmission and distribution network, combined with high costs of connecting remote and decentralised power sources such as offshore windfarms to the grid. Second, the UK makes ordinary consumers like you and me pay for investment in renewables and subsidies to vulnerable households; this doesn't come out of the national budget as one might expect. Third, the UK imports most of its gas, on which it is heavily reliant for power generation (30-40% of overall production), rather than producing its own in places like the North Sea, and has relatively short-term supply agreements and decreased on-site reserves, which are vulnerable to international shocks.

Finally, like most deregulated electricity markets, the UK uses a system called 'marginal pricing' to determine the price of electricity based on the most expensive power station (typically a gas one) required to meet demand at any given point, a process that occurs every half an hour. One way to reduce this marginal price is to have large, inexpensive energy sources such as modern nuclear that are consistently able to meet a significant proportion of demand regardless of the weather. This pushes the more expensive gas producers off the back of the queue, and the marginal price falls.

6.3. How energy developers get paid

I've also been trying to understand how energy developers, especially renewable ones, get paid in the UK. A simplified value chain consists of generators who produce electricity, a wholesale market where electricity is traded, and suppliers such as ScottishPower and Octopus Energy who buy electricity from the wholesale market and sell it to consumers and most businesses. There is a high level of vertical

integration, so a company like SSE may develop wind farms, operate them through another entity, and sell electricity into the wholesale market and/or to an affiliated supply business that then sells to end customers.

Renewable energy developers and advanced nuclear projects can enter into Contracts for Difference (CfD). These are 15-year arrangements with a government-owned entity called the Low Carbon Contracts Company (LCCC). A CfD sets a fixed "strike price" for electricity over a contracted period. Generators sell electricity into the wholesale market as normal, but if the market price falls below the strike price, the LCCC pays the generator the difference. Conversely, if the market price rises above the strike price, the generator pays the difference back to the LCCC.

This mechanism makes the LCCC a financial middleman that stabilises the revenue earned by generators. The LCCC doesn't set wholesale prices, which are determined by normal supply and demand. If the electricity grid cannot absorb all the power generated, for example due to network constraints or oversupply, generators may be instructed to reduce output and are compensated for the resulting loss of revenue.

This seems straightforward and reasonable once I finally got my head around how the system works. I realised there are common misconceptions, such as "generators being paid to do nothing", of which I was also guilty. I understand the need and value of vertical integration, and I understand how a stable price for the generator enables more efficient planning and acts as an incentive for new nuclear and renewable energy projects.

However, there are two major problems I see with the system. First, some of the earlier CfD payments were for £120-£140 per MWh (the inflation-adjusted price) and some only expire in 2028. Given the current wholesale price being traded in early 2026 of £90-£100 per MWh, the LCCC is paying these projects a premium, in much the same way as any business would pay for a long-term supplier contract that was set at a higher price. This premium is ultimately passed on to you and me as the consumer, and this type of thing is to be expected from businesses. Second, and more importantly, is the marginal pricing mechanism I've mentioned earlier. If the bulk of complementary power to renewables were produced by nuclear, especially if we learn how to build Korean-style power stations as rapidly and cheaply as they do, subject to UK regulatory and planning processes, then the wholesale price would drop, making overall electricity much cheaper in the UK.

6.4. Community benefits: crumbs off the table

There is a policy mechanism for communities to benefit from commercial activity like airports, construction projects, wind and solar farms, and landfills. This is known as "community benefits". The idea is that communities get a slice of commercial activity, especially where a public asset such as air, landscape or amenity is impacted by it.

For example, the figure of £5,000 per installed megawatt (MW) per year is the recommended benchmark for windfarm developers in Scotland to pay to communities. This number was introduced in 2014 by the Scottish government. While this is an admirable sentiment, it has been significantly eroded by inflation and needs to be increased to approximately £7,200 per installed megawatt to retain its original real currency value. These funds are typically distributed by an intermediary

such as the local community development trust or by a specialised funder like Foundation Scotland. Some developers establish their own local charity.

What's interesting is that while community organisations truly value such funding, the social investors I've spoken with have described this amount as a pittance, using phrases like "crumbs off the table".

The Point and Sandwick Trust in the Hebrides commissioned a report in 2021 called "A comparison of the financial benefits arising from private and community-owned wind farms". This research found that community-owned wind farms generate around 34 times more community benefit per installed MW than the industry standard for privately owned farms, and that the best-performing example generated 60 times more. This puts things into stark perspective.

This is why I'm always pleased when a community invests in their own turbine, most recently a 2.5MW turbine in Kilbirnie near me. This community-owned company has said it will earn them significantly more than the standard community benefit.

I believe community groups should aim much higher and seek to invest in their own energy projects, which someday may include small nuclear plants. This is a key strategy for acquiring independence and not being beholden to centralised authorities.

I also believe that the government should be much more heavy-handed and mandate that all privately-owned energy plants in the UK must have 10% community ownership in order to receive an operating licence. South Africa adopted this type of approach with its mining and renewables industry, and there are still plenty of businesses wanting to get involved. I believe it would be the same in the UK, after an initial outcry and several court cases.

6.5. Watch out for centralisation of pots of money

There's inevitably going to be a scramble for lucrative pots of community benefit funding. I can easily see local authorities seeking to invest in wind farms, and the government someday suggesting that all community benefit money is pooled under government control for "optimal distribution".

This same pattern is evident in South Africa, with a decentralised pool of funding called "enterprise and supplier development", where businesses were required by law to spend a recommended 3% of net profit after tax. Now the South African government is trying to centralise that funding under its own control and make it part of the fiscus. I've seen the same tendency with mining benefits and even producer subsidies, such as those for tyres, as part of the circular economy.

Communities and charities in the UK need to be mindful of this tendency, especially when state budgets are tight and everyone is scrambling for resources and willing to use their power to secure them.

6.6. The case for state ownership

The state ownership of energy production has been on my mind for a while, especially after watching a travel documentary on Norway that touched on this. The

UK's electricity generation market has been privatised since the 1990s, with most power plants being owned and operated by private companies like Centrica/British Gas, EDF Energy, SSE and Scottish Power. The government does not directly own most generation capacity.

Margaret Thatcher's government presumably wanted to unbundle loss-making businesses from the government's balance sheet, and I understand the need for those types of decisions, having given similar advice myself. Subsequent UK governments have not thought otherwise.

The UK government established Great British Energy in 2025 as a state-owned company to invest in renewable energy projects. Parliament has pledged £8.3 billion of capital for the company over several years, but it has invested considerably less so far. Because the company is very new, it hasn't yet acquired a significant shareholding in energy projects overall.

In 2025, the UK government also confirmed a 44.9% equity stake in the Sizewell C nuclear plant, which is under development and should be operational by the late 2030s.

This means the UK government is primarily granting licences to private companies to supply electricity and then earning money from taxing them and charging them licence fees.

The obvious challenge is that large multinational electricity companies use corporate and financial structures to reduce the taxes they pay in the UK. This is rational and legal behaviour within the existing policy environment. Companies depreciate their assets, which reduces taxable profits. They also finance new energy projects through debt, often from parent or subsidiary companies based in other countries, and these finance charges reduce their taxable income. Finally, parent companies can charge for overheads and services provided from headquarters elsewhere. None of this is unusual, and it fits the pattern of multinational companies I've dealt with or advised in Africa. The big problem is that it gives the UK very little real control over something as important as energy supply and prices, beyond regulatory control.

In contrast, governments of countries like France, Norway, Iceland and China have invested heavily in their own energy infrastructure. Roughly 70% of the electricity in France is produced by a state-owned company that has invested heavily in nuclear power. Approximately 70% of Norway's power generation is publicly owned through Statkraft, one of Europe's largest renewable energy producers, and is invested in hydro projects. A similar proportion of Iceland's power is government-owned, centred around geothermal and hydroelectric power. Finally, over 90% of China's power production is in state hands, invested in coal, hydro, nuclear and renewables.

State ownership of energy infrastructure produces several tangible benefits, assuming the state is able to efficiently and responsibly manage the enterprises. If not, as is the case in South Africa, then privatisation is best. The benefits of state ownership include an ability to influence energy prices, greater energy security, the ability to cross-subsidise vulnerable households, and the retention of all profits for future investment and public good.

My sense is that the UK needs to put significantly more funds into Great British Energy and invest more aggressively in renewable and nuclear energy, using policy to insist on the state's right to own a set share. It must also be proactive in offering finance to communities aiming to buy into local renewable energy projects, and, as I suggested earlier, the government should mandate a specific proportion of shares that must be community-owned.

7. Nuclear: time for an honest conversation

I want to end with the subject that seems to generate the most instinctive resistance in UK public debate, and where I think the gap between received wisdom and practical reality is widest.

Nuclear is a contentious energy source. People associate it with Chornobyl, Fukushima, Hiroshima and Nagasaki, and of course with the nuclear arms race during the Cold War. I grew up approximately 40 miles from a 1,860 MW nuclear power station called Koeberg in Cape Town, which became operational in the mid-1980s. Most people don't know that South Africa developed six nuclear bombs in the 1970s and 1980s, which were later destroyed in the early 1990s. Hence, I'm mindful and curious about nuclear fission and fusion.

As mentioned earlier, I found a podcast interview with Kathryn Porter to be illuminating when she explained how slow and expensive it is to build nuclear reactors in the UK. My homework while writing this essay showed that South Korea can build a 1,400 MW reactor in 5-7 years for $3-5 billion, based on the APR-1400 reactors built in the United Arab Emirates using South Korean technology and support. In contrast, the UK is building a 1,650 MW reactor at Hinkley Point C for $20+ billion over a period of 10-15 years, though current estimates suggest this cost may reach $44-50 billion.

This suggests that South Korea is at least five times more efficient than the UK at building nuclear reactors, possibly even more. They also build a lot of the same model, meaning everyone from engineers to policymakers and bureaucrats knows what is required from a practical and policy perspective. In contrast, the UK government tends to be risk-averse, lacks the industrial capacity and is often hamstrung by regulatory complexity.

To put the energy output of nuclear into perspective: the 307 large 14-24 MW turbines at Berwick Bank will have a combined installed capacity of 4.1 GW, and assuming they operate at 50% capacity (a common benchmark) due to the wind not always blowing, this will result in an average energy output of around 2 GW. This is about a quarter more than the nuclear power stations mentioned above.

Neither wind farms nor nuclear power produce significant emissions, but nuclear power output is consistent and not dependent on wind strength. There is a trade-off between nuclear waste being regularly produced versus wind farms producing significant waste once they are decommissioned. The decommissioning of offshore wind farms is largely theoretical since no large-scale wind farms have yet been decommissioned.

In contrast, France generates between 65% and 70% of its electricity from nuclear power, much of which is state-owned, and has some of the cheapest, most stable

and lowest-carbon electricity in Europe. It has done so safely for decades. The UK abandoned a similar path and is now paying the price in expensive, unreliable energy.

8. Key insights

Having written this essay, I've had time to reflect. Here are the key insights that will remain with me.

8.1. Aim for nuclear and renewables, and let gas decline

The UK should aim for a mix of renewable energy and nuclear energy, and let attrition take care of gas power generation, possibly even closing the latter before their end of life. Currently, according to the International Energy Agency's data, the UK gets approximately 31% of its electricity from natural gas, 29% from wind, and 14% from nuclear sources.

Both renewable and nuclear power produce fewer emissions than gas-powered stations, and both are cheaper forms of electricity than gas, which is highly subject to international prices. I believe nuclear should make up 30-50% of the mix and create a stable foundation for the grid, since the wind doesn't always blow and the sun doesn't always shine.

Sufficient nuclear capacity should be locally available so that when the weather is sub-optimal for renewables and demand is high, there's still sufficient capacity in the grid. And remember, I am proposing we plan for exponential power demand in the future. Having sufficient capacity under these conditions will lower the energy price, given the marginal pricing system, and increase the energy independence of the UK.

8.2. Resilience must be built in, not bolted on

The resilience of UK energy infrastructure is likely to be stressed over the next decade from external sources. Possible threats include sanctions against China, undersea cables and pipelines being destroyed, trade routes being blocked for extended periods, drone attacks against outlying windfarms and other infrastructure, cyberattacks and terrorist activity.

We will need local supply chains wherever possible, even if this requires the use of tariffs and subsidies to achieve. I believe energy policy should align with defence policy and scenario planning. The world is not an inherently safe and peaceful space. We have seen a hint of what global instability can do to the UK economy with the conflicts in Ukraine and Iran, and it can easily get much worse. The UK shouldn't forget the lessons it learned after the Second World War, as that would be incredibly foolish.

8.3. Government and community ownership matter

The UK needs to invest significantly in government and community ownership of energy production. This would involve using government power to mandate such ownership, combined with expanded and aggressive finance through Great British Energy. Provided these entities can be run efficiently, which can happen if private

parties retain a significant minority shareholding, it will be a net benefit for the country: increased revenue, employment, price reduction, price stability, and an ability to more easily cross-subsidise vulnerable groups.

8.4. Current technologies are an intermediate phase

I also wonder if current EVs and renewable energy technologies are an intermediate phase in the UK's energy future, and will be replaced by better alternatives. I anticipate they will run into material shortages, such as constraints on the availability of critical metals, and that decommissioning windfarms will prove more challenging than expected. It's unlikely that these renewable technologies will be able to meet future energy demands, especially if we hope to rebuild a modern industrial economy in the UK.

Furthermore, expanded methods of carbon accounting that adopt a global and value chain perspective, which are beginning to become possible with AI support, will reveal the hidden environmental costs we are currently inclined to overlook. I expect other technologies, such as hydrogen fuel and nuclear, to gradually replace the current models.

8.5. China and Russia are better positioned than we acknowledge

China and Russia are extremely well-positioned for the future, much better than the UK currently. They have significant reserves of rare earth minerals, though Russia is still reliant on imports for some. China especially has the raw materials, both within the country and secured from places like the DRC in Africa. China is also investing significantly in solar and nuclear, and is becoming a global supplier of the key components for renewable energy, such as batteries and solar panels.

China is rapidly gaining leverage, though it may not yet be using this power, waiting rather for renewable energy strategies to become increasingly dependent on it as a supplier. The UK should be mindful of a future scenario where it cannot procure such supplies from China, either due to sanctions or blockades. I'm sure the military has already contemplated this possibility.

8.6. The UK must get much better at building nuclear

The UK must significantly improve its ability to construct nuclear power stations. There is a stark contrast in construction costs and timelines compared to countries like South Korea, China and France. The UK is currently building nuclear facilities at five times the cost (given the best-case scenario, which is starting to look unrealistic) and at a much slower pace than its international counterparts. This situation hampers the UK's efforts to meet its energy needs and reduce carbon emissions.

Dealing with nuclear waste is an ongoing challenge, though good progress is being made as reactor technology continues to improve and newer designs become better at utilising spent material. It is also worth keeping this in perspective: the volume of nuclear waste produced is small compared with the enormous quantities of concrete and fibreglass that decommissioned wind farms will eventually produce, the disposal of which remains largely unplanned.

Achieving this goal requires developing the political will, streamlining regulatory processes, and building the necessary skills and supply chains. I also expect much smaller and even portable nuclear plants to be developed over time, which could be deployed to rural and remote towns.

8.7. Think more broadly about environmental impact

The UK needs to think more broadly about environmental impact. While carbon emissions certainly matter, they are only one of many indicators of environmental health, and a poor proxy for the ecological condition of a forest or wetland. Environmental impact should be measured across the entire value chain with equal weightings and across the planet with equal weightings, considering both direct and indirect activity. While this is not currently easily possible for complex multinational value chains, it will be one of the great benefits of AI and blockchain technologies.

While I applaud the sentiment of Net Zero, I think it has unintended consequences, such as the outsourcing of economic activity to other countries, and possible workarounds in terms of what constitutes a carbon offset. I've often tried to explain to people that Net Zero isn't the only way of protecting the environment, and I'm met with dumbfounded looks, along with a feeling that I'm about to be categorised as a climate-denier and kept at a distance in future.

8.8. Policy, standards and investment remain underrated tools

Finally, I think we are inclined to overlook the value of policy, standards, research and development, and associated investment as methods of gaining more energy independence. I've touched on hydrogen fuel and nuclear, but there are many other related technologies, such as those dealing with carbon sequestration, engine efficiency or waste disposal, that are being developed and show real promise. Environmental standards must also be intensively monitored and enforced, with extremely strict penalties applied where necessary.

9. Conclusion

I've written this as an informed observer. I'm not a technical specialist, though my consulting background and my years living in South Africa have given me some perspectives that I rarely encounter in UK policy debates.

I will welcome any input, corrections, other ideas and conversations that might follow from this essay. I hope that UK policymakers are embracing a debate, free of dogma and ideology, that will build a secure, stable and affordable supply of electricity that is good for both the economy and the environment.