30 March 2024

At the Tropical Crossroads

A Case for an enhanced bilateral relationship between the UK and Indonesia

Abstract

- The Brexit vote was largely predicated on the re-establishment of national sovereignty. How much has Britain accomplished in the 3 years since leaving the EU? It may well be that we need to look further afield.
- The cornerstone of good strategy is a clear sense of priorities. It is important, therefore that Britain clearly distils its national interests, both domestic and foreign.
- It is transparent here that a major aspect of Britain's developmental and growth strategy is the electrification of the economy, and the R&D and industrialisation of green technology.
- One of the most important components of electrification involves the large-scale production of batteries, generally in *gigafactories*.
- There is some precedent for gigafactory creation in the UK, notably the ventures of Tata, Nissan, and the Bakrie Brothers-BritishVolt.
- A major bottleneck in the development of this battery production capacity is long-term, cheap, reliable sources of nickel.
- Indonesia is the 4th largest country in the world, growing quickly and exports most of the nickel in the world. It is also notably a country with which Britain does remarkably little trade, given the size of its market and the direction its heading in.
- The Indonesian government seems to want to encourage partnership and the development of local technology and industry, both for environmental and business reasons. Indonesia's domestic development strategy involves moving up the nickel supply value chain. Accordingly, they have instituted export bans on raw ore, and are currently under litigation with the EU over this at the WTO.
- Britain, therefore, is well placed to take advantage of the current situation to advance not only its interests in electrification, trade, development, and diplomacy, but also reassert itself globally. The recent JETCO demonstrates both countries willingness to take things forward. This is an effort that Pickthall House believes we should invest in and push forward.

On Taking Back Control

What does it mean to take back control?

"Take Back Control" became not only the rallying cry of the Brexit campaign but also a symbol of the desire for national sovereignty, autonomy in decision-making, and the freedom to navigate Britain's own path on the world stage, rather than ultimately succumb to the labyrinth of European bureaucracy.

In 2020, the UK formally exited the EU and ventured into the new world and the question of whether Britain has truly "taken back control" has become central not only to a historical evaluation of the outcomes of this monumental decision, but more importantly in helping Britain re-establish its priorities and guide decision-making as a nation going forward.

While the Brexit Vote is primarily interpretable as a *strong* public expression for decisiveness, agency and accountability when pursuing national objectives, the tumult and turmoil of recent domestic politics has rendered the country feeling stultified, impotent and reeling with the fallout. An example of where efforts have backfired include immigration; despite immigration control being a popularly cited reason for the Brexit vote, net migration has only increased in the years since.

Public morale is low, encapsulated in Media reports noting Theresa May's "Strong and Stable" becoming "Weak and Wobbly" or the Economist comparing Liz Truss' tenure with the shelf-life of a head of lettuce, or the investigations into the cabinet reshuffles and policy flip-flops by Boris Johnson's government in the COVID years.

Further, the EU, keen not to elicit further secession, will continue to seek ways to punish Britain, and will do us no favours, acting of-course, rationally in their own interest.

The question now, then, is less whether or not it was wise to leave the EU, but rather, to remember that Britain *did* democratically decide to leave the EU on the basis of exercising agency, and given that it has left, it would be at once rational, moral but also politically expedient [it's rare that political options are all these at once] to do just that i.e. exercise agency to forge a new industrial, immigration, and also ultimately foreign policy.

On National Goals

What are Britain's national interests and goals?

But before further policy impetuousness, we believe Britain should stop and ask itself the question of where it is in fact that it wants to go?

After all, strategy ought to be a function of our objectives, rather than the other way around.

What does it mean here to *exercise agency*? To "take back control"? It means to think, and ultimately *act*, freely and in our own interests.

In order to do that then, we need to rationally assess precisely what Britain's interests are, establish a set of priorities [which will help it make tradeoffs], and then explore the set of choices before making decisions and then implementing them.

We can attempt to infer Britain's national priorities by looking at the intersection of interests in the Conservative and Labour party manifestoes.

For the *Labour Party Manifesto*, we have:

1. Planning Reform to incentivise the building of "housing, gigafactories, windfarms, labs, roads, ports"
2. Great British Energy, a publicly owned clean energy company to create jobs in the UK and "not depend on tyrants like Putin"
3. Cutting down NHS waiting lists by securing overtime payment funding for staff by revoking non-dom tax breaks
4. Town centre police patrols to tackle street crime, paid for by cutting back on contractors and consultants
5. Free school breakfast clubs, and high-quality maths and science teaching

For the *Conservative Party Manifesto* [2019], we have:

1. Increase funding for the NHS
2. Increase the police force by 20000
3. An Australian-syle points-based immigration system
4. Increased investment in science, education, apprenticeships
5. Net Zero Carbon Emissions by 2050 with investment in clean energy solutions
6. Not raising National Insurance, VAT or Income Tax rates

We can say, then, that Britain's national goals across the board definitely include:

1. tackling crime
2. improving healthcare efficiency
3. border control
4. higher quality education
5. massive expansion in green energy provision

On Greenification

Clean Energy Security and Provision is fundamental to national priorities and strategy going forward.

Of these 5 points, the first 4 are largely domestic issues with well-defined policy options that have been considered for most of the history of modern governance. We choose to look her at the 5th, an important, but largely recent phenomenon, one that needs to be tackled in a complex, multifaceted way at an institutional [i.e. need dedicated public departments, private companies, research organisations etc] level. Importantly, policy efforts should also play to Britain's *strengths* as a nation, so that they have the greatest likelihood of tractability.

A McKinsey report on business opportunities in the transition does just this, and outlines 3 avenues:

1. Reducing costs by reducing the country's own emissions
2. Supplying the "Green Capex Revolution"
3. Enabling emission reduction elsewhere in the supply chain [eg suppliers or clients]

Looking at the distribution of emissions by industry from the Transport Department 2023 Statistics, we see that:

1. UK Transport directly accounts for 26% of emissions, but is also a major source of emissions for every other industry
2. UK Power Generation accounts for an additional 20%, mostly due to power generation via natural gas and coal

In particular, from the above McKinsey report, "there are some sectors where the UK punches above its weight. It is well known that the UK has a comparative advantage in exports of financial services, professional, scientific and technical services, information and communication services, pharmaceuticals, and aerospace equipment. It turns out that many of these sectors are also prime providers of inputs into capital projects, such as building offshore windfarms, reinforcing grid infrastructure, designing more carbon-efficient buildings, or greening transport systems."

From Powering Up Britain, the parliamentary policy paper, these are some of the angles to pursue in the Energy Transition:

1. Offshore Wind
2. Nuclear Power
3. Carbon Capture and Storage
4. Hydrogen electrolysis and storage
5. EV and Battery technology

[Alongside this, Britain is also over-represented [and should continue to expand here] in Green Financing and fundamental research and development.]

Britain is well-poised to pursue many of these, but one that is immediately commercially viable, well-understood [indeed the only one of these that is] and critical to deploy at scale is Battery technology and production [both for EVs and Power Grid balancing], and we will now focus on this.

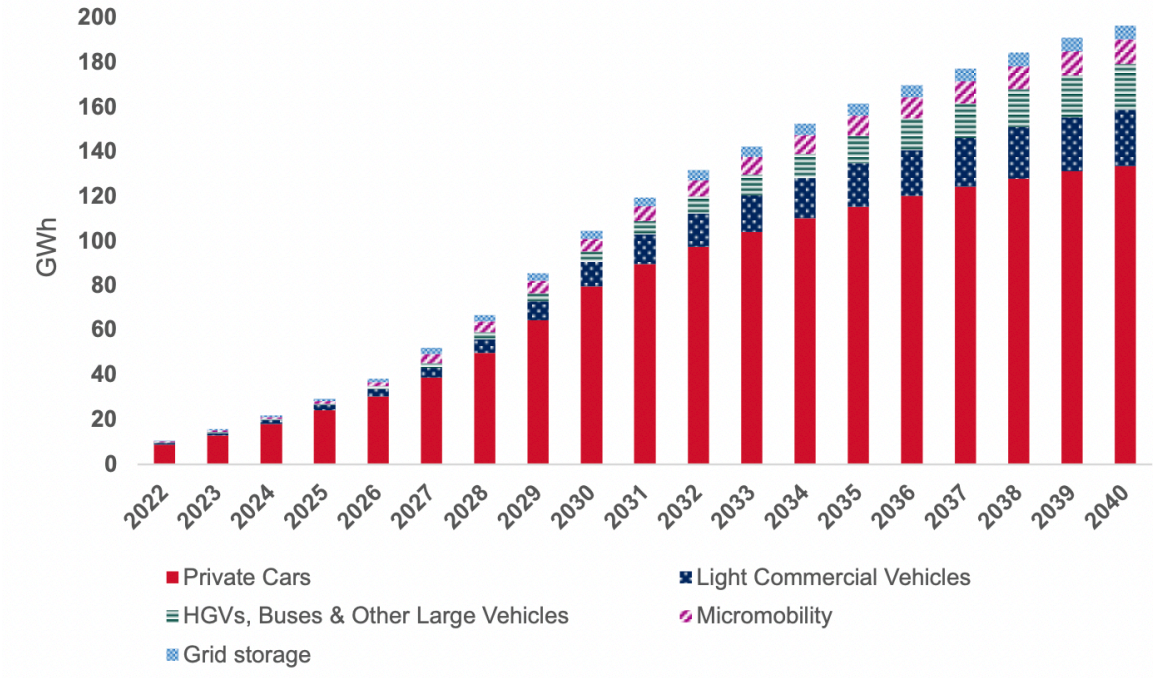
On Battery Storage

Batteries are among the cornerstone technologies of the greenification effort.

The large-scale commercial batteries relevant to the Energy Transition have two primary use-cases:

1. Electric Vehicles [the case here is obvious]
2. Grid-Scale Battery Energy Storage Systems [BESS] Renewable energy [Wind + Solar] are both seasonal, and vary in output even throughout the day. Importantly, the strength of this output does not generally match the demand profile. [Eg we have no solar generation in the evenings, but this is where consumer power demand is highest.] Battery Storage helps to increase the utilisation rates of renewable energy producers, and ensure that they meet a larger proportion of power demand. i.e. it is not enough to just build wind-farms, we also need to ensure that supply meets demand at all times, i.e. that the power market is balanced. This grid-balancing argument is particularly important when aiming for energy security and independence and a reduced reliance on energy imports from eg Russia or the Middle East.

Figure 2: future UK demand for GWh by end use



What is the size of this market?

From the UK Battery Taskforce paper outlining their policy objectives and strategy: "The global transition to EVs means that lithium-ion batteries are expected to dominate the rechargeable battery market for the next decade. About 70% of global lithium-ion battery demand in 2030 will be from passenger EVs, with the remainder from electric buses, consumer electronics, grid stationary storage, and commercial EVs. The value of lithium-ion batteries from mining through to recycling, could see global demand grow by over 30% every year, to reach a value of more than $400 billion and a market size of 4.7TWh by 2030."

So, where are we now, regarding batteries?

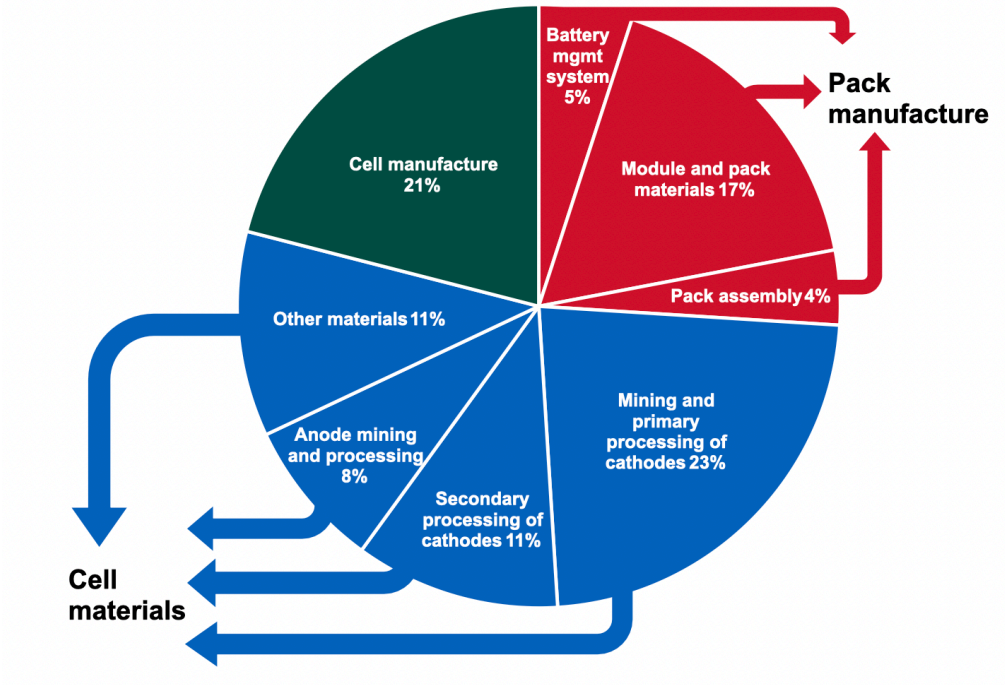
Importantly, there's a set of 15 commitments that the UK's Battery Strategy outlines for how the government seeks to achieve this vision. These broadly encompass:

1. targeted support for the EV industry production [amounting to GBP 2 billion]
2. support for further research either from academia, industry incumbents or startups
3. expand market access for the trade of critical minerals and the negotiation of trade agreements
4. explore options for international collaboration both on supply chain standards, technology and FDI both to and from the UK
5. explore options for recycling

Further, the taskforce asserts [and we agree] that the UK is uniquely positioned to take advantage of the global demand growth in batteries because we play an outsized role in global R&D, we have the fourth largest battery startup ecosystem worldwide, and the second largest car manufacturing industry in Europe, employing 170k people. Two examples of major commercial developments in this space are: the Tata Group's £4 billion new gigafactory, and the JV by Nissan and AESC to create an electric vehicle manufacturing hub in Sunderland.

How are these batteries produced?

Figure 5: approximate value of lithium-ion battery pack components



This is the approximate cost-breakdown of lithium batteries:

The primary raw materials required are:

1. Lithium
2. Nickel
3. Cobalt
4. Graphite

Indeed, from the Battery Strategy paper: "…supply chains are not only strained by rapidly increasing demand, but also take time and investment to build, as do the associated skills and know-how. Moreover, these supply chains are complex and opaque, often concentrated in specific countries. Markets are volatile, distorted, and fraught with environmental, social and governance issues. We cannot rely on mineral supply chains vulnerable to market shocks, geopolitical events, and logistical disruptions, at a time when global demand is rising faster than ever."

Further, "Starting from 2022, China emerged as the main source of batteries, with imports to the UK increasing nearly tenfold. The UK's use of Chinese-built batteries may pose a problem if UK automakers fail to meet the Rules of Origin (RoO) thresholds required to export electric vehicles into the EU under the tariff-free regime. Given that batteries account

for approximately 40% of the car's cost, the utilisation of materials from Chile and batteries from China may hinder key automakers from meeting RoO requirements."

The facts are that:

1. battery infrastructure is about half the cost of EV production
2. the predominant cost to battery manufacture is cell inputs [i.e. raw materials and the concordant cathodes]
3. there appears to be serious supply chain risk
4. most importantly that demand [both domestic and international] is expected to escalate dramatically in the coming decades implies that we should be both prudent, but also enterprising while securing critical mineral supplies and exploring new business and trade opportunities.

On Nickel

Nickel is critical to efficient battery production, and Britain will need to secure supply given its current relationship with Russia.

Here is an overview of the expected demand for the various raw materials:

Figure 9: estimated annual UK demand for critical minerals in 2030, kilotonnes (kt)

Scenario	Assumed Production (GWh)	Lithium (kt)	Nickel (kt)	Cobalt (kt)	Manganese (kt)	Graphite (kt)
UK-NMC	135	14.9	90.4	11.2	10.2	135.0
UK-NMC/LFP	135	14.2	49.6	5.9	5.3	135.0
APC-NMC-811	96	10.7	72.0	9.1	8.5	96.0

Source: UK Critical Minerals Intelligence Centre. 'Study on Future UK Demand and Supply of Lithium, Nickel, Cobalt, Manganese and Graphite for Electric Vehicle Batteries'. British Geological Survey. 2023.

Nickel, in particular, is important among the metals. It is used in the production of Cathodes for the batteries, increasing their energy-density, and therefore allows for higher quality, high-range, light-weight batteries.

Additionally, from the UK's Critical Minerals Strategy [2022] and its update: "Nickel, for example, is traded in large global markets and has a diverse range of applications, giving supply chains a degree of resilience. However, Russia is a major supplier, and Russia's invasion of Ukraine caused significant disruption to nickel markets. Class 1 (high purity) nickel is an important metal for electric vehicle batteries, and as Russia continues its aggression in Ukraine, the criticality of nickel may rise over the coming year, hence its inclusion in the watchlist."

Further: "The Faraday Institution estimates that over the next decade (2020-2030) there is likely to be a transition to low cobalt/high nickel content cathode materials due to the demand for increased energy density and the ethical considerations associated with mining of cobalt. UK CMIC [Critical Minerals Intelligence Centre] UK-NMC-811 scenario provides estimates of relatively high uptake of Lithium nickel manganese cobalt oxide (NMC811)-high nickel batteries. NMC811 is considered one of the most promising future cathode materials for lithium-ion batteries in electric vehicles due to its high specific energy density, favourable rate capability and relatively low-cost production. Moreover, if alternative battery technologies do reach commercial maturity, there could be a significant impact on mineral demand."

More generally, Nickel is used predominantly for the production of stainless-steel and is mostly consumed in China. The share of Nickel demand from Battery production grew from 5% in 2015 to 15% in 2022, and again is only expected to rise massively, and is a pillar of the current electrification strategy. In fact, Tesla opened a gigafactory in China, citing primarily the need for cheap, reliable supplies of Nickel and Lithium at scale.

On Indonesia and Opportunity

Indonesia is the 4th largest country in the world, remarkably under-valued in Britain and is also by far the largest supplier of Nickel globally. This is an opportunity.

Putting all of the above together, we conclude two things: more generally, that it is in Britain's interest to look further afield when courting trade and diplomatic relationships, and specifically, that Britain needs to secure critical mineral resources if it wants to have any hope of furthering its ambitions in energy provision.

Here we suggest Indonesia as a very attractive prospect with whom to potentially engage in trade with. Why?

1. Demographics and Macroeconomics Indonesia is the 4th largest [by population] country in the world. It is a rapidly developing economy and is projected to be the 4th largest economy in the world by 2045-2050. It has a young workforce (with a median age of 29 years compared to India's 32 or the UK's 40). Annualised GDP Growth has been at 5% robustly for the last 20 years (with the exception of COVID 2020) in-keeping with the rest of SE Asia, which is one of the fastest growing regions in the world.

2. Investment and Trade Policy Indonesia has been actively trying to solicit commercial activity with policy ranging from their participation in the Regional Comprehensive Economic Partnership and ASEAN to their Omnibus Law on Job Creation which cuts red-tape for foreign investors.
3. Largest Nickel, Tin Supplies in the world Importantly for the purposes of electrification, Indonesia has the world's largest supplies of raw nickel. Notably, they have banned the sale of raw nickel in an effort to move up the value chain. Importantly, this has culminated in a WTO dispute with the EU. Further, it's resulted in billions of USD of foreign investment in the country and much nervousness on the part of other suppliers. Indeed: "Christel Bories, the head of Eramet told the *Financial Times* that Indonesia could account for more than 75% of the world's highest class of pure nickel in five years' time."

Indonesia as a prospect is already on the radar in Whitehall. After all, Britain's Indonesia-Partnership Roadmap explicitly mentions [under 9. Investment] the need for B2B discussions on the development of the EV ecosystem and nickel acquisition and processing. Nevertheless, Indonesia is conspicuously *missing* from the UK Critical Minerals Strategy; we've chosen instead to lazily solicit supplies from nations like Australia with which we already have relationships.

Indonesia is hungry for growth and partnership; they have free trade agreements across the Asia-Pacific, predominantly via ASEAN, but nothing with the UK. It is our belief that this needs to be rectified, and that it is deeply in our mutual interest to do so. While the UK has already taken steps to encourage trade, most notably in their annual Joint Economic Trade Committee with Indonesia, we think that we're doing nowhere enough given the scale of the opportunity and its potential for benefit (both in terms of potential supply of resources and labour but also the availability of a gigantic market).

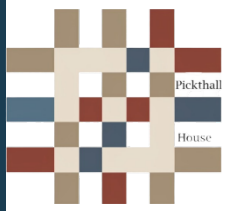
After all, gross trade with Indonesia only amounted to about GBP 3.4b, accounting for 0.2% of UK's foreign trade. This is paltry given that Indonesia is both about 3% of global GDP and also of global population (and only increasing on both fronts). Furthermore, there is precedent for Joint-Ventures between British and Indonesian corporations in the Energy Industry, notably the BV-Bakrie JV launched in 2022, demonstrating that it is, in fact, possible.

On Risks

All new ventures carry with them some risk. We highlight here a few, but still believe that it is worth Britain's time to explore this opportunity more fully.

There remain risks with this approach. We highlight here a few. One of these has less to do with Indonesia's ultimate prospects, but rather those of Nickel. Namely, it is conceivable that the development of Sodium-Ion batteries and other competitors to the

current lithium ion batteries mitigate the demand for Nickel; this is similar to how Cobalt is no longer so much of a bottleneck to battery production at scale due to the development of



replacements. We address this by noting firstly that this scenario is well-captured in the Majority-LFP Scenario considered by the UK Battery Strategy, which only cuts expected Nickel demand by about half, and secondly, by noting that independently of Nickel, the sheer size of Indonesia's local market and its opportunity for expansion as it develops nevertheless render it a very attractive prospect for trade partnership. After all, given that the UK is a global leader at high-tech, sustainable manufacturing, it remains in our interest to move down the value chain, as it is in their interest to move up it.

The second risk concerns the fate of British Volt, which after a spectacular haze of exuberance and poor governance went bankrupt. Here, we stress that the fact initial attempts to build capacity in a high-tech business failed should not deter us too much, failure is after all par for the course when attempting to navigate the future. As Churchill famously said, "Success consists of going from failure to failure with no loss of enthusiasm."

Further, from here: "Due to the centrality of batteries to the future of global decarbonisation, and Brexit tariffs making the import of batteries unsustainable, this isn't just another story of a single company failing. The failure of BritishVolt threatens Britain's position as the third-largest tech ecosystem and global leader in decarbonisation. However, this was not inevitable. Across the pond, the Inflation Reduction Act exemplifies effective industrial policy. At home, the government's stewardship of the steel industry shows it can be done here too, but it begs the question, why steel over electric batteries? Ultimately, the decision to favour steel rather than future-proof the car industry will be yet another mistake in this story."

All this is not to pardon failure *per se*, but that in the light of our fundamental infrastructural needs and the scale of the opportunity, we should nevertheless remain resolved to ushering in that bright future for this country. There is after all, no reward without risk and experimentation, something that Britain once knew but has chosen to forget.

References:

Has the UK taken back control? by Michael Keating
Tory Party Manifesto
Labour Party Manifesto
Opportunities for UK Businesses in the Net-Zero Transition by McKinsey
Powering Up Britain Policy Paper by the UK Department for Energy Security
Environment Statistics by UK Department of Transport
Nickel's Use in EV Batteries by the Nickel Institute
The Cost of Nickel in EV Batteries by Reuters
What is the cost of EV Cars? by Mining.com
Tesla on cost-cutting plans for Nickel + Lithium
Primer on UK Battery Production Faraday Report on Gigafactory needs
UK-Indonesia Partnership Roadmap British Volt falling flat by the Guardian
RCEP on Wikipedia
ASEAN on Wikipedia

CPTPP by the House of Commons Research team
Indonesia has grand plans for its Nickel Industry by Foreign Policy Magazine
Indonesia Nickel Ore Export Ban by the International Energy Agency
Critical Minerals Strategy by the UK Department for Business and Trade
Battery Strategy by the UK Department for Business and Trade
UK-Indonesia Trade Factsheet by the UK Department for Business and Trade
UK-Indonesia Partnership Roadmap by the UK Department for Business and Trade
Mining Giants worried that a flood of Indonesian Nickel could wipe them out by Fortune Magazine
What went wrong at British Volt? by the Corporate Governance Institute
List of UK's Trade Deals by the UK Department for Business and Trade
UK Export Guide to Indonesia by the UK Department for Business and Trade
EU-Indonesia WTO Dispute by the WTO
Indonesia's Nickel Strategy by the Center for Strategic and International Studies
Indonesia's growth in FDI by the ASEAN Briefing

Notes:

1. From the Tory Party Manifesto 2019: "This future relationship will be one that allows us to:
    1. Take back control of our laws.
    2. Take back control of our money.
    3. Control our own trade policy.
    4. Introduce an Australian-style points-based immigration system.
    5. Raise standards in areas like workers' rights, animal welfare, agriculture and the environment.
    6. Ensure we are in full control of our fishing waters.

2. From the same paper, "In 2022, the UK had the second highest battery electric car sales in Europe, bringing the total number of plug-in vehicles on UK roads to over one million licensed, of which around 60% are battery electric." Further, "For the automotive sector, government has already committed …£800 million capital funding. We want the UK to be one of the best locations in the world to manufacture electric vehicles, with an end-to-end zero emission vehicle supply chain. Our ambitious ZEV mandate will put UK manufacturers at the forefront of the electric revolution, supported by delivery of charging infrastructure that government is funding in partnership with industry to boost demand and by our capital allowances reforms to boost investment with the introduction of full expensing for 3 years. In addition, the Automotive Transformation Fund and the long-term Advanced Propulsion Centre R&D programme are supporting the development and commercialisation of cutting-edge automotive technologies."

3. All figures in this paper are taken from the UK government Battery Strategy and Critical Minerals Strategy Research reports.