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The United Kingdom as a sandbox for state-directed investment

Major increase in 'shadow debt', and in the 'shadow taxation' required to service that debt

Bob Lyddon

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By

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Exchange between Sir Makepeace Watermaster, Liberal Member of Parliament and Justice of the Peace, and Richard T. Pym, confidence trickster, upon the disappearance of certain monies from the Baptist Women’s League Appeal Fund:

Watermaster: ‘How much have you spent?’

Pym: ‘Not spent, sir. Invested’.

From ‘A Perfect Spy’ by John Le Carré

Foreword

Enrico Colombiatto
Professor emeritus of economics, University of Turin
Chairman of the Scientific Committee of the Institute for Economic and Fiscal Research (IREF)

Many countries' Founding Fathers and large portions of academia believed that constitutions, common-sense economics, and people's vigilance would be enough to restrain taxation and public debt. It was wishful thinking. In developed countries, taxation started growing to finance the Great War and kept rising even during relatively peaceful periods. Public debt as a ratio of GDP was also moderate until the early 20th century, rose until the end of the Second World War, fell back to about 25%, but eventually rose steadily as from the mid-1970s. It is now about 100%.

Some public debt is visible, but a large share of it was opaque and has sometimes been known as "shadow debt". This expression refers to commitments to future public expenditure, to be financed through future taxation or future sales of government bonds. The main examples are pay-as-you-go, unfunded pension schemes, whereby the policymaker accepts liabilities (obligations to pay future pensions) but has no assets to back them with. Their shadowy nature is the fact that those liabilities are real and can be quantified, they do not appear in the books.

In these pages, Bob Lyddon draws the reader's attention to two different categories of possibly more elusive shadow practices. Although these do not appear in the books, they are much less visible and quantifiable than the off-the book liabilities with which we have been familiar in the past decades. These new categories are not entirely unknown: one of them could be labelled "shadow taxation" and one "discretionary debt". Lyddon aptly and clearly shows that in recent years they have significantly increased in size, have become more sophisticated and are likely to expand further.

As pointed out in the Lyddon's work, shadow taxation regards situations in which the government encourages companies to finance or co-finance its projects – and thus replace public expenditure. In exchange, the government grants its private partners monopoly power to sell their goods and services. The shadow tax is the difference between monopoly pricing and free-market pricing. As mentioned above, this is not new. The sale of privileges has often been a popular way by means of which governments have raised revenues. Today's innovations are threefold:

- This despicable practice is now justified by resorting to the public interest. According to the mainstream narrative, efficiency requires the exploitation of natural monopolies and these call for regulated pricing.
- The spectrum of opportunities (privileges for sale) has become virtually unlimited.
- The discretionary power enjoyed by the authorities ensures that the market for pricing privileges thrives for an indefinite time, as incumbent companies strive to retain their monopoly power and the world of politics asks them compensation for enforcing the privileges.

Instead, discretionary debt applies to situations in which a political authority encourages the public to believe that it guarantees private or public debts. This is what happens when ad hoc, semi-public agencies go into debt or when some companies are classified as too big to fail. Within these contexts, governments never show bail-out commitment and funding reserves in their liabilities (let alone their assets). A similar mechanism also applies when a multinational institution (e.g. the European Union) borrows money backed by opaque guarantees by its member states or the central bank.

Discretion means that the central bank may decide not to monetize opaque guarantees or multinational debts. Then, the member states’ off-the-book liabilities suddenly appear very real. The veil previously provided by the central bank is no longer in place. The following scenarios are not well defined, but they are all rather unpleasant.

To conclude, Bob’s work is a path-breaking and most valuable effort to identify and quantify the size and threats of the shadowy mechanisms that public opinion often fails to appreciate and that most commentators naively consider isolated events. Bob deserves credit for opening our eyes and at the same time disclosing an important and vast research agenda. The sooner scholars and experts follow his example, the more effectively we shall be able to do what constitutions and empty promises failed to deliver.

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About the author

Bob Lyddon is a management consultant in international banking and payments.

Bob has been a regular contributor of online articles to IREF, most recently on the need for EU member states to bring forth more money to repay the debts taken on by the EU for its Next Generation EU programme,[1] and on the creation of financial structures that give investors a flavour of public sector risk, without the debt or the debt service passing through the public accounts.[2]

Bob is a published author, of *The shadow liabilities of EU Member States, and the threat they pose to global financial stability* (Bruges Group, London, 2023), and jointly with Barney Reynolds and Professor David Blake of *Managing Euro Risk – Saving Investors from Systemic Risk* (Politeia, London, 2020).

Bob has been a major contributor on the euro and Brexit, notably with the eight 'Brexit Papers' issued shortly after the Brexit Referendum, available at https://brexitpapers.uk.

Bob's main report in 2024 was entitled 'Rachel Reeves – stripping away the jargon', and correctly identified the policies that a new Labour administration would enact: https://www.lyddonconsulting.com/rachel-reeves-stripping-away-the-jargon-the-full-analysis-of-the-2024-mais-lecture/

Bob took a First Class Honours B.A. degree in Modern and Medieval Languages at Fitzwilliam College, Cambridge in 1980, and was awarded an M.A. with Distinction in History at the Open University in 2022.

[1] https://en.irefeurope.org/publications/online-articles/article/eu-shadow-debts-start-to-become-all-too-real/ accessed on 10 September 2025
[2] https://en.irefeurope.org/publications/online-articles/article/taxpayers-to-be-burdened-with-further-obligations-under-a-new-way-of-creating-public-debt/ accessed on 6 October 2025

Background

This report builds on themes explored in a series of four papers written for Global Britain in early 2025 about the UK's public finances. The four papers were:

1. De-mystifying the structure of the UK's public finances and focusing on what exactly the UK's public debt is;[3]
2. 'Day-to-day costs', as opposed what the government 'invests';[4]
3. Government 'investment', and the theoretical models upon which the borrowing plans of the current UK government plans appear to be based;[5]
4. How 'borrowing for investment' will be accounted for, and how it could expand dramatically, particularly in connection with Net Zero.[6]

The author has already been published on the subject of 'shadow debt' in the EU.[7] This means the debts for which EU businesses and individuals have been made liable, but which fall outside the main measure of EU member state debt that is published by Eurostat, and which is relied upon by the public credit rating agencies: 'General government gross debt'

This report demonstrates how the UK intends to increase its 'shadow debt' via re-use of the EU's InvestEU model, which in turn was based on the Private Finance Initiative model extensively employed by the Labour Party administration from 1997 until 2010.

Over and above that this reports breaks new ground by calculating how much 'shadow taxation' needs to be levied to service and repay this 'shadow debt'.

There are important parallels with the EU. The EU needs to raise extra money from member states to repay its borrowings taken up to fund the Next Generation EU programme.[8] This will include taxes both levied directly on businesses, and also directly through intermediary bodies and arrangements. This represents the conversion of a 'shadow debt' into real taxation.

The EU's debts rank as 'shadow debt' for the member states, because the member states are responsible for them but they are not included in the member states' 'General government gross debt'. As the debt is on the name of the EU, the debt service has to be collected by the member states and allocated to the EU as real taxation, not as 'shadow taxation', in our taxonomy.

'Shadow taxation' arises rather where the state directs the expansion of a certain part of the economy, but where this is mobilized through privately-owned enterprises. The debt is taken on by these enterprises, and the state makes sure that they can service their debt by granting them rights to take money directly from businesses and individuals. This is akin to a tax-raising power without the money flowing through the public accounts.

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[3] https://www.lyddonconsulting.com/starmer-and-reeves-want-to-spend-and-borrow-more-and-to-keep-the-increase-in-both-under-wraps/ accessed on 10 August 2025
[4] https://www.lyddonconsulting.com/the-uk-governments-day-to-costs-are-out-of-control-and-no-spending-review-is-going-to-get-them-back-on-target/ accessed on 10 August 2025
[5] https://www.lyddonconsulting.com/labours-borrowing-for-investment-think-new-labours-private-finance-initiative-and-investeu/ accessed on 10 August 2025
[6] https://www.lyddonconsulting.com/borrowing-for-investment-all-the-signs-point-to-a-debt-funded-disaster/ accessed on 10 August 2025
[7] R Lyddon, *The shadow liabilities of EU Member States, and the threat they pose to global financial stability* (Bruges Group, London, 2023)
[8] https://en.irefeurope.org/publications/online-articles/article/eu-shadow-debts-start-to-become-all-too-real/ accessed on 10 September 2025

The UK will be examined as a sandbox for testing how much the state-directed sector will be expanded so as to enable the realisation of state plans without the state raising the visible scope and rate of taxation. This involves testing the UK for much additional ‘shadow debt’ will be taken on and how much ‘shadow taxation’ will have to be levied to service and repay this ‘shadow debt’.

Executive Summary

The new government elected in July 2024 has promised a 'decade of national renewal', to take place through an expansion of the state-directed sector of the UK economy. This will be tantamount to an experimental sandbox to test how much 'shadow debt' can be added and how quickly, before bond markets, public credit rating agencies, and spending watchdogs respond. The experiment will test how great an incremental burden can be imposed on businesses and individuals as 'shadow taxation'.

The destination of this 'shadow taxation' will be to service and repay the 'shadow debt' with which the state-directed sector's projects are to be financed, their having next-to-no genuine shareholders' equity.

The UK's Net Zero transition is the main, but not sole, section of the sandbox. The scale of the 'investment' planned and the long period over which the 'shadow taxation' will have to be levied promise to impose a major, new financial burden on the UK's businesses and individuals in it: there is not enough wealth in the UK to pay for the 'shadow debt' amount in addition to the visible debt amount.

The consequent drag on economic growth will hit government tax revenues, and damage public services paid out of them, as well as ending wealth creation. The EU's parallel initiatives are well underway in the form of InvestEU and Next Generation EU but the UK's rapid and radical approach will produce 'sandbox'-style results: a disaster that ought to act as a warning to others.

The new government's approach involves the adoption of a new measure of national debt – called 'Public sector net liabilities' – within which the 'shadow debt' will not feature, and the re-characterisation of day-to-day costs like maintenance and training as 'investments' so that they can be both backed out of the day-to-day costs budget and borrowed against.

The new government plans to relaunch a technique extensively used during its party's previous term-of-office called Private Finance Initiative, where the principal of one their investment schemes is a public sector entity.

For the most part, though, the costs of the schemes will bypass the public accounts, and be levied on UK businesses and individuals in the form of even more expensive energy, road tolls, bridge tolls, and higher rail fares.

The new government's investment plans for the 10 years the party hopes to remain in office total over £1.64 trillion, which will be entirely funded with 'shadow debt'. The government plans to borrow-for-investment an amount of £270 billion: invisible within 'Public sector net liabilities'. The remaining £1.37 trillion will be borrowed direct by the projects themselves.

£350 billion of the £1.64 trillion will be spent through new-style PFI projects, imposing a cost of £512 billion over a 30-year period. The remaining £1.29 trillion will be spent through schemes that bypass the public accounts, imposing a cost of £6.15 trillion over a 30-year period.

The total imposition – at £6.7 trillion – comes out as 234% of the UK's 2024 GDP.

Part 1 - Definitions and explanations of financial instruments

1.1 Introduction

An explanation is warranted of the methodology adopted for this report including an upfront admission of any unresolved issues and possible gaps in the logic chain.

Unresolved issues

It remains an unresolved issue as to how the ratio of total cost/investment cost of all Private Finance Initiative projects approved prior to the expiry of the previous term-in-office of the UK's current governing party was a multiple of the ratio in our financial model. The ratio in our model is £512 billion/£350 billion or 146%. The precedent was £278 billion/£50 billion, or 556%.

A further unresolved issue is the amount of £127.3 billion of spending on 'Economic Infrastructure' stated in the government's Industrial Strategy that could not then be identified in its Infrastructure Strategy, and which is not obviously linked to Net Zero. The government states that it intends to spend £725 billion on 'Social and Economic Infrastructure', and then it clearly earmarks £129 billion to be spent on 'Social Infrastructure'. That should have left £596 billion of expenditure on 'Economic Infrastructure', but only £468.7 billion could be identified.

There is no clear and consistent indication in the government's papers of what returns will be required by either (i) Public financial institutions like the British Business Bank and the National Wealth Fund; or (ii) the government itself, for the funds they commit into the schemes being discussed, or the guarantees they issue.

Finally we know that schemes for clean energy will receive subsidies, and we have evidence of several different ways in which these subsidies will be enabled. Some will run through public sector entities and therefore be directly funded from taxation, and will have the effect of reducing the direct price paid by a user for respective goods and services. Given that the UK's tax system is highly redistributive, the net effect of this is a form of progressive 'shadow taxation', whereby the more wealthy businesses and individuals subsidise the less wealthy. Others subsidisation methods authorise suppliers to charge a higher price to users: this is a form of regressive 'shadow taxation', whereby a tax is levied at a level that takes no account of the ability to pay.

We have not attempted to build the effect of subsidies into our financial models for the amount of 'shadow taxation' that the government's plans will necessitate. Given the myriad of schemes and subsidy methods, it would have unnecessarily clouded the picture to try to incorporate them. All the subsidies do is to reallocate the 'shadow taxation' back to the same UK businesses and individuals in a more or less progressive manner. Our focus has been to calculate the total of 'shadow taxation' that will be extracted from UK business and individuals one way or another, and not to hazard a guess of how much of it will flow down each permutation of the possible pipework connecting the payers (UK business and individuals) to the receivers (the suppliers of the 'shadow debt').

Possible gaps in the logic chain

The possible gaps in the logic chain are:

- The usage of one financial template to represent each of the two types of model: Private Finance Initiative or PFI, and what we have called the 'Direct sale' model. In practice the exact terms of each financing will be unique;
- The spreading of the investment pro-rata over a 10-year period;
- The absence of any rolling-up of interest during the build phase of a project;
- The absence of any grace period from the completion of the build phase of a project until repayments of capital begin. This possible defect is offset by the usage of an annuity model for the debt service payments, in which the capital repayments are very small in the early years;
- The assumption that the plans laid out by the new government and the associated expenditure are incremental to what was already in the spending plans of the previous government: the government has contended that they are, and we have taken that assertion at face value;
- The assumption that the government's own contribution towards the expenditure is the increase in its so-called 'capital envelope' for the 2025-9 Parliament, and that the government intends to sustain that increase if re-elected for the 2029-34 Parliament: again, this is how the government has presented the increase and we have taken their assertion at face value;
- The qualified assumption that there is a firewall between the government's 'investment' budget – its 'capital envelope' – and its 'day-to-day costs' budget; the main qualification is that a project using a new variant of Private Finance Initiative will by definition be serving a public sector entity and be making a charge for the service that falls within the day-to-day costs of the public sector entity. The firewall between the government's 'investment' budget and its 'day-to-day costs' budget is porous.

Out-of-scope issues

A number of issues are out-of-scope:

- Costs of the Net Zero transition that exist already, and about which other commentators have written. For example, the Green Energy Subsidy is mooted to be adding around £100 annually to household bills, even though it was closed to new entrants in 2017;[9]
- The feasibility that the government's plans will not materialise.[10] It is the working assumption that, because Net Zero is a legal obligation, the money will be spent. This is notwithstanding the initial evidence of the government not making good on promises it has made, for example with regard to the Grangemouth oil refinery;[11]
- A critique of the policies and developments that have led to the UK having high electricity prices already compared to other countries.

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[9] https://www.telegraph.co.uk/business/2025/08/23/zombie-net-zero-levy-adding-billions-to-britain-energy-bill/ accessed on 25 August 2025

[10] https://www.telegraph.co.uk/business/2025/08/23/unions-accuse-starmer-of-broken-promises-on-net-zero-jobs/ accessed on 25 August 2025

[11] https://www.telegraph.co.uk/business/2025/08/23/unions-accuse-starmer-of-broken-promises-on-net-zero-jobs/ accessed on 25 August 2025

This report, as stated, is solely about further potential burdens on account of financing costs, and their knock-on impact on prices and taxes, if the government realises its plans.

Comparison of these issues with what is missing from the official picture

These possible issues in the methodology adopted on our side pale into insignificance, in our view, compared to the gaps on the authorities' side:

- Absence of the cost of capital/borrowing from the Cost Benefit Analysis in the Carbon Budget;
- No template in any of the government's documents that states exactly what will be spent and in which year, and which is unique to that document and not repeated in any other document;
- No statement as to which projects are eligible for funding under a Private Finance Initiative model;
- No overarching government document that states the total of what will be spent under each of the individual strategies (Net Zero, Industry, and Infrastructure) and what the government's own financial contribution will be, splitting what the government will engage directly and what will be engaged through Public financial institutions;
- How guarantees will be used by the government and by Public financial institutions;
- How the difference will be raised between the total to be spent and what the government's own financial contribution to that total will be, whether the contribution is made directly or through Public financial institutions;
- No commentary from the Office for Budget Responsibility or the Bank of England on the implications of these plans.

This report is, in a sense, an emulation of what should be in the papers that the authorities have not written.

1.2 Methodology

The first step has been to collate the author's own relevant past work, so as to both put a perimeter around what the subject is, capture key definitions, and show examples where the theory and practice are already visible of the financial schemes that this report deals with.

The second step has been to identify, in the UK, the emergence of counterparts to the EU financial schemes and the actors in them.

The third step has been to identify the current plans to spend money, whether under the heading of Net Zero, infrastructure or industry. This was a line-by-line examination to pick out every mention of the spending of money in the respective government papers. Expenditures were routinely mentioned multiple times, both within the same document and across documents. Appendices 1-4 are the result of the line-by-line examination.

Appendices 1-4 are every mention of the spending of money, but there is a drawback in that there is no consistency of the time period over which a figure is to be spent.

The documents contain all of the following and more:

- per annum;
- 'over the life of this Parliament' or 'over the life of Spending Review 2025', both of which mean between July 2024 and July 2029, which cuts by three months into financial year 2029/30;
- 'over the next decade';
- Rising over a period where the start and finish years are identified, with the start and finish amounts, but not the amounts pertaining to the years in between;
- The time period is unspecified.

As such it impossible to determine the annual expenditure under all headings, during this Parliament and if the current government is re-elected for another five years in 2029.

The problem of timing is compounded by the problem that many items that are termed as an 'investment' are repetitive, being spent 'per annum', and not just as a lump sum. It is an open question as to whether these costs should be captured as day-to-day costs, and therefore in the test of adherence to the new fiscal rule that day-to-day costs should be covered by revenues. There should be no borrowing, under the new fiscal rule, to fund spending on day-to-day costs. Borrowing should only be incurred to fund 'investments'.

However, it has to be taken as an assumption that the UK government is deliberately re-characterising certain recurring expenditures so that they can be backed out of the day-to-day costs budget and captured as 'investments'. This both alleviates the pressure in the day-to-day costs budget and justifies that borrowing be incurred to fund these expenditures.

The shortcoming in this approach is that no asset is created – unless one is falsely created – and that therefore, lacking an asset to show against the 'investment', the related borrowing should not be netted off against the debt under 'Public sector net liabilities'.

These issues have been put to the Office for Budget Responsibility in the letter contained in Appendix 6.

As such it impossible to split out what exactly should come under day-to-day costs and what should come under the government's capital budget, as well as its being impossible to track precisely what will be spent each year.

The fourth step has been to examine the government's plans for its own 'borrowing for investment', and contrast that with the total amount of money to be spent. The difference is the assumed amount to be raised from third-party sources, and primarily as debt, since the mission statements of public organisations like the National Wealth Fund state or strongly infer that they will be acting as shareholders or as providers of quasi-equity finance (such as subordinated debt), this being the normal role of the 'missing investor'.

During this step it was impossible not to recognise that the government plans a further round of Private Finance Initiative. Therefore there are two finance models that are carried forward, one for PFI and one labelled as 'Direct sale'.

The fifth step has been to posit the annual cost of an investment with a cash price of £100,000 under each of those two models, over a 20-year period from each project's start-up, and based on a given mix of equity, subordinated, and senior debt, each with an appropriate interest margin added to the cost of government borrowing for the average life of the financing.

Then an attempt was made to identify from the full list of projects those ones that should be eligible for financing through the PFI model. This identification cannot be scientific: it is again an emulation based on the application of the sorting criterion that the project's principal is likely to be a public sector entity.

The aggregate amount of the PFI-eligible projects was deducted from the overall investment amount to identify the PFI amount, thereby isolating the amount to be subjected to the 'Direct sale' model.

The steps to emulate a full cost were then:

- To identify the total number of units of £100,000 to be spent through each model;
- To divide the result by ten to reflect an even per-annum expenditure over our 'decade of national renewal' from 2025-2034;
- To apply the annual cost of an expenditure of 1 unit to the number of units spent per annum from 2025-2034, the final payment thus falling in 2054;
- To total the annual costs over the whole of the 30-year period.

The final step was to contrast the results with official studies.

1.3 Value-added

This report fills a gap left by the UK authorities in quantifying the impact of the Net Zero transition and the current UK government's 'dash for growth', by drawing out:

- The total amount of 'investment' implied by the Net Zero transition and other announced industrial and infrastructure projects;
- The difference between that amount and the small amount announced for the government's contribution, namely its 'borrowing for investment', of which the amount to be invested through Public financial institutions is a sub-set;
- The amount of 'shadow taxation' that will need to be extracted from businesses and individuals over the next 30 years in order to service and repay this debt;
- the size of this 'shadow taxation' compared to current UK GDP;
- the gap between these costs to the economy and those captured in the projections of the government and other authorities;
- in particular the inadequacy of the Cost-Benefit Analysis produced by the UK's Climate Change Committee as part of the UK's Carbon Budget, which projects a need for £50 billion to be spent every year between now and at least 2050, but which does not include the financing costs.

1.4 Key definitions

Introduction

The main point of this report is to explore the financial obligations that will fall on UK businesses and individuals thanks to schemes that are mounted through private sector entities, but which serve public policy objectives.

Private sector investors of money into these schemes want to be able to press these financial obligations on UK businesses and individuals, and the government wants to facilitate their doing so, because then investors will then provide a greater quantity of money, for a longer period of time, and at a lower interest rate.

The essence for the government, though, is that the footprint of these schemes in the public accounts should be as small as possible, and that the private sector investments and the returns on them should bypass the public accounts.

This is the meaning of the government's 'borrowing for investment': it borrows a small portion of the cost itself, inserts that money into the scheme, in order to 'unlock' the private sector investment. The government 'primes the pump' to get the balance of the required funds flowing from private sources.

It is of vital importance for the government that these investors can view the risk they are taking as being a form of 'public sector risk' but without its affecting the numbers produced for the indebtedness of the public sector: these money flows bypass mainstream public accounting.

Different qualities of risk under the banner of 'public sector risk'

The highest possible quality of 'public sector risk' is 'sovereign risk', referring to the risk-free investment option in the currency concerned. The risk-free investment in US$ is US Treasury bonds; in the UK£ it is gilts, aka UK government bonds. The added risk of lending to other entities in the public sector should be reflected in a premium paid to the investor over the yield of the US Treasury bond or gilt in the same maturity, a premium that reflects the degree to which the respective debtor's powers to draw money from businesses and individuals is less than that of the 'sovereign' itself. The sovereign's power is draw the debt in full from any and all businesses and individuals under its jurisdiction.

'Sovereign risk'

'Sovereign risk' means the repayment risk of an obligation of a nation state which is denominated in the state's own currency of which it is the sole user, and over which it has control of the full range of monetary policy tools, such as setting interest rates.

The obligation itself will be backed by the 'full faith and credit' of all tax-liable entities in the country of the currency in question. This means that all businesses and individuals that are liable for tax could be called upon to pay the whole debt: their liability is joint-and-several.

A problem has arisen in the misapplication of the term 'sovereign risk' to the Eurozone, in which there is no single borrower that matches the definition. The nearest is the European Union itself, but its backing is at one step removed: the EU member states are jointly-and-severally liable for the EU's debts, and the EU member states are backed by the 'the 'full faith and credit' of all tax-liable entities in that country.

However, neither the member states nor the European Union have control of the monetary policy tools over the euro as a currency: control of those tools has been ceded to the European Central Bank, which is independent of both.

This causes a blurring of the definition, and to the EU's and Eurozone's benefit: authorities use the term 'Eurozone sovereign' when referring to the government of a Eurozone member state, thereby misrepresenting the credit quality of such a state's obligations as being higher than it is.

'Government risk'

The EU has espoused the concept of 'government risk', which EU authorities use interchangeably with 'sovereign risk', thereby blurring the vital difference between the two. The government of a Eurozone member state is held to have 'full fiscal responsibility'. The structure of this phrase is misleading and hangs on the difference – which will be opaque to many – between 'fiscal' and 'financial'. It means that the member state has been stripped of all its financial powers except debt issuance and raising taxes, which in turn means that its financial powers are very limited.

'General government'

'General government' is a definition used by Eurostat – the EU's statistical agency.[12] It refers to central, provincial, regional and municipal government, and government agencies, in a particular country. The definition has gained general usage and there is nothing objectionable about that in itself.

The concept of 'General government' applies equally where the country fits the definition of a 'sovereign' and where it does not. In this way, however, the term becomes an unwitting enabler of the blurring of the difference between 'sovereign risk' and 'government risk'.

The debts of a Eurozone member state are 'General government debt', and 'government debt', but not 'sovereign debt'.

'General government debt'

'General government debt' is the debt of the 'General government' entities in a country.

Public credit rating agencies concentrate on this measure of a country's debts, and they look at 'General government gross debt', not permitting any offsets.

'General government gross debt' is the main measure of EU member state indebtedness tracked by Eurostat. It is not, however, given emphasis by UK authorities.

'Public sector debt'

The scope of 'Public sector' debt is wider, and embraces debts of public financial and non-financial corporations (which should include the debts of the central bank), and – where such exist – public pension and social security funds that have borrowings.

The difference between 'General government debt' and 'Public sector debt' depends upon factors such as the degree of privatization, and the tendency of the government to act through quasi-autonomous entities rather than itself.

[12] [12] https://ec.europa.eu/eurostat/ accessed on 31 May 2022

'Public sector debt' is the measure focused on by the UK authorities, and in three variants:

1. 'Public sector net debt'
2. 'Public sector net debt less Bank of England'
3. 'Public sector net liabilities' – which was introduced by the current government in the October 2024 budget

'Public sector gross debt' is not accorded prominence. It would perforce be equal to or greater than 'General government gross debt'.

'Public sector net debt' was until recently the main measure focused upon by the UK government and the Office for National Statistics.

'Public sector net debt less Bank of England' is published by the Office for National Statistics and deducts a figure from 'Public sector net debt' on account of the Bank of England's Quantitative Easing programme. The author challenged this deduction, as is explained in section 1.6 below.

'Public sector net liabilities' is highly relevant for this report. Under this measure the extra government debt borrowed to invest in the schemes being discussed here can be netted off on the grounds that there is an asset into which the money has been invested. The government, on that basis, could borrow many hundreds of billions of pounds, without this measure of debt rising.

The state-directed sector

The state-directed sector is also of high relevance to this report. It is the sector of enterprises that deliver on public policy objectives without themselves counting as the public non-financial corporations. Their debts, even where they are contracted solely to enable the fulfilment of public policy objectives, do not fall within any of the measures of 'Public sector debt'.

The 'missing investor'

The theory of the 'missing investor' is the one that justifies public financial involvement in projects that serve public policy objectives, where the original intention is that the project should be privately funded.

The 'missing investor' is the private sector investor who will not commit funds to a scheme that is driven by public policy objectives due to the mix of risk and return on offer.

The 'missing investor' is normally being asked to subscribe either to equity – the highest-risk layer in a financing – or to a form of debt that is also high-risk, such as subordinated debt.

The reason a 'missing investor' would turn down a subscription to equity is that it does not promise an adequate dividend flow or capital appreciation potential, compared to other investment opportunities.

The reason a 'missing investor' would turn down a subscription to a high-risk debt tranche would normally be a mixture of the equity layer being too thin to absorb losses on the project, the return being too low, the project assets being of questionable value, or the project cashflows being too uncertain.

The failure of the 'missing investor' to subscribe triggers a further problem: providers of funding at levels involving lower risk (senior debt, mezzanine debt) have made their commitments contingent upon the presence of given percentages of financing at the levels of risk higher than their own.

The scheme cannot go ahead as a privately-funded scheme because the private sector will not commit the equity or high-risk debt needed to 'unlock' the other levels of financing.

The logic chain that operates from this situation is as follows:

- It is not acceptable that the scheme not go ahead at all, given that it is a public policy objective;
- The logjam acts as the justification for the public sector to commit itself at the level that the private sector will not;
- Schemes like InvestEU are then invented as the model through which the public sector commits, either with funds or with guarantees;
- The public sector always commits into the higher-risk layers of the financing, even if it takes some part in the lower-risk layers as well.

A key question, clouded in mystery, is what return the public sector asks in exchange for taking on a financing that the private sector rejected as representing too low a return for the risk, or as a risk that was not acceptable at any price:

1. No return: the public sector subsidizes the scheme by providing free, high-risk money;
2. The same return the private sector rejected;
3. An even higher return than the private sector rejected in order to justify the risk, thereby making the cost of the project's output (as goods or services) more expensive.

If it is (2) above, a public institution is accepting a risk in exchange for a return that, under the analysis carried out by the private sector, does not match it.

If it is (3) above, how does the scheme itself remain viable, in terms of selling what it produces to willing buyers at a price and on other terms that the buyer finds acceptable, assuming the buyer is at liberty to buy from other sources of supply, or indeed to not buy at all?

The 'creditor ladder'

The 'creditor ladder', as explained more fully in Appendix 5, is the order in which the creditors of an enterprise get paid out should the enterprise go into liquidation. The financing schemes discussed in this report establish a 'creditor ladder' in the form of 'tranches' of financing. The 'creditor ladder' is thus integral to the funding templates explored in this report.

A 'tranche' corresponds to a rung on the 'creditor ladder'. The arrangement makes it clear to creditors where they stand in terms of risk and return, because the creditors in each tranche explicitly agree to enjoy precedence over those on rungs lower down the ladder, and to grant precedence to those on rungs higher up the ladder. The arrangement is bracketed within the operation of law: shareholders are automatically on the lowest rung, and certain categories of statutorily-preferred creditors are automatically on the highest rung, such as employees for their wages, and tax authorities.

'Shadow debt'[13]

A 'shadow debt' for the purposes of the author's book meant a debt for which the public sector and/or the public is responsible that is not captured in 'General government gross debt'. It might have been captured within 'Public sector debt' but, where it is 'General government gross debt' that is focussed upon, other 'Public sector debt' is at risk of being overlooked.

The debt may be created via the issuance of a debt security or the contracting of a loan, and it may be taken up from an institutional investor, from a bank, or from retail investors.

The key point is that the suppliers of the debt believe – and this will be with justification - that the public sector is responsible for the payment of capital and interest on the debt. The direct borrower of a 'shadow debt' will not be a government or any other entity that falls within the definition of 'General government'. The direct borrower may be a private company, and one set up solely and only for the purposes of a particular project. Then it might be termed an 'SPV' (for 'Special Purpose Vehicle') or 'SPC' (for 'Special Purpose Company').

The structure of the financing gives the lender or investor an assurance that monies will be forthcoming from the taxpayer (which means from businesses and individuals) in the event that the direct borrower cannot pay the capital and interest.

The financing structures come in a number of forms, which serves to obscure the size of the claim on taxpayers. The debts may be off-balance sheet for parties who are nevertheless on-risk. This type of financing has been growing and will continue to grow because governments are under pressure to stabilise and reduce their 'General government gross debt', and 'Public sector debt', in the face of unrelenting spending demands.

These newer financing templates avoid that debt taken up from lenders or investors should appear as part of a country's 'General government gross debt', and preferably not as part of 'Public sector debt' either. The debts consequently fail to be captured in a measure like the Debt-to-GDP ratio where it is based on 'General government gross debt'. The debt service might form part of the country's annual fiscal surplus/deficit but not as interest: this is the sole statistical downside, as a public sector entity might experience the costs as items that fall within the scope of the primary fiscal surplus/deficit, whereas interest payments fall within the scope of the secondary fiscal surplus/deficit.

'Shadow debts' come in several variations. Ten are examined in the author's book, but for ease of reference this is a condensed list:

1. Debts of public non-financial corporations;
2. Debts of public financial corporations like development banks and the central bank;
3. Debts of private-sector corporations whose debt service tracks onto entities within either 'General government' or the 'public sector', an example being the UK's Private Finance Initiative;
4. Debts of private-sector corporations whose debt service tracks onto the same businesses and individuals that stand behind all 'General government' and 'public sector' debt, and where the enterprise serves public policy objectives;
5. Debts of supranational entities – like the EU or the European Financial Stability Facility.

[13] Lyddon, *The shadow liabilities of EU Member States* p. 10

The first two categories are in common usage and form part of 'Public sector debt' where that is measured. However, they would still remain outside the main focus of both Eurostat and public credit rating agencies.

It is the fourth category that is main focus of this report. Before we go there, we have a perfect example of the third category, the UK's Private Finance Initiative.

1.5 Key precedents in the UK – Private Finance Initiative[14]

The UK's Private Finance Initiative ('PFI') is an important forerunner of the schemes that the UK government now plans, but which falls into the third category in the list above.

Whilst it was the Conservative government under John Major that invented PFI, it was the 'New Labour' administration between 1997 and 2010 that used it as major channel for the creation of public assets: schools, university buildings, hospitals and Ministry of Defence facilities were the main objects constructed.

As per a spreadsheet issued at the end of March 2023 by HM Treasury, the capital cost of these projects was £50 billion. The lifetime cost will have been £278 billion by the time the last payment has been made in the financial year 2052/3. That gives a good indication of how expensive these schemes were.

£133 billion remained to be paid from 2024/5 through to 2052/3.

These are commercial payments, forming part of the primary fiscal surplus/deficit. Nevertheless, they represent a 'shadow debt' for the UK, and we can express these payments as a Net Present Value, on the premise that the government could theoretically transfer its obligation to pay by making an immediate cash payment to a trustee, who would then manage the cash payment to meet the future payments.

To raise the cash payment, the government would have to borrow it and at the prevailing cost of government debt – the gilt yield – for the average life of 15 years.

The 15-year gilt yield is the rate of interest at which the future flow of PFI payments would be discounted, to determine the cash payment to be made to the trustee. The trustee could even buy these 'gilts' in a round-trip exercise so as to lock in its returns and ensure it could meet the future obligations as they fell due.

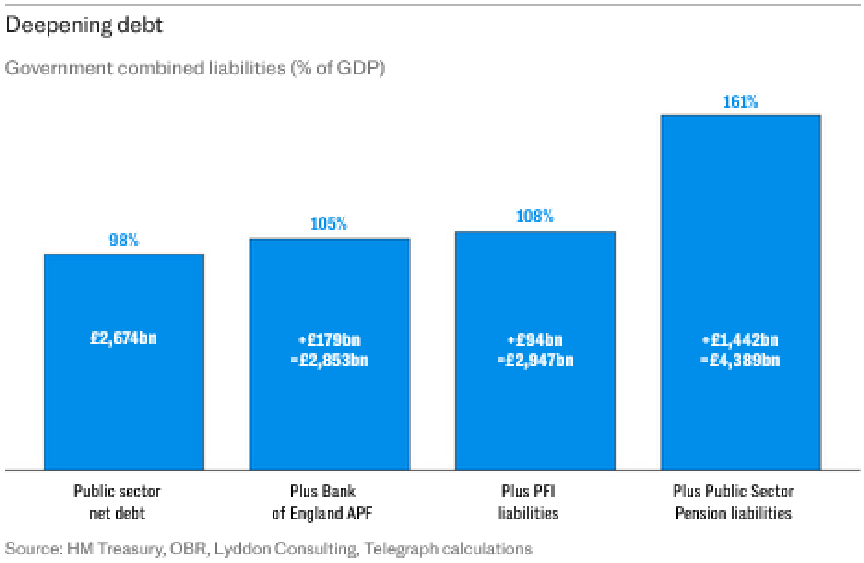
On 7th February 2025 the 15-year gilt yield was 4.72%, interpolated between the 10-year at 4.42% and the 20-year at 5.01%.

The Net Present Value of the payments discounted at the 15-year gilt yield was £94 billion.

That represented a putative addition of £94 billion to the current UK national debt on account of PFI.

[14] https://www.lyddonconsulting.com/private-finance-initiative-the-new-labour-financial-catastrophe/ accessed on 18 August 2025

This chart – referencing the author as its source - appeared in the UK's Daily Telegraph on 9th February 2025 to show the impact on the UK's national debt of PFI, as well as accepting the author's argument – discussed in the next section below - that the Bank of England's latent loss on its Quantitative Easing bonds should be added to the national debt, not deducted from it:[15] [16]



The important point with PFI is that in all cases the public sector debtor was a part of 'General government'.

The comfort for investors that rentals will be paid is because they are coming directly out of 'General government' budgets. The end-user of the asset is a government ministry or, like the National Health Service, acts through a trust whose income is guaranteed by the government. An NHS Trust is a 'public non-financial corporation' itself, but its paymaster sits within 'General government'.

These structures create financial liabilities for the public sector as the rentals are calculated to meet debt service obligations. Because, however, the rentals are within a commercial contract and not within a financing agreement, the end-user does not have to record the debt as a liability and the finance object (hospital, university hall of residence) as an asset. This is different from a finance lease for an aircraft where an airline does have to record an asset and a liability.

The PFI assets and liabilities are 'off-balance-sheet' for the scheme user, for the UK 'Public sector', and for the UK 'General government', but the costs materialise – in substance - as if they were 'on-balance-sheet'.

[15] https://www.telegraph.co.uk/business/2025/02/09/the-national-accounts-are-full-of-cons-and-tricks/ includes this same calculation, supplied by Lyddon Consulting, accessed on 9 February 2025

[16] The latent loss quoted above of £179 billion was as of 28th February 2024, and was taken from the Bank of England's annual report on its 'Asset Purchase Facility'. The equivalent figure for 28th February 2025 is £166 billion, since part of last year's latent loss was realised in the interim through the sale of a portion of the bond portfolio.

1.6 Key precedents in the UK – Bank of England and its losses on bond purchases[17]

The second column in the chart from the Daily Telegraph above relates to the latent loss of the Bank of England on its so-called Quantitative Easing programme.

This is another 'shadow debt' of the UK.

The author published a report in 2024 entitled 'The ONS should add 'Bank of England' on to the national debt, not deduct it'. It challenged the figure for 'Public sector net debt less Bank of England', that figure being about the £200 billion less than figure of 'Public sector net debt' that the Office for National Statistics (the 'ONS') also issued. The result was a figure that was doubly emollient and misleading: not only should the £200 billion not have been deducted, there was a strong case for it to have been added, making 'Public sector net debt' £200 billion higher than the ONS claimed.[18]

The author's argument now appears to have been widely accepted, except by the ONS.

The background is that the Bank of England (the 'Bank') purchased a large portfolio of fixed-rate bonds in £GBP when interest rates were low. Then interest rates rose, bond prices fell, and the Bank would incur a major loss if they were to sell all the bonds out.

The structure of this Quantitative Easing or QE is that the Bank established a separate Asset Purchase Facility or APF, and made a loan to it. This reflects a key principle of these financial structures: the creation of special entities or funds at arm's-length to their principal, in this case the Bank. This separation is a device to enable special accounting.

The APF purchased the bonds, using the proceeds of a loan granted to it by the Bank. The Bank funds its loan into the APF with the money deposited with it as reserves by the UK's licenced financial institutions.

The yield on the bonds in the APF has been projected to be around 1.8% per annum: the Bank does not disclose what the yield is but, given where gilt yields sat during the time when most of the bonds were purchased, this is both well-founded and possibly generous to the Bank.

The Bank is currently paying 4% per annum to the UK's licenced banks for the funding, and therefore losing 2.2% every day on the amount of the funding.

Given that the bonds still have on average over 7 years until maturity, holding onto the bonds until their maturity will cause the Bank to incur a major annual loss, unless the Bank continues to cut its own Bank Rate and reduces what it pays to the UK's licenced banks on their reserves.

On the other hand, if the Bank were to sell out the entire portfolio of bonds now, it would incur a major lump-sum loss, because interest rates have risen sharply since it bought the bonds.

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[17] https://www.lyddonconsulting.com/the-office-for-national-statistics-should-add-bank-of-england-on-to-the-national-debt-not-deduct-it/ accessed on 10 August 2025

[18] http://www.lyddonconsulting.com/wp-content/uploads/2025/01/ONS-should-add-BoE-to-national-debt-final-26jan25.pdf accessed on 18 August 2025

The Bank itself quantified this latent lump-sum loss in its APF annual reports as of 28th February in the year in question:

	28/2/23	Change	28/2/24	Change	28/2/25
APF balance	£637bn	-£84bn	£553bn	-£76bn	£477bn
Lump-sum loss	£191bn	-£13bn	£178bn	-£12bn	£166bn
Bank Rate on date	4.25%	--	5.25%	--	4.5%
APF yield[19]	1.7946%	--	1.7946%	--	1.7946%
Interest loss in percent[20]	2.4554%	--	3.4554%	--	2.7054%
Daily interest loss[21]	£42.85mil	+£9.5mil	£52.35mil	-£16.99mil	£35.36mil

Any losses in the APF can be passed back to HM Treasury by the Bank, but only when they are realised. In that case HM Treasury, being in a fiscal deficit, has to increase the UK's national debt in order to pay the Bank.

This has been occurring (i) for the daily interest losses; and (ii) where the Bank has sold off bonds prior to their maturity in what they refer to as 'Quantitative Tightening'. These losses have been substantial. The table above shows that the Bank sold off £84 billion of bonds in 2023-4 and £76 billion in 2024-5, these figures being the price at which the bonds were purchased. Their sale caused a portion of the lump-sum loss to be realised.

The latent, lump-sum loss remains unrealised. However it is not an asset that is eligible for deduction back from 'Public sector net debt' as projected by the Office for National Statistics, resulting in the figure it calls 'Public sector net debt less Bank of England'. At the very least it should be noted as a contingent liability which, if it materialised, would cause 'Public sector net debt' to rise.

A more conservative treatment would be to add it to 'Public sector net debt' now, on the basis that there will either be an ongoing loss or a lump-sum loss.

However, the UK's public accounting obscures the existence of a loss, and even makes out that there is a latent profit. This is a perfect example of a shadow liability created for the UK general public by the actions of authorities, but which sits outside the main measures of public indebtedness.

In fact in this case it goes further: even if one were to argue that it is not a debt because it is unrealised, one would surely accept that it was a contingent liability, in other words a potential source of a need to pay. The contingent liability can be quantified: the cost that would be incurred if the portfolio of bonds was sold now, or the NPV of the interest loss on holding the bonds to maturity based on the yield on the bonds compared to the interest being paid on banks' reserves in like amount. What cannot be justified is the treatment of the matter by the ONS: making out that the portfolio is a source of value that merits being offset against 'Public sector net debt'.

[19] This yield was only ever an estimate, and might even be high, given the term interest rates prevailing at the time the Bank bought the APF bonds

[20] This is the presumed yield on the portfolio less the Bank Rate prevailing on the respective date

[21] This is the amount outstanding on the balance sheet date, multiplied by the annualised interest loss, and divided by 365 days

1.7 Section summary

These definitions and forerunners mark out the pitch on which the current UK government intends to play.

The government’s own small contribution of ‘borrowing for investment’ will be inserted in such a way that the asset that arises when the contribution is inserted can be netted off against the borrowing that enabled it, thanks to espousal of the new measure for national debt which is ‘Public sector net liabilities’.

Any other debt that the schemes contract will appear neither in ‘General government gross debt’ nor in any variant of ‘Public sector debt’.

The government’s receipt of whatever is needed to service its ‘borrowing for investment’ will run through the public accounts.

Similarly, if PFI is used, the cost of using the asset will fall on a public sector entity as one of its day-to-day costs, and those amounts will run through the public accounts.

Without pre-empting the matter, it is worth noting the pattern that a PFI scheme does not require an injection of money from the government to get it off the ground, whereas the other type of scheme does.

As a result, a scheme impacts the public accounts either (i) because the scheme is a PFI one and causes costs to be paid out of the public accounts; or (ii) because it requires an injection of government money and the resulting ‘borrowing for investment’ – and the returns on it – pass through the public accounts, even if the borrowing is netted off under ‘Public sector net liabilities’.

No scheme would impact the public accounts in both ways.

Part 2 – EU examples

2.1 Introduction

The purpose of this section is to lay out further important precedents, drawn from the EU, for the funding models the current government will be using. Each one is an adaptation of the principles laid out in Part 1.

These precedents fall into two categories:

- Commercial schemes creating 'shadow debt' within Special Purpose Companies, using a funding model in which finance is raised in tranches;
- Official EU schemes that create 'shadow debt' to keep public liabilities outside their mainstream public accounting.

Under the first category we have two schemes:

1. Italian banks sanitizing their balance sheets of their bad loans with the intention of obtaining European Central Bank financing for doing so;
2. Ireland's scheme for reducing corporation tax paid by multinationals through the financing of commercial aircraft.

Under the second category we have five schemes:

1. The European Central Bank's equivalent programmes to the Bank of England's Quantitative Easing;
2. The EU's Next Generation EU programme - the EU's main response to the Pandemic;
3. The European Stability Mechanism (the Eurozone's main bailout mechanism) and how they view the future source of funding for Europe – more debt;
4. The NATO Defence Bank, for funding EU 's expanded defence spending;
5. InvestEU, the EU's attempt to reflate its economy and the main template for how the UK government intends to proceed.

InvestEU merits a section of its own.

2.2 Example commercial 'shadow debt' schemes within the EU

Securitization of Italian banks' bad loans

This first adaptation was created during the timeframe 2015-2019 for the securitization of Italian banks' bad loans: the banks sold their bad loans to a Special Purpose Company (SPC) at a heavily discounted price compared to the loan's face value, and then the SPC raised the purchase price by issuing medium-term bonds.

The objectives for the Italian bank were manifold:

1. To rectify non-compliance with global capital standards, but without the further depletion of their capital that would be caused by writing off the bad loans;
2. To exchange a bad asset of uncertain value for a good one with a more reliable value, underpinned by a public credit rating;
3. To refinance this new asset at the European Central Bank;
4. To release capital on the basis that the new asset is made to appear to be of a markedly higher quality than the old one, even though the same loans underlie it.

The liabilities of the SPC would typically be in three tranches with outline terms as follows:[22]

Tranche	Ranking	Percentage	Interest	Repayment
A	Senior	85%	3-month Euribor plus ¼%	As soon as collections on the bad debts allow
B	Mezzanine	12%	3-month Euribor plus 8%	Once collections allow it and Tranche A has been fully repaid
C	Junior	3%	3-month Euribor plus 10%	30 years after issuance and if collections allow it

Table 4.5: typical tranching of a securitization financing and associated interest margins

There is almost no equity: there is no question of there being capital appreciation for the SPC's owner. The equity amount will be the minimum needed to establish the SPC in its country of incorporation.

There is only a thin layer of Junior (aka Subordinated) debt: this layer carries the same risk as equity would normally carry, in the absence of a meaningful equity layer.

The Mezzanine carries a higher risk than its name would normally infer: the Junior tranche is thin and, with no equity layer, the assets would only have to decline in value by 3% for the Mezzanine investors to start losing their capital. This is why the interest rate on this tranche is only slightly lower than that of the Junior tranche.

The size of the B and C tranches – acting as second- and first-loss cushions respectively - should allow the A tranche to achieve public credit ratings of its own – if the assets are of reasonable quality. The quality of the assets is reflected in the size of the discount from face value at which the loans are purchased by the SPC. The discount could easily be 85%, equating to the value to which the selling bank had already written them down.[23]

Given that level of discount, even a modest recovery on the loans should be enough to service and repay the bonds. All the recoveries are attributed to the holders of A tranche bonds before B and C tranche holders receive any repayments.

The A tranche is 85% of the SPC's funding and only 12.75% of the face value of the loans, if the discount was 85%. If this tranche is able to achieve public credit ratings of at least A3 (in the Moody's system) or better, and from two of the five EU-approved public credit rating agencies, the premium of ¼% over the interbank Euribor rate would be seen as reasonable, and the issue of bonds should be fully subscribed – reflecting also that the market for low-risk bonds is much larger than that for high-risk ones. Set against that are the factors that all of the SPC's bonds are so-called 'Asset-backed securities', and that the loans include commercial and residential mortgage loans.

By obtaining two ratings of at least the A3-equivalent level, the A tranche bonds would become 'eligible Asset-backed securities' within the Eurosystem. In that case the A tranche bonds could be placed as collateral at any Eurosystem national central bank and borrowed against. This status would stimulate the market for the bonds amongst third-party buyers, making them more liquid with a larger secondary market, and causing them to trade at a lower yield.

[22] Lyddon, *The shadow liabilities of EU Member States* p. 81

[23] In the terminology used, the face value of the loan was diminished by write-downs to reach its 'carrying value', or the value at which the loan was carried in the books of the selling bank

This version of the reasoning for why the A tranche bonds should obtain two ratings of A3 or better came to obscure another version, which is that this was a round-trip exercise for the selling bank, whereby they sold the bad loans and simultaneously bought the A tranche bonds.

It became common practice for the selling bank to buy the entirety of the A tranche itself, and obtain the money to do so from the European Central Bank. In some cases the selling bank also subscribed to a portion of the B tranche. The only tranche that the selling bank was shut out of was the thin C tranche, which had to be purchased entirely by third-parties in order for the selling bank to be permitted by European bank regulators to divest itself of the loans i.e. so that the transaction did not look like an imaginary sale, even though it was in substance.

The thinness of the C tranche was a deliberate measure to minimise the amount that had to be raised from third-parties in order for the selling bank to achieve its accounting objectives.

The Eurosystem eligibility criterion that the A tranche had to meet was the one for an 'Asset-Backed Security' – as opposed to a security upon which the name of its issuer represented the credit risk, such as on a bond issued by the Kingdom of Spain. The issuer in this case – the SPC – has no substance: it is the assets behind the SPC that represent the credit risk. This structural issue is why an 'Asset-Backed Security' needs to fulfil the requirements of 'Credit Quality Step 2' in the Eurosystem credit assessment framework: 'Credit Quality Step 3' is inadequate for an 'Asset-Backed Security'.[24] The security must, as a minimum, obtain ratings to the level of A3 in the Moody's system, and it must obtain two of them, from any of the five EU-approved agencies.[25]

The application of these principles in practice went quite badly wrong for Unicredit in 2018 under its flagship 'Fino' transaction. Unicredit's initial offering to investors was too aggressive, with the outcome that the thinly-capitalized SPC issued several tranches of bonds as follows:[26]

Tranche name	Tranche amount	DBRS rating	Moody's rating	Moody's banding	Moody's credit risk
A	€650.0 million	BBB (high)	A2	Investment	Low
B	€29.6 million	BB (high)	Ba3	Speculative	Substantial
C	€40.0 million	BB	B1	Speculative	High
D	€50.3 million	Not mentioned	Not rated	n/a	n/a
	€769.9 million				

Table 4.8: tranching arrangement in Fino 1 securitization

The objective was for the A tranche – the senior debt – to achieve 'Credit Quality Step 2': Unicredit intended to buy these bonds itself and to pledge them to the Eurosystem, thus funding its bad loans from an official source.

Whilst the A2 rating from Moody's was good enough, the BBB High from DBRS Morningstar was not: the asset was not admitted to the Eurosystem list of eligible collateral, and could not be refinanced from an official source: Unicredit either had to continue to fund it from third-party deposits itself, or find genuine third-party buyers for it.

[24] https://www.ecb.europa.eu/mopo/coll/risk/ecaf/html/index.en.html accessed on 12 September 2025
[25] These are Standard & Poor's, Moody's, Fitch, DBRS, and Scope
[26] Lyddon, *The shadow liabilities of EU Member States* p. 85

At that point both potential third-party buyers of the A tranche, as well as the prospective buyers of the B and C tranches, suspected that the portfolio of bad loans – which was Fino's only asset – was of such low quality that each tranche represented too high a risk for the return the buyers were being offered. With no equity cushion below them, the C tranche would take the first loss, and the B tranche the second, and it would not be too long before the A tranche became impaired.

The A tranche was originally €650 million out of €719.6 million, or 90%. It ended up as being €650 million out of €769.9 million, or 84%, because a new D tranche of €50 million had to be inserted as an extra loss-absorption cushion to reassure the buyers of the other tranches that the return matched the risk.

The relevant learning points for this report are:

- The funding model contained no equity cushion beyond the minimum incorporation capital for the SPC – a few hundreds of euros;
- Credit risk enhancement for the investors in the lower-risk tranches was supplied by the debt tranches subscribed by higher-risk investors, not by any equity;
- The value of a given loss-absorption cushion is defined by the assets that sit behind it: in this case the assets were poor, necessitating the adding of an extra cushion;
- Had the assets been claims on public sector entities, or on a wide spread of businesses and individuals, the cushions could have been thinner.

Aircraft 'leveraged lease' financing to reduce the corporation tax of a multinational in Ireland

This adaptation of the model contains only two layers: equity and senior, secured debt.[27]

The SPC is an Irish Limited Liability Partnership (LLP), with substantial equity ('General partner capital') of 15% of the aircraft's purchase price. The General partner capital is subscribed by the Irish subsidiary of a multinational corporation. This allows the Irish subsidiary to itself use the depreciation allowances that are available to the LLP for its buying the aircraft: the Irish subsidiary can depreciate the entire cost of the aircraft against their tax bill in Ireland, and on an aggressive depreciation schedule: 1/8th of the cost of the aircraft per annum for 8 years, with no residual value.

The arrangement is a key part in the 'Celtic Tiger' business model that has attracted so many multinationals into Ireland, spending money there and creating thousands of high-skill jobs. In turn 70% of the world's fleet of commercial airliners is nominally owned out of Ireland, although few of the aircraft ever fly into or out of Ireland.

The Irish subsidiary of the multinational requires no income out of the transaction other than the return of its 15% equity at the end of the 15 year term of the lease. The leasing of the aircraft to an airline can be on such terms that the lease rentals cover only the loan interest payable by the SPC to the banks who lend 85% of the purchase price, and the loan repayments.

The lease is completely 'dry': the airline crews, insures, maintains and operates the aircraft and has 'quiet enjoyment' of it as long as it pays the lease rentals and abides by the other conditions of the lease.

[27] http://www.lyddonconsulting.com/wp-content/uploads/2024/02/The-Celtic-Paper-Tiger-15feb24.pdf pp. 16-9 accessed on 1 September 2025

The loan is fully repaid in year 15, at which point the lease concludes, the aircraft is sold, and the equity owner has their equity amount returned to them.

The financial benefits for the General partner in the LLP reside entirely in the reduction of their corporation tax bill, as follows: the annual depreciation allowance is US$15 million on an aircraft costing US$120 million (1/8th of the aircraft's purchase price) and the annual tax saving is 12.5% (also 1/8th) of the depreciation allowance, or US$1.875 million:

Using Boeing 737			
Current market value		120,000,000	for a single aircraft
Debt		102,000,000	
Equity		18,000,000	
	01/10/2015	-18,000,000	
	01/10/2016	1,875,000	
	01/10/2017	1,875,000	
	01/10/2018	1,875,000	
	01/10/2019	1,875,000	
	01/10/2020	1,875,000	
	01/10/2021	1,875,000	
	01/10/2022	1,875,000	
	01/10/2023	1,875,000	
	01/10/2024	0	
	01/10/2025	0	
	01/10/2026	0	
	01/10/2027	0	
	01/10/2028	0	
	01/10/2029	0	
	01/10/2030	18,000,001	
IRR		6.80%	

The Irish subsidiary inserts US$18 million at the start and receives that plus one extra dollar at the end.

The relevant learning points for this report are:

- The funding model contains a thick equity cushion to meet the risk criteria of the banks lending 85% of the aircraft's purchase price – they do not wish their loan ever to exceed 85% of the aircraft's value;
- The transaction need produce no revenues for the equity owner, as their requirements are fulfilled by the tax advantages and receiving their initial stake back;
- With a mortgage on the aircraft, the banks lend at a thin interest margin;
- The banks' loans do not rank as liabilities of the equity owner (the Irish subsidiary), as the banks cannot reclaim any loss from the equity owner;
- The loans become a form of shadow debt, owed by the SPC, which has no substance of its own and has no revenues except the lease rentals.

Interim summary

We have two working, commercial adaptations of the basic model where the risk-and-return appetites of different types of investor had to be matched off against the requirements of the principal: an Italian bank, and an Irish subsidiary of a multinational.

The result was a range of amounts of equity – from 0% to 15% of the transaction amount – and of different layers of debt. The equity provider in the aircraft financing required a 0% return out of the lease, unlike the 16%+ return they would require if they were taking entrepreneurial risk. The equity provider in the other transaction received a peppercorn amount for acting as the owner and inserting a few hundreds of euro.

Debt investors required anywhere between ¼% and 10% per annum above a reference interest benchmark, depending upon the rung of the ‘creditor ladder’ upon which they stood, and upon what asset they were financing.

Where there is no equity, the lender sitting on the lowest rung of the ‘creditor ladder’ takes the first loss. If that layer of financing is thin as well, the lender on the second- lowest rung of the ‘creditor ladder’ has a high risk of loss as well.

Both schemes create a form of shadow debt, where the direct debtor of them is an SPC with no substance or revenues beyond what is derived from the assets.

Both schemes are ‘rentier’ business models. One receives a rent in the form of recoveries on bad loans; the other receives a rent from leasing out an aircraft. These rents are distributed according to a formula to the creditors, in the absence of an owner that is relying on these flows for its own returns.

We now go to look at official EU schemes whose driver is principally to raise new financing for public policy priorities, but without adding to member states’ ‘General government gross debt’.

2.3 Example official EU ‘shadow debt’ schemes

European Central Bank and its Quantitative Easing: the Asset Purchase Programmes and the losses

The European Central Bank (the ‘ECB’) and the Eurozone national central banks (the ‘NCBs’) – collectively known as the European System of Central Banks or ‘Eurosystem’ – had their own Quantitative Easing, known as the ECB Asset Purchase Programmes and then the Pandemic Emergency Purchase Programme. At the end of 2021 these programmes held €4.9 trillion of bonds, based on the price at which they were purchased.[28]

The programmes were mandated by the ECB at the ECB’s risk, but the bonds were purchased by the NCBs, and using - like the Bank of England – reserves deposited by the banks in the same country as the NCB in question.

Here is another example of the scheme being operated at arm’s-length to its principal. The NCBs operate the scheme. The ECB is the principal. The separation enables special accounting between the two.

The special accounting is that profits or losses – but only when realised – are allocated up to the ECB by the NCB that incurred them. The ECB would then allocate the profit or loss across all the NCBs in line with their percentage shareholding in the ECB, including a portion back to the NCB that realised the loss.

Until a loss is realised by a sale of bonds, the mark-to-market losses on the bonds can be held within each NCB without their becoming visible: these losses become, in themselves, ‘shadow debts’, just as the Bank of England’s loss is.

[28] Lyddon, *The shadow liabilities of EU Member States* p. 198

The bonds were purchased during the period when interest rates in Euro were low or even negative. Interest rates rose sharply in 2022 before falling back, but there remains a major mark-to-market loss housed at each NCB.

The ECB Asset Purchase Programmes stood at €2.67 trillion at the start of 2025, and the Pandemic Emergency Purchase Programme stood at €1.67 trillion, making €4.34 trillion.[29] By the author's calculations made in February 2025 there was a mark-to-market loss of €826 billion.

The response of the ECB/Eurosystem has been to allow the Asset Purchase Programmes and the Pandemic Emergency Purchase Programme to run off as bonds mature, but not to make any sales.

The €826 billion latent loss is held at the Eurosystem NCBs and is obscured by their valuing the bonds at the price paid, not at their resale value now. The loss remains a contingent liability, but it is now a real loss on paper rather than one that might arise if interest rates were to rise.

The ECB/Eurosystem is doing everything it can not to realise a loss. Firstly, it has ceased paying interest on banks' Minimum Reserves, thereby making the funding free-of-charge, and avoiding an ongoing loss at NCBs which would have to be passed up to the ECB. Secondly, by holding the programme bonds to maturity, the NCBs avoid the crystallization of any part of the mark-to-market loss, so no losses on re-sale need be passed up to the ECB either.

This approach avoids the risk that the ECB could have its capital depleted to such an extent that it would need to be recapitalized. The ECB has always been thinly capitalised as a percentage of the size of the operations it mandates the NCBs to carry out. Indeed it now has negative equity.[30] Taking over substantial losses from the NCBs would place it in the position of having to request more capital. Member states in that case would have to raise General government gross debt themselves, to pass on to their NCBs for them to subscribe to a new share issue by the ECB.

The same type of loss exists within the ECB/Eurosystem as exists at the Bank of England but is less visible:

- There is no day-to-day loss because no interest is paid to banks on their reserves: instead those banks reduce their deposit rates to customers and increase their loan rates to borrowers, causing bank customers to carry the loss;
- No mark-to-market loss is realised because there are no bond sales: realising a loss would bankrupt the ECB, cause it to require more capital, which the member states would have to borrow;

The ECB/Eurosystem approach involves the same categories of loss and in approximately the same amounts as the Bank of England approach, but the losses must remain hidden outside the member state accounting, just as the operations themselves were conducted outside the member state accounting.

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[29] http://www.lyddonconsulting.com/wp-content/uploads/2025/02/EU-shadow-debts-update-as-of-25jan25.pdf p.3 accessed on 17 August 2025

[30] ECB Annual Accounts at 31 December 2024 p. 33 - 'Capital and reserves', plus 'Accumulated losses carried forward', plus 'Profit/(loss) for the year' = -€285 million

Next Generation EU and the need for real taxes[31]

A programme of up to €806 billion was created for the EU's current budget period – its Multiannual Financial Framework or 'MFF' – which lasts from 2021-7. The main purpose was billed as the recovery from Covid-19. All the monies needed were borrowed from international investors via bonds on the name of the EU itself, not of the member states.

These debts are invisible in the member states' accounts, but the member states are responsible for them if the EU cannot repay them by itself, which it will not be able to.

The European Commission recently kicked off the negotiation of the EU budget for the next budgetary period 2028-34.[32]

There will be a shortfall on account of Next Generation EU and a need for member states to provide more money, one way or another, because €338 billion of the programme ceiling of €806 billion was available as grants. The European Union will have no amounts flowing naturally to it in respect of this portion as the primary source from which to make its own payments on the matching debts.

The EU, in respect of the grants portion, broke with the precedent that had prevailed under all of its previous borrowings, namely that the amount it borrowed would be lent out to another borrower – normally a member state - on a back-to-back basis. Back-to-back lending of the amounts borrowed by the EU was the structure of all of the EU's programmes prior to Next Generation EU: the European Financial Stabilisation Mechanism, the Balance of Payments Facility, Euratom, and Macro Financial Assistance.

As regards the loans portion of €385 billion, these loans were not all granted to member states. As a result there is a risk that they may not all be repaid, and that a further shortfall appears.

The European Commission has made a first proposal for how the shortfall will be filled, and it is through extra taxes and levies, some being directly on consumers (a tobacco excise duty), some on businesses (a lump-sum payment from large businesses), and others that tap into existing schemes and add a level to their cost (an upwards adjustment to the Emissions Trading System), cost which is then passed on to businesses and individuals as higher prices.

If the Commission's proposal fails, other options include increasing the takings from existing EU 'own resource' lines (such as the sugar levy and VAT) or the member state cash contribution.

Whichever it is, the member states are legally obliged to arrange for there to be no shortfall in the EU budget, so they must pay in, either visibly via the member state cash contribution or through new or existing lines of 'own resource' that impinge on EU businesses and individuals.

The new or existing lines of 'own resource' act like a 'shadow taxation' on EU businesses and individuals. In this respect what used to be a 'shadow debt' now shows its true colours: member states are responsible for it, and a member state is simply an entity through which its businesses and individuals act on a collective basis.

[31] https://en.irefeurope.org/publications/online-articles/article/eu-shadow-debts-start-to-become-all-too-real/ accessed on 10 September 2025
[32] https://commission.europa.eu/strategy-and-policy/eu-budget/eu-borrower-investor-relations/nextgenerationeu_en accessed on 8 August 2025

The credit strength of the EU is no more and no less than the credit strength of the member states – and the credit strength of a member state is the payment capacity of the businesses and individuals which reside there.

The European Commission's proposal for new lines of 'own resources' is laid out as follows:

New own resources to match our common ambition

To give itself the means to act, Europe must also equip itself with a modern and diversified revenue stream. In turn, this will create means to fund its priorities while repaying what the EU has borrowed under NextGenerationEU and limiting the national contributions to the EU budget. To that end, the Commission presents five new own resources:

- **EU Emissions Trading System (ETS):** targeted adjustment of the revenues generated from ETS1 go to the EU budget. Expected to generate around EUR 9.6 billion annually, on average.
- **Carbon border adjustment mechanism (CBAM):** targeted adjustment of the revenues generated from CBAM go to the EU budget. Expected to generate around EUR 1.4 billion annually, on average.
- **An own resource based on non-collected e-waste** through the application of a uniform rate to the weight of non-collected e-waste. Expected to generate around EUR 15 billion annually, on average;
- **A tobacco excise duty own resource**, based on the application of a rate on the Member State-specific minimum excise duty rate levied on tobacco products. Expected to generate around EUR 11.2 billion annually, on average;
- **A Corporate Resource for Europe (CORE)**, amounting to an annual lump-sum contribution from companies, other than small and medium-sized companies, operating and selling in the EU with a net annual turnover of at least EUR 100 million. Expected to generate around EUR 6.8 billion annually, on average.

The Next Generation EU debt was a 'shadow debt' for the EU member states. The money raised by the EU for the programme was not all relayed as loans, and this will cause a shortfall in the EU budget. Because of the construction of the EU and its budget, the shortfall of debt service has to be imposed on member states as real taxation, rather than as 'shadow taxation'.

European Stability Mechanism and its projection of the future debt-funding of the EU

This sub-section serves simply to shine a light on the thinking of senior EU figures about the future source of finance for EU public policy objectives at a high level. The source is more debt, and taken on through 'shadow debt' mechanisms.

More money could be supplied by the member states increasing their own borrowings and paying the proceeds over to EU institutions. This is not the chosen route, however.

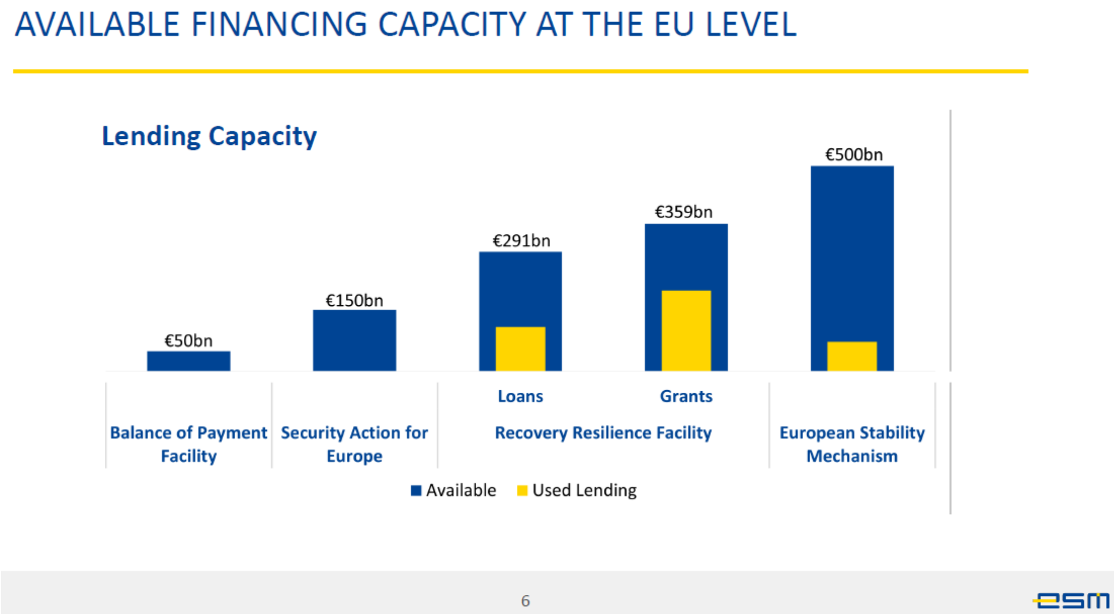
EU member states prefer to issue forms of guarantee behind these creature institutions, which then borrow money from investors on the strength of these guarantees, as these creature institutions have no financial substance of their own.

The presentation used as the exemplar is entitled 'More Debt for Europe's Future? The European Crisis Response Framework - Challenges and Opportunities', and was given in Mannheim on 11th July 2025 by Rolf Strauch, ESM Chief Economist and Management Board Member.

The ESM – the European Stability Mechanism – is the main crisis response and bailout facility behind the Euro.

Dr Strauch quotes the same 'shadow debt' facilities as are referred to by the author in his book and in this report, noting that the RRF, or the 'Recovery & Resilience Facility' is part of Next Generation EU:

Dr Strauch then puts numbers against some of the categories:



'SAFE' – or Security Action for Europe – is the new EU defence initiative launched in response to both the growing perceived threat from Russia and the Trump Administration's demands that Europe pay more for Europe's defence.

One can quibble with the numbers and how much is really available, but that should not detract from the main point: these are all 'shadow debt' facilities where the amounts do not impinge upon member state public accounting, specifically on member states' 'General Government gross debt'.

The NATO Defence Bank

Alongside 'SAFE' – or perhaps wrapped up with it – is the proposal for a new NATO Defence Bank to raise the money to pay for rearmament and other defence measures.

Its initial appearance is that it will work exactly to the traditional EU model: borrow funds from international investors, and lend them on a back-to-back basis to shareholders in the bank, for those shareholders to buy arms or pay for the other defence measures.

Over time the shareholders repay the loans they have taken out with the bank. In this case the loans ought to feature in 'General government gross debt' if they are made to a Defence Ministry, but no doubt considerable thought will be given to how this can be avoided.

Even if the debt itself can be kept out of 'General government gross debt', the debt service must surely come out of the member states' day-to-day defence budgets, as the asset produces no revenues that can be routed directly to this new bank and then on to investors.

The asset will tend to attract extra costs, in terms of maintenance and crewing, and they stand a chance of damage and destruction, a risk that can hardly be transferred onto international investors.

Many other issues need to be resolved, such as who pays back the investors if one of the borrower countries defaults: the same issue for which the EU, ESM and EIB all provide different answers.

Nevertheless the response is as ever the same to a new need for funding: it is to incur more 'shadow debt', and then to cause businesses and individuals to bear the cost over time, rather than to take any difficult budgetary decisions now.

2.4 InvestEU - the key financial template[33]

InvestEU has been used to reflate the EU economy since the EU sovereign debt crisis and is now increasingly used to finance green energy projects.[34]

InvestEU is organized through the European Investment Bank Group (EIB Group), the EU's self-styled 'climate bank'.[35]

InvestEU is a refinement of PFI, but it has been used to support schemes that fulfil the definition in the fourth category of 'shadow debts': debts of private-sector corporations whose debt service tracks onto the same businesses and individuals that stand behind all 'General government' and 'public sector' debt, and where the enterprise serves public policy objectives.

[33] Based on Chapter 3 of 'Borrowing for investment' – what is meant by this statement in theoretical terms published through Global Britain on 21st April 2025 as part of a series on the overall public finances of the UK

[34] https://www.eib.org/en/products/mandates-partnerships/investeu/index accessed on 19 August 2025

[35] The EIB Group consists of the European Investment Bank (EIB) itself and its subsidiary the European Investment Fund (EIF)

An understanding of the InvestEU model in particular, out of all the 'shadow debt' schemes, is warranted because:

- The purposes to which it has been used are so similar to the ones contemplated in the UK as being central to the 'decade of national renewal';
- The InvestEU model causes all financial flows to bypass national public accounting, because the public financial contribution is made through the EIB Group and any returns on the contribution flow to the EIB Group.

InvestEU structure and operation

InvestEU is aimed at financing EU public policy priorities. InvestEU – originally named the European Fund for Strategic Investments or 'EFSI' - is a direct and explicit result of the decision taken in 2012 by Angela Merkel and Francois Hollande to fully mobilize the potential of the European Investment Bank for engaging in counter-cyclical public spending, also known as Keynesian economics.

The decision was reported upon by Reuters at the time as follows: 'German Chancellor Angela Merkel added her voice on Saturday to calls to bolster the European Investment Bank (EIB) and to use EU infrastructure funds more flexibly to help spur economic growth in Europe. Her comments are part of a new German emphasis on growth-boosting measures to complement painful tax hikes and spending cuts that have triggered a political and popular backlash against austerity across the Eurozone'.[36]

The EU member states do not invest money into InvestEU, and neither does the EU itself. The member states use the EU, which uses the EIB/EIF. It is done at two steps removed from the member states, firstly by their having the EU issue a guarantee to the EIB Group for losses it may incur on InvestEU projects, and then the EIB Group engages itself through the issuance of various types of guarantee, as well making a certain portion of loans. This ensures that InvestEU is off-balance-sheet for the EIB Group (partially), for the EU (wholly), and for the member states (entirely).

EU first-loss guarantee

In recognition of the fact that the EIB Group is doing the EU's bidding, and of the fact that the EU is a creature of the member states for undertaking operations they do not wish to run through their public accounts, the EU issues a guarantee in favour of EIB Group:

- For each EU 7-year budget period, the Multi-annual Financial Framework or 'MFF';
- Up to a given amount;
- On a first-loss basis: the EIB/EIF can claim back under the guarantee up to its limit, regardless of which projects they made losses on;

[36] http://uk.reuters.com/article/uk-germany-merkel-idUKBRE83R02120120428 accessed in August 2014

- The EU legal instruments that create the guarantees have in the past included a permission to the EIB/EIF to put a portion of their own resources 'at risk' as well, although it is ambiguous:
    - whether the EIB's making a loan into the senior debt level of a project counted as putting its own resources 'at risk', when the EIB makes such loans all the time in its normal course of business, under its standing mandate;
    - the more plausible explanation is that 'at risk' would mean the EIB making loans at the Subordinated debt level, and the EIF issuing any guarantees or 'equity commitments', in excess of the amount covered by the EU guarantee.

How a project gets mobilised and funded

A project is set up. The EIB lends to it. The EIF issues guarantees to another investor in it, and/or the EIF issues 'equity commitments' either to the project itself or to an owner of equity in it.

Each project has its own version of the 'creditor ladder'.

Once the project is able to show the above degree of public backing, how EIB/EIF have placed themselves at a high risk of loss, and how badly the project would have to perform before investors at different levels lose money, private investors are willing to invest their money into other tranches in the scheme, such as Secured, Senior unsecured, or Mezzanine loans. This is known as 'unlocking'.

The relationship between the engagement of the EIB/EIF to the amount raised from other investors is to be maximised: as much money as possible should be raised on the back of as small as possible an engagement from EIB/EIF. That approach can make the EU guarantee and the slightly larger EIB/EIF engagement – expanded by its putting a portion of its own resources 'at risk' - go a long way.

Copying of leveraged finance templates

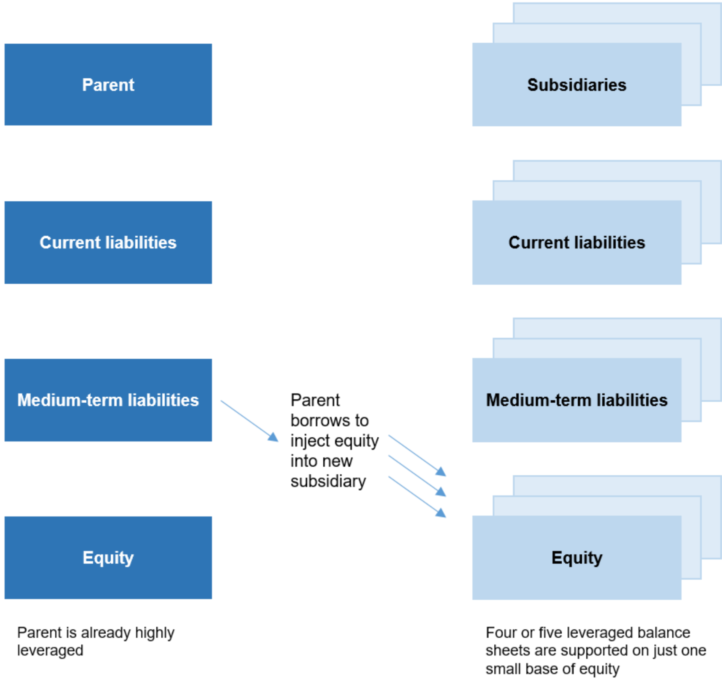
Leverage is key to InvestEU – maximising the amount of money 'mobilised' on the back of an engagement by the EIB/EIF of modest financial size but made at the highest-risk levels, and on the back of a guarantee of modest size from the EU to the EIB/EIF.

The InvestEU template owes much to the financing template employed by Enron and other highly-leveraged organisations. It is based around the operation of the 'creditor ladder' as described in Appendix 5.

Its essence is to borrow as much as possible on a limited amount of capital – the first-loss layer. Within an Enron-style model only the parent company has genuine capital, subscribed by outside investors. The Enron parent company takes on borrowings itself in a multiple of its capital, and uses the proceeds to inject equity – a thin layer of equity – into subsidiaries.

The subsidiaries then borrow as well, showing lenders that they have a capital base, albeit that this capital base corresponds to debt in the books of the capital's owner.

This is a 'double-leverage' model:



It is not out of the question that the subsidiaries repeat the process again, by using their borrowings to invest in further subsidiaries, which also borrow, creating a triple-leverage model.

Application of the leveraged finance template in InvestEU

In the context of InvestEU, it is EIB/EIF that act in the role of the Enron parent company, and they do so in the full knowledge of the operation of the 'creditor ladder' as described in Appendix 5.

The EIB and the EIF engage at the rungs lower down the 'creditor ladder', in order to create a loss-absorption cushion thick enough to attract private market actors to invest in the same scheme but at higher rungs on the 'creditor ladder'.

Of the two, it is the EIF that plays the most important role, because it acts towards the highest-risk layers in the scheme and with off-balance-sheet commitments rather than cash investments.

The EU legal instrument creating InvestEU[37] authorised the EIB Group to borrow up to an extra €61 billion and inject it into InvestEU projects, during the 2014-20 EU budget period, the first one during which InvestEU was in operation.

The EIB/EIF were permitted to borrow up to this amount, but they could also engage part of the amount in other ways. Practicality dictated that any lending would be done by EIB, not EIF, because EIB has ready access to capital markets. EIB was authorised to borrow up to €40 billion and lend it out as its 'normal' loans into InvestEU projects. This meant lending at the senior debt level, and inferred that this money was not classed as being 'at risk'.

[37] At the time InvestEU was known as the European Fund for Strategic Investments or 'EFSI'

The EIB/EIF were then authorised to commit up to €21 billion of Mezzanine or Subordinated debt financing, this limit being shared between them. The EIB would do any lending of cash, but lending was not the only way in which the €21 billion could be engaged. The EIF could utilise the limit in the form of issuance of guarantees and 'equity commitments'.

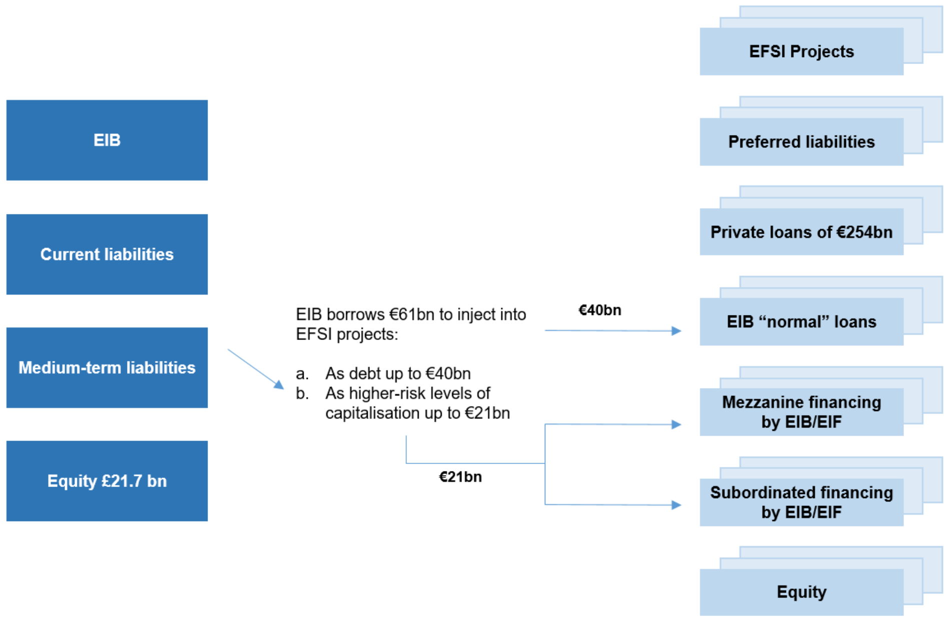
EIF's 'equity commitments' would perforce be deployed towards the first-loss layer of financing in a project: equity. EIF's guarantees would be deployed towards the next-highest risk layers: principally Subordinated debt, the second-loss layer, with possibly some engagement at the level of Mezzanine debt.

How EIB/EIF 'unlock' private money

The EIF – by engaging in the highest levels of risk – can 'unlock' more money for every €1 of business it writes, and as a result can speak for the majority of the operations for which the €16 billion EU guarantee is viewed as the backing, notwithstanding the EIF's smaller size.

With an EU guarantee of €16 billion, and a permission to the EIB/EIF to put €5 billion of their 'own resources' at risk as well, EIB/EIF could write €21 billion of very high-risk business and make another €40 billion of medium-risk loans, on the back of which the projects could borrow more, and into the medium- and lower-risk layers of capitalisation.

The projects were expected to borrow another €254 billion themselves into the medium- and lower-risk layers of capitalisation:



Seventy or eighty balance sheets are created and leveraged, all on the basis of the EIB's current capital base, as well as the EIB over-leveraging itself

The right-hand side of the above chart exemplifies a 'creditor ladder' as explained in Appendix 5. For illustrative purposes the chart presupposes that the EIF's engagements are done as on-balance-sheet via lending, as the EIB's must be. However, in practice the EIF's engagements – albeit in the same amounts – are done via off-balance-sheet undertakings: guarantees and 'equity commitments'.

InvestEU masterplan for the 2014-20 MFF

This was the initial masterplan for the size of InvestEU by the end of the 2014-20 MFF:

FINANCING LEVELS AND LEVERAGE	FIGURE
Financing raised on the back of EIF guarantees and 'equity commitments', or lent by EIB into mezzanine and subordinated levels	€21 billion
EIB lending into senior debt level	€40 billion
Total raised directly from or on the back of EIB/EIF engagement	€61 billion
Extra debts raised by InvestEU projects	€254 billion
Total of funds 'mobilised'	€315 billion
Total of funds 'mobilised'/ €21 billion	1500%
Total of funds 'mobilised'/ €40 billion EIB lending amount	788%
Total of funds 'mobilised'/€61 billion	516%

This masterplan indicates how highly leveraged InvestEU projects were contemplated as being, if €21 billion of first-, second-, and third-loss positions taken by the EIB/EIF were considered sufficient to prop up a total of €315 billion.

How much business has EIF written and what finance has been 'mobilized'

Neither the EIF nor the EIB publish figures for the total amount of finance 'mobilized', nor indeed the total of the EIF's book of guarantees and equity commitments.

The amounts had to be synthesized and three times, for *Managing Euro Risk – Saving Investors from Systemic Risk* (Politeia, London, 2020), for the author's own book, and for the 2025 update on the figures in in the author's book:

Publication	Page	'As of' date	Total EIF book	Total mobilised
Managing Euro Risk	108	End of 2018	€42 billion	€301 billion
The shadow liabilities of EU Member States	74	End of 2021	€76 billion	€612 billion
2025 update[38]	4	End of 2024	€128 billion	€1,035 billion

The 2025 update needs to be viewed as approximate, as another template was in play between 2021 and 2024, called the European Guarantee Fund, also mobilised through the EIB Group in the exact same way as InvestEU. The total mobilised under both – and other further schemes of the same type – was estimated at €1.7 trillion.[39]

It is noteworthy that the total money mobilised per annum is around €100 billion, compared to an EU GDP of around €15 trillion. That equates to 0.66% of GDP being spent per annum. Given that the transactions are of 15-20 duration and individually on a declining balance basis, it is realistic to posit that such schemes are currently responsible for a 'shadow debt' amount of around €1.5 trillion, or 10% of EU GDP.

[38] http://www.lyddonconsulting.com/wp-content/uploads/2025/02/EU-shadow-debts-update-as-of-25jan25.pdf p. 4 and footnote 4 accessed on 10 August 2025
[39] http://www.lyddonconsulting.com/wp-content/uploads/2025/02/EU-shadow-debts-update-as-of-25jan25.pdf p. 3 accessed on 10 August 2025

Summary of InvestEU

The key points about InvestEU are:

1. Rapid and determined expansion;
2. Large amounts accumulate;
3. High leverage, to the point where schemes may have no equity beyond the amount in relation to which the EIF has issued an 'equity commitment';
4. EU institutions have a high risk of loss because they are operating in connection with the levels of finance in a scheme that are at the back of the queue for a pay-out in a liquidation, such as equity and subordinated debt;
5. The positions with the highest risk of loss are off-balance-sheet and therefore obscure;
6. EIF does not give a list of what engagements it has entered into through either guarantees or equity commitments;
7. No clear explanation from EIB Group of what an 'equity commitment' even is;
8. No clear explanation from EIB Group of who the Account Party is when the EIF issues a guarantee.[40]

2.5 Section summary

Leveraged financing templates are in wide usage in the EU both within the private sector and the public sector. The motivation for this usage is not completely above board.

Italian banks could have divested themselves of their bad loans by writing them off against their capital. This would have depleted their capital to the point of non-compliance with global capital standards. Instead they exchange a bad asset – bad loans – for the A tranche bonds which carry a public credit rating. The result is a release of capital as the new asset ties up far less capital than the old one, even though it is substantially the same asset.

Airlines could buy aircraft and use the depreciation allowances available to them in their own jurisdiction. Instead a scheme has been developed that is integral to the Irish 'Celtic Tiger' economy, in which the Republic of Ireland attracts employment and highly skilled jobs, in exchange for a give-up of corporation tax revenues that would not have been realised anyway without the scheme.

The subsidiaries of multinationals in Ireland are able to substantially reduce their Irish corporation tax liabilities, with the assistance and connivance of the Irish authorities, by buying into an asset unconnected with their core business. The end result is to shift profits into Ireland, and deny the associated corporation tax revenues to counties like France, Germany, the UK, Italy, Spain and so on.

A clear pattern has been established by EU member states of using similar techniques to keep financial obligations, in as far as this is possible, outside their mainstream public accounting.

[40] The Account Party is the party on whose behalf a bank issues a guarantee, for example the importer of goods when a Customs Guarantee is issued. The Account Party must sign a counter-indemnity such that, if there is a call under the guarantee, the bank has a claim for the amount on the importer. The suspicion is that, where EIF has issued a guarantee to an owner of subordinated debt in a scheme, the EIF is simply subrogated into the subordinated debt once they have paid out the guarantee beneficiary. The subordinated debt will then by definition be worthless.

The key measures of public indebtedness move in a favourable direction (‘General government gross debt’, Debt-to-GDP, compliance with the Stability and Growth Pact, compliance with the Fiscal Stability Pact) in parallel with the total amount of money for which businesses and individuals are responsible moving in an adverse direction.

Schemes are structured so that there are minimal touchpoints with the mainstream public accounting, certainly avoiding debt measures and debt service categories, and at most allowing certain payments to form part of ministry budgets that total up to the primary fiscal surplus or deficit, and in almost all European countries it is a deficit.

This is facilitated by the existence of the several EU supranational entities whose liabilities are not tracked back into the liabilities of the member states.

These schemes represent the general pattern that the UK is shaping up to emulate, with InvestEU being particularly emulated, even if the lack of supranational entities causes a somewhat larger footprint to be left in the UK’s public accounts.

Part 3 – Funding models

3.1 Introduction

We have numerous precedents from the EU of how a leveraged funding model has been used in both the public and private sectors, and we have the UK's original usage of PFI.

We have the precedent of InvestEU to show how EU Public financial institutions – the EIB and EIF – 'unlock' private money by committing themselves to the higher-risk rungs on the 'creditor ladder', positioning themselves as a creditor of the company that owns the asset or assets which are the subject of the financing, and even making ready to become one of the owners (if an 'equity commitment' is called upon).

We can regard InvestEU as for the types of scheme where the product or service of the project is not bought by a public sector entity. PFI is for the type of scheme where the product or service of the project is bought by a public sector entity.

With that distinction in mind we can now focus on the construction of the two funding models of which the current UK government is going to make use:

1. A new version of PFI, for situations where the user of the asset is a public sector entity;
2. A scheme where the product or service of the scheme is sold on, directly or indirectly, to UK businesses and individuals, minimising the footprint of the scheme's costs and the scheme's debts in the UK's public accounts.

3.2 Principles

'Rentier' business models

We can discern an emerging pattern for where the leveraged funding model is used, and it is towards stationary assets:

- A block of bad loans;
- An aircraft;
- A green energy scheme;
- Hospitals, schools, living quarters for armed services personnel.

These are examples of 'rentier' businesses, which build an asset (such as a toll bridge), and charge a rent for its usage (the toll to cross the bridge).

Equity financing, and its usage within 'rentier' business models

Equity financing, being the layer that takes the highest risk, is the most expensive form of financing. As a rule-of-thumb, an equity investor should be seeking a return – via dividends or capital appreciation – 10% higher than for the risk-free investment in the same currency. If gilt yields are at 6% per annum, an equity investor would be wanting 16% per annum as a minimum.

All the debt financing layers are interest-bearing, and their yield is set as a premium over a benchmark rate-of-interest, whether that is the gilt yield or a short-term rate. The lower down on the 'creditor ladder' the debt stands, the greater will be the premium.

The above points to a solution of maximising debt and minimising equity, but that can only be taken so far: the providers of each layer of financing will wish to be assured that there is a realistic loss-absorption cushion in the rungs lower down the 'creditor ladder' than their position, so that they are either insulated from a risk of losing their investment of capital, or can be adequately rewarded for taking a risk of loss.

The solution is a mix of equity and debt layers, each receiving a return appropriate to the risk being taken.

This leads on to a key point about the role of an equity layer in the state-directed schemes towards which the current UK government intends to direct these models. The primary role of the equity layer in these models is not to make money. For entrepreneurial equity investors, making money is synonymous with the chance that the enterprise can accrete value:

- Because its product sells in high quantity and for a good price;
- Because its brands, recipes, formulae become valuable;
- Because the physical assets it owns – offices, land – become more valuable.

These possibilities are not on the agenda here. In the schemes we are discussing in this report, the chance that the asset will accrete value is low:

- It has a single purpose, like a flood defence or a wind farm;
- It is illiquid with a small, if any, market willing to buy it from its original owner.

This means that the provider of the equity financing cannot look to capital appreciation from the scheme: their returns must all come directly out of the scheme's cashflow. The enterprise is not an entrepreneurial undertaking, but a state-directed one. It is a different animal entirely.

Instead the primary role of equity in these models is 'credit enhancement' for the lenders into tranches of debt: an equity layer furnishes the highest-risk, first-loss absorption cushion, where one is required. The requirement dwindles when the quality of the asset and the revenues associated with it are backed by 'Sovereign risk', 'General government risk', or 'Public sector risk'.

Need for an equity layer where the scheme's principal is a public sector entity

Where there is no risk attached to the scheme's revenues, there is no value to having an equity layer. The suppliers of the debt tranches will view the scheme revenues as certain, where they have been committed to by a public sector entity. There might be a small interest premium demanded where the public sector entity is not the sovereign itself or a 'General government' entity, but the debt investors would not feel any more or less comforted if there were a thick equity layer.

As a result one can conclude that a different type of scheme is needed where the principal is a public sector entity, and where the principal (the source of the scheme's revenues) is not.

A scheme where the principal is a public sector entity is simply a new version of PFI. The contract payments under the scheme have to be accounted for as a cost for the public sector entity.

The other type of scheme is the one where the principal is an arrangement where the product or service of the scheme is sold on, directly or indirectly, to UK businesses and individuals, and without a minimal footprint in the public accounts.

3.3 Business case for the PFI model

The current government intends to revive PFI as a funding model, although its application is by its nature limited to schemes where a public sector entity is the contract party and is obliged to make the payments for the asset involved, according to the Infrastructure Strategy:

> **Public Private Partnerships**
>
> **2.40** The Public Private Partnership (PPP) model provides a mechanism to bring in private finance to infrastructure projects. The PPP model is a long-term contract between a private party and the public sector where the private sector designs, builds, finances and operates a public asset and related services. The private sector finances the construction of the asset and is recompensed for this, and ongoing maintenance, via annual payments either directly from taxpayers or through consumer charges (for example, tolls or fares).

The defect of this option is that the annual payments by the public sector entity count as day-to-day costs, raising them, and thereby acting as a drag on the fulfilment of the respective fiscal rule.

The business case for PFI is laid out in para 2.42, which can be read as a disguised apology for how New Labour used PFI during their thirteen years in office, what poor value was delivered to the public, and how long the payments will persist:

> **2.42** A well-designed PPP model can bring in private sector discipline to reduce deliverability risk as the private sector is incentivised to deliver to budget and time. In some cases, PPPs can bring these and other benefits to infrastructure projects, but this needs to be balanced with the management of risks and costs. This can be done by the careful, targeted use of PPPs for the projects and sectors where risks can be well managed so that private financing achieves value for money.

The government proposes to use PFI going forward only 'in very limited circumstances' and in the areas of health and Net Zero. They also propose to announce their decision-making in the Autumn 2025 Budget:

> **2.44** The government will also explore the feasibility of using new PPP models for taxpayer-funded projects in very limited circumstances where they could represent value for money. The government will explore the potential to use PPPs:
>
> - In certain types of primary and community health infrastructure; and
> - For taxpayer-funded public estate decarbonisation projects such as the installation of solar PV, battery storage and low carbon heating solutions (where PPP may be considered alongside alternative private finance models).
>
> **2.45** A decision whether to use PPPs in these very limited circumstances will be taken by Autumn Budget 2025, based on co-development of a model and business case between NISTA and the relevant department.

The author's view is that these professions of reluctance to use PFI other than in exceptional circumstances are disingenuous. The reasons for avoiding usage of PFI are nothing to do with its success or failure in the past but with accounting treatment:

- The costs of PFI for the public sector become day-to-day costs, the inverse of the effect that the government plans to achieve;
- The government wishes rather to recharacterize day-to-day costs as 'investments' in order:
  - To be able to borrow to fund them;
  - To make it easier to meet the fiscal rule around day-to-day costs.

A different type of scheme – the 'Direct sale' one - is needed to meet these accounting objectives.

The case in favour of the renewed usage of PFI is rather one of practicality and investor appetite:

- The government needs to raise a lot of money;
- PFI could produce a large quantity of money because the credit risk for the investor is closer to direct 'public sector risk' than the ideal scheme structure for accounting purposes;
- Investors will also be willing to commit their money for a longer period;
- 100% of the investment cost of a PFI project is raised from third-party sources;
- No usage need be made of the government's 'capital envelope'.

For these reasons we expect PFI to be used to fund some or all of the following:

- All of the 'Social Infrastructure' expenditure on Health, Education and Justice;
- Maintenance on assets that are already being financed under PFI;
- Flood defences;
- Expenditure on railways, now that much of the network is being taken back into public ownership. ,

Net Zero assets lend themselves to the application of the ideal scheme structure for accounting purposes.

3.4 PFI funding model

Without wishing to push the analogy too far, this scheme is akin to a 'dry' aircraft lease, in which it is the user – an airline – that provides all the crewing and bears the operating expenses as its day-to-day costs. Where the PFI's object is a hospital, an NHS Trust will provide all the staffing, equipment, and other services. Where the PFI's object is a school, a local education authority will provide all the teachers, ancillary staff, and equipment.

A proviso should be raised against the analogy, in terms of where the dividing line lay under the PFI schemes engaged during the period 1997-2010 between what the public sector user had to do to operate the asset, and what the PFI provider did. The very high lifetime cost of the schemes points to the dividing line having been set at a point where the PFI provider undertook many roles that might better – and more cheaply – have been kept in-house by the public sector entity.

The current government's papers on PFI allude to an intention not to repeat earlier mistakes, and we take this at face value: under the new PFI the public sector entity should be entering into a form of 'dry' aircraft lease, or, to use the term from the maritime world, a 'bare boat charter'.

With the user in the case of PFI being a public sector entity, the credit risk pertaining to the rental payments is low. The asset, meanwhile, is unsuited to alternative use, cannot easily be sold, and creates no Intellectual Property value. There is no capital appreciation potential for an owner. Its ownership reverts to the user at the end of the lease: the objects of the previous incarnation of PFI projects revert to the user (an NHS health trust, the Ministry of Defence, an education authority) at the conclusion of the PFI arrangement.

As a result, equity is neither needed for risk purposes nor can it be adequately remunerated. There needs to be a nominal owner, and the owner will be a private sector entity that is in a position to supply any extra services. As a result it is likely – but not certain – to be a construction company.

The scheme's financing can be contracted along these lines, in which the senior debt is the majority of the amount to be raised:

Tranche	Ranking	Percentage	Interest	Repayment
A	Senior	85%	Gilts plus 2%	10-year annuity
B	Mezzanine	10%	Gilts plus 4%	15-year annuity
C	Subordinated	4¾%	Gilts plus 6%	20-year annuity
D	Equity	¼%	--	Peppercorn

There will also be an annual management fee, as well as a stipulation that the user can request extra services. It is from these two sources, rather than dividends or capital appreciation, that the equity investor makes their return. The pertaining commercial principles are explained in the author's book with reference to the InvestEU 'Medway Cargo Rolling Stock' project in Portugal.[41] In that project the organiser - Medlog S.A., a Swiss logistics company – will have had ample possibilities within the commercial structure to take revenues along the way, thereby reducing their need for returns on their shares.

The entirety of the debt raised is 'shadow debt', and it amounts to nearly 100% of the project cost. The debt service, though, is not 'shadow taxation': it is an addition to real taxation, because the contract payments come out of public budgets for day-to-day costs. The debt does not figure in 'General government gross debt' or in any measure of 'Public sector debt', but the contract payments do run through the public accounts.

This is the one defect in the PFI model for a government, and will cause PFI to be used selectively, but not necessarily for the reasons the government states in its papers.

On the other hand the scheme needs no support from Public financial institutions or injection of investment money from the government, so it has no footprint in the public accounts on that side.

3.5 Business case for the 'Direct sale' model

Ideal scheme structure

The ideal scheme from an accounting point of view is where the principal is not a public sector entity, but a privately-owned one:

- The scheme reimburses itself on UK businesses and individuals, directly or through an arrangement;
- No day-to-day costs run through the public accounts, save any subsidies paid out to the scheme;
- The credit risk for the investors in the scheme is a version of 'public sector risk' but without their loans being counted within any of 'General government gross debt', 'Public sector net debt', or 'Public sector net liabilities'.

These debts are genuine 'shadow debts', and the debt service is genuine 'shadow taxation': the debts are financial obligations of UK businesses and individuals created for them by the government, without little or no footprint left in the public accounts.

[41] Lyddon, *The shadow liabilities of EU Member States* pp. 188-9

The footprint in the public accounts is the support from the government – direct or through Public financial institutions – that is necessitated because the schemes contain a higher risk for investors. The risk for investors is reduced firstly by the government and Public financial institutions acting in the role of the 'missing investor' and engaging in the layers of financing that contain the highest risk.

The second level of support is that given to the returns for investors through the mechanisms through which the schemes will be licenced to reimburse themselves on UK businesses and individuals. That could be a subsidy, or an allocation of a market at a fixed price, and or mixture of the two. The operation of these mechanisms may leave a footprint in the public accounts, even if the main intention is that the business model should not.

Pricing mechanisms

It is not within the scope of this report to analyse each of the arrangements that can be used to ensure returns for market actors and for their investors out of any of the schemes that sit within the report's scope.

Those providing the funds wish to gain a return, and that includes the Public financial institutions and the government itself.

Suffice it to say that it is intrinsic to the business models of these schemes that there can be a different mechanism for the setting of the price for the end user of whatever product or service it is, than that the suppliers makes available a source of supply to a buyer, and ask for a price that reflects the supplier's investment costs, cost-of-capital, cost-of-debt, mix of capital to debt, operating costs and all the other elements. The buyer decides whether to buy the product or service from this supplier, or to buy from a different supplier, or not to buy at all.

Instead the business model envisages many and various ways in which the taxpayer subsidises the supplier, or else the supplier is licenced by the authorities to set their price to the buyer at a level that ensures the viability of the supplier, whatever the result for the buyer.

In certain cases the taxpayer (businesses and individuals) provides the subsidy through the government or through public corporations; in other cases it is businesses and individuals who provide the subsidy through the price they pay for the supply.

Either way it is no longer a free market.

The Infrastructure Strategy (p. 41 para 2.27 Part 2) lays out how the nation's various 'economic regulators' will perform the duty of negotiating these subsidies:

- Ensure that price control decisions are timely and predictable, with dialogue with licensees in the design and delivery of price controls.[60]
- Consider how a better-defined role for consumers in price control processes could improve the palatability of infrastructure delivery costs.
- Provide regular updates to government and appropriate transparency to the public on:
    - The progress of infrastructure delivery and companies' progress against outcome metrics;
    - The expected impacts on household bills of delivering the infrastructure set in price controls and the rationale for investment;
    - How they have balanced between objectives and duties as part of their price control determinations.

The Infrastructure Strategy (p. 43) then sets out the allowable subsidy mechanisms:

> **2.36** The **Regulated Asset Base (RAB)** model is a funding framework employed primarily in regulated infrastructure sectors to determine the allowed revenues which can be earned by assets that are used to provide regulated services, such as water, energy, and transportation. Under this model, regulated entities are allowed to recover their investment costs, including a reasonable return, through customer charges based on the RAB value. The RAB model is being adopted to deliver a range of new infrastructure – including the Thames Tideway Tunnel, nuclear projects such as Sizewell C, and new areas such as hydrogen transport infrastructure. It is also a model under consideration for the Lower Thames Crossing.
>
> **2.37** **Contracts for Difference (CfD)** are contractual agreements designed to encourage investment in renewable energy and low-carbon projects by providing price stability and revenue certainty to developers. Infrastructure projects suited to the CfD model are those which have access to traded market revenues, but where revenues are too uncertain or volatile to support long-term financing. As well as renewable energy sectors such as offshore wind, the dispatchable power agreement for supporting gas generation with carbon capture combines a CfD approach with a fixed rate 'Availability Payment' similar to the capacity market. The proposed business model for hydrogen power generation will be based on the Dispatchable Power Agreement, and is expected to use an availability payment mechanism.
>
> **2.38** **Capacity market auctions** offer another model for attracting private capital to infrastructure in regulated sectors. To ensure there is enough electricity to meet peak demand, reliable capacity can bid for contracts to be available at peak times. Auctions are held four years and one year ahead of delivery, and contracts are available for existing and new capacity.
>
> **2.39** A **'cap & floor' model**, suitable for monopolistic assets, sees investors paid between a minimum cost (the floor) and a maximum cost (the cap), with excess revenues being paid back to consumers. This model has been implemented previously (for example, for interconnectors and Offshore Transmission Owners (OFTOs)). In April 2025, Ofgem opened the first application window for the new Long Duration Electricity Storage (LDES) projects under the cap and floor scheme.[65]

The energy company RWE has helpfully furnished an example of a 'Power Purchase Agreement' between a generator of green energy and a distributor, such as themselves, the agreement 'ensuring predictable pricing and fostering investment in renewable energy projects'.[42] In other words the pricing makes sure that investors receive their promised returns.

Part of ensuring returns is to increase the period during which the generator is permitted to sell their energy into the transmission system and on to UK businesses and individuals. To support the supplier side of the industry, 'contracts under the UK's renewable energy support scheme [will be extended] from 15 to 20 years'.[43] In other words UK businesses and individuals will become locked into these longer arrangements as well.

The Low Carbon Contracts Company ('LCCC'), a quango, is the conduit for the payments under a Contract for Difference (a 'CfD').[44] The government is proposing both 'longer CfD contract terms and less stringent offshore wind eligibility criteria in order to boost investor certainty and accelerate the planning process for new clean power projects'.[45]

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[42] https://www.rwe.com/en/the-group/rwest/rwest-products-and-services/green-energy/power-purchase-agreement/?startDate=24.02.2025&endDate=24.02.2026 accessed on 1 September 2025

[43] https://shropshiregreenenergycentre.co.uk/a-push-for-longer-renewable-energy-contracts-in-the-uk/ accessed on 1 September 2025

[44] https://www.gov.uk/government/collections/contracts-for-difference accessed on 1 September 2025

[45] https://www.businessgreen.com/news/4409819/contracts-difference-government-proposes-bold-reforms-flagship-clean-power-scheme accessed on 1 September 2025

In other words, in business models where the subsidy for the supplier is not in the form of higher prices paid by UK businesses and individuals, UK businesses and individuals will pay higher taxes to the government, for the government to pay out to LCCC, for LCCC to pay out the subsidy to the supplier under its CfD.

One of the main elements in the push towards Net Zero is the weakening of the planning regime.[46] Just as offshore wind projects will face less stringent eligibility criteria for obtaining subsidies, onshore projects will face less difficulty and less time in gaining approval.

3.6 'Direct sale' funding model

The product or service of the scheme is sold on, directly or indirectly, to UK businesses and individuals, and without either these payments, the scheme's costs, or the scheme's debts being visible in the public accounts.

This is akin to a 'wet' aircraft lease: the lessor provides crewing and discharges other operational tasks, and sets the lease rental at the appropriate level to recoup the costs, as well as to cover financing costs and profit.

A layer of equity is required in this case, and the resulting financial package may be attractive to the equity provider, once all the subsidies and other 'incentives' are taken into consideration. This does not necessarily make the proposition bankable for a lender. The model may require further layers of loss-absorption cushion on the lower rungs of the 'creditor ladder' for the risks and returns to be acceptable to the investors on the higher rungs.

It is a typical scenario where the 'missing investor' features: as inserter of the missing loss-absorption cushion to make the transaction bankable for lenders. This is the role of the EIF in InvestEU and we can expect it also to be the role of Public financial institutions in the UK government's plans.

The key question is what these Public financial institutions will demand as remuneration. In InvestEU the answer tends towards zero: they supply a loss-absorption cushion without commensurate remuneration, in order that the scheme be launched and the public policy objective associated with it met.

The EU's Public financial institutions thereby supply a form of subsidy, similar to the equity layer in the aircraft lease: that 15% layer of financing requires no payments by the SPC. The equity amount merely has to be returned at the end of the lease. It is a form of interest-free loan whose effect is to reduce the rentals.

In the UK's case we can expect Public financial institutions to either supply this layer, or to guarantee another finance actor to supply it. The resulting scheme set-up might look like this:

Tranche	Ranking	Percentage	Interest	Repayment
A	Senior	70%	Gilts plus 3%	10-year annuity
B	Mezzanine	10%	Gilts plus 5%	15-year annuity
C	Subordinated	10%	Gilts plus 8%	20-year annuity
D	Equity	10%	--	Dividends from profit margin on operating expenses

[46] https://national-infrastructure-consenting.planninginspectorate.gov.uk/project-search?region=eastern accessed on 1 September 2025

On top of the financing costs, the SPC would need to recoup the operating expenses, which could be substantial, and make its profit. The owner of the SPC would be a construction company or otherwise a leading operator for its own account of the type of asset the scheme is involved in.

The C tranche – subordinated debt – is likely to be the one guaranteed to its supplier by a Public financial institution. The key question is what remuneration it asks for from the supplier or from the scheme:

- Does it require that a portion of the interest coupon on the Subordinated debt be paid over to it?
- Does it require the scheme to pay it a guarantee fee, leaving the supplier of the Subordinated debt receiving a high return for taking a low risk?
- Does it not ask for any remuneration?
- Whichever variant it is, how would the answer square with the avowed intent of the NWF, as quoted above, to 'utilise an increased appetite for risk to achieve our mission'?

These are issues over which the publicly available information about the UK's Public financial institutions supplies little enlightenment.

The entirety of the debt raised is 'shadow debt', and it amounts to 90% of the project cost. The debt service ranks as 'shadow taxation': the scheme's revenues do not come out of public budgets for day-to-day costs, even if the project is motivated by public policy objectives.

The scheme's debt does not figure in 'General government gross debt' or in any measure of 'Public sector debt', nor do the scheme's revenues run through the public accounts.

This would be the ideal accounting outcome, were it not for the fact that the scheme may need a financial contribution either from the government or Public financial institutions or both, to get it off the ground. Either type of contribution is ultimately borrowed by the government as 'borrowing for investment', even the portion that runs through a Public financial institution.

Such 'borrowing for investment' does raise 'General government gross debt' and 'Public sector net debt', but it does not raise 'Public sector net liabilities', because there is an asset against it that can be netted off. Even where the money is relayed first to a Public financial institution and then from the Public financial institution into the scheme, as long as there is an asset at the end of the chain, the debt can be netted off against it.

Where the scheme also requires an ongoing financial contribution from the government – supplied directly or through a government agency – this will be a day-to-day cost and leave its footprint in the public accounts.

3.7 Lifetime cost of an asset under the PFI and 'Direct sale' models

We now have a funding model for both of the two variants likely to play a role in the realisation of the UK government's investment plans. Both are grounded in principles in common usage in the 'leveraged finance' industry, in schemes that achieve accounting outcomes whereby debts are created but are held off the balance sheets of the main market actors involved.

The next step in this report will be to calculate what payments will be required to service a given amount – the cash price of an asset - under the PFI model and using the deal template outlined above, and same for the 'Direct sale' model. The chosen cash price is £100,000. That is taken to be one investment unit.

In each case we will have a lifetime deal cost for the acquisition and running of one unit under the respective model, one equating to a 'dry' lease where the lessee incurs the running costs, and the other equating to a 'wet' lease where the lessor incurs them and factors them into the rentals.

Once the lifetime cost per unit has been ascertained, it will be a question of identifying, from all the projects proposed by the current UK government, which ones can be subjected to the PFI model, and which qualify for the 'Direct sale' model. The cash prices of the projects can then be converted into the number of units they represent. Finally this number of units can be multiplied by the lifetime cost of a single unit.

The result is firstly an illustration of what the lifetime financial burden will be for the projects eligible for PFI, and secondly what it will be for the projects that are ineligible and which utilise the 'Direct sale' model. Thirdly, the sum of the two is the lifetime burden that the current UK government's plans will place upon UK businesses and individuals.

Funding terms and conditions

The debt's full term is taken to be 20 years under both models. Loan finance is paid off to zero on an annuity basis over a period related to its rung on the 'creditor ladder'. The different tranches in the financing are remunerated through an interest rate composed of the yield on gilts for the transaction's average life, plus a premium dependent upon the credit risk being taken by an investor into that layer.

The higher up the tranche sits on the 'creditor ladder', the quicker it is paid off.

The gilt yields are as at close-of-business on 12th September 2025:

- The Reference Gilt approximates to the average life of the annuity;
- The 15-year yield was derived by adding the 10-year and 20-year yields, and dividing by two.

The dividend rate for equity is set at 10% above the gilt rate for 30 years, the longest maturity. It yielded 5.48%. Adding the 10% margin required by an equity investor results in a dividend rate of 15.48%.

The interest premia take account of:

- PFI schemes intrinsically containing lower risk for the investor because the ultimate debtor is a public sector entity;
- This supports a thicker layer of senior debt and at a lower interest premium;
- All the layers in the PFI model attract a lower premium than their equivalent layers in the 'Direct sale' model.

No account has been taken of either ongoing administration fees or the cost of repairs, alterations or adaptation of the asset. Including them would verge on guesswork and this remains an illustration.

Term sheet for the PFI funding model and annuity calculations

This is the term sheet for the PFI model:

Tranche	Ranking	Percentage	Interest	Ref Gilt	Gilt yield	All-in	Repayment
A	Senior	85%	Gilts plus 2%	7 year	4.26%	6.26%	10-year annuity
B	Mezzanine	10%	Gilts plus 4%	10 year	4.68%	8.68%	15-year annuity
C	Subordinated	4¾%	Gilts plus 6%	15 year	5.02%	11.02%	20-year annuity
D	Equity	¼%	--	N/A	N/A	N/A	Dividends

These are the resulting annuity calculations for each tranche:

Tranche A		
Annuity:		Annual payment:
10	Pymts	-11,691
6.26%	Interest	
85,000	Capital	
0	FV	
Tranche B		
Annuity:		Annual payment:
15	Pymts	-1,217
8.68%	Interest	
10,000	Capital	
0	FV	
Tranche C		
Annuity:		Annual payment:
20	Pymts	-597
11.02%	Interest	
4,750	Capital	
0	FV	

This is the projection of lifetime costs for an investment unit of £100,000:

Year	Tranche A	Tranche B	Tranche C	Total
1	-11,691	-1,217	-597	-13,506
2	-11,691	-1,217	-597	-13,506
3	-11,691	-1,217	-597	-13,506
4	-11,691	-1,217	-597	-13,506
5	-11,691	-1,217	-597	-13,506
6	-11,691	-1,217	-597	-13,506
7	-11,691	-1,217	-597	-13,506
8	-11,691	-1,217	-597	-13,506
9	-11,691	-1,217	-597	-13,506
10	-11,691	-1,217	-597	-13,506
11		-1,217	-597	-1,815
12		-1,217	-597	-1,815
13		-1,217	-597	-1,815
14		-1,217	-597	-1,815
15		-1,217	-597	-1,815
16			-597	-597
17			-597	-597
18			-597	-597
19			-597	-597
20			-597	-597

Term sheet for the ‘Direct sale’ funding model and annuity calculations

This model is taken to involve £15,000 per annum of operating expenses, and an equity layer that earns a profit margin of around 10% on those expenses. These expenses may appear low. However, the schemes will be spread over a number of types of enterprise, and it is our sense that there will be a preponderance of Net Zero-related schemes using this model. The Cost/Benefit analysis in the Carbon Budget contains operating expenses that it has not been possible to validate.

There are always risks in financial analysis, and the risk in this area in our judgement would be to duplicate what is already in the Carbon Budget and thereby to exaggerate the costs. Instead, we have preferred to include the operating expenses as a global amount of £15,000 per annum on the asset of £100,000, whereby a presumed 10% profit margin on the operating expenses comes close to the required 15.48% per annum return on the equity layer of £10,000. The enterprise has to pay out both the dividend and the expenses.

It is preferable to keep the model simple and not to claim too much of it, as it then remains a model and an illustration.

This is the term sheet for the ‘Direct sale’ model:

Tranche	Ranking	Percentage	Interest	Ref Gilt	Gilt yield	All-in	Repayment
A	Senior	70%	Gilts plus 2%	7 year	4.26%	6.26%	10-year annuity
B	Mezzanine	10%	Gilts plus 5%	10 year	4.68%	9.68%	15-year annuity
C	Subordinated	10%	Gilts plus 8%	15 year	5.02%	13.02%	20-year annuity
D	Equity	10%	10% over risk-free rate in longest maturity	N/A	N/A	N/A	Dividends from profit margin on operating expenses

These are the resulting annuity calculations for each tranche:

Tranche A		
Annuity:		Annual payment:
10	Pymts	-9,628
6.26%	Interest	
70,000	Capital	
0	FV	
Tranche B		
Annuity:		Annual payment:
15	Pymts	-1,291
9.68%	Interest	
10,000	Capital	
0	FV	
Tranche C		
Annuity:		Annual payment:
20	Pymts	-1,425
13.02%	Interest	
10,000	Capital	
0	FV	
Tranche D		
- Equity		Annual payment:
10,000	Capital	-1,548
10,000	FV	
15.48%	Dividend	

This is the projection of lifetime costs for an investment unit of £100,000:

Year	Tranche A	Tranche B	Tranche C	Tranche D	Opex	Total
1	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
2	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
3	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
4	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
5	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
6	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
7	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
8	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
9	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
10	-9,628	-1,291	-1,425	-1,548	-15,000	-28,892
11		-1,291	-1,425	-1,548	-15,000	-19,264
12		-1,291	-1,425	-1,548	-15,000	-19,264
13		-1,291	-1,425	-1,548	-15,000	-19,264
14		-1,291	-1,425	-1,548	-15,000	-19,264
15		-1,291	-1,425	-1,548	-15,000	-19,264
16			-1,425	-1,548	-15,000	-17,973
17			-1,425	-1,548	-15,000	-17,973
18			-1,425	-1,548	-15,000	-17,973
19			-1,425	-1,548	-15,000	-17,973
20			-1,425	-1,548	-15,000	-17,973

3.8 Considerations around the apportionment of revenues and costs

Who will pay these costs and how

Now we have a reasonable model of the lifetime costs from the PFI model and the 'Direct Sale' model, for an asset with a cash price of £100,000.

The contention is that these costs will be borne by UK businesses and individuals one way or another:

- The PFI-related costs through taxes, as these become day-to-day costs of government, given that the principal is a public sector entity;
- The 'Direct sale' costs through charges that UK businesses and individuals will pay for whatever the respective scheme produces, and/or through subsidies for suppliers intermediated through public sector entities, and/or through the provision of finance by the government or Public financial institutions which the government has borrowed but where the project fails to deliver the returns needed to pay the government's borrowing costs.

Where the scheme does not produce a chargeable supply, it is more likely that the PFI model will be used.

Given that the PFI model does not require – and in fact should not receive – an equity injection from the government, it follows that the entirety of the government's 'borrowing for investment' and its increased resources for Public financial institutions will be used in the 'Direct sale' model.

The increased cash resources at the disposal of Public financial institutions have been furnished to them by the government's 'borrowing for investment'. These cash resources should not be double-counted.

They can be expected to be invested in the C Tranche or the D Tranche in the 'Direct sale' model.

The other resource at the disposal of Public financial institutions towards these schemes is their increased ceiling for issuing guarantees, backing out the increased ceiling for UK Export Finance.

These guarantee resources can be expected to be deployed towards the C Tranche in the 'Direct sale' model, to induce investors to supply cash where they do not have the risk-appetite for that layer.

It cannot be discounted that the government also issues guarantees itself rather than through Public financial institutions, although its papers do not supply any detail on this point.

Costs under the 'Direct sale' model include revenues for the government and for Public financial institutions

We need to address the issue of whether it is fair to project all the costs under the 'Direct sale' model as falling on UK businesses and individuals, when some of those costs represent revenues for Public financial institutions, and for the government (where the government is a direct investor). Those revenues are, on paper at least, attributable to UK businesses and individuals.

If the National Wealth Fund's contentions are to be believed, they at least will put their resources out at market rates. In the InvestEU model it is, by contrast, the role of the EIB and EIF to put their resources out at sub-market rates in order to get projects off-the-ground. The projects could not have attracted enough money at the right cost from the market, so the EIB and EIF play the role of the 'missing investor' and step in with a form of subsidy.

Revenues for Public financial institutions

The issues around how the UK's Public financial institutions will conduct themselves can in our estimation be brought down to this:

- The 'Direct sale' schemes will produce revenues for Public financial institutions, where they are involved, that include the interest payments that the government must pay to investors on the gilts it issued in order to raise the funds that it has put at the disposal of the Public financial institutions;
- That portion of the costs of the 'Direct sale' scheme is paid through the Public financial institutions and through the government to investors: it does not remain in a place where it is attributable to UK businesses and individuals;
- We are therefore only discussing a putative profit over cost-of-funds accruing at Public financial institutions, if one should arise;
- The question is whether this putative profit should be identified and then deducted from the costs, to result in a net cost.

We have elected not to do this for several reasons:

- The portion of the whole that can be contributed by Public financial institutions is small: £39.3 billion of cash resources and £18.0 billion of guarantee resources, against a need of £1.9 trillion: that is just 3% of the requirement;
- The 'wealth' that might be amassed by Public financial institutions cannot be counted upon, when the Public financial institutions will be taking high risk;

- UK businesses and individuals will be sceptical as to whether the Public financial institutions are capable of making good investments and dealing at market rates, given the prior experience of the Future Fund and the Covid Business Interruption Loan Scheme, where losses were made due to poor investment decisions and to poor due diligence work to filter out fraudulent applications;
- UK businesses and individuals will be sceptical as to whether any 'wealth' landing in the Public financial institutions will actually be of benefit to them, as opposed to its being utilized for a social purpose of no benefit to them;
- It would be speculative to count the putative profit margin of Public financial institutions as offsetting the costs, as the profit may remain imaginary;
- The models remain illustrations, and ones focusing on cost, and making adjustments on account of 'wealth' amassing in Public financial institutions would be a speculative exercise, unlikely to alter the big picture, and might make common understanding of the issues more difficult.

Political dynamics between Public financial institutions and the government

On top of this we need to take account of political dynamics. The UK government's plan is aggressive, and may not survive contact with reality:

- If the pace of projects begins to slow, in the face of objections and bureaucratic process;
- If 'commitments' from third parties are revoked or watered down;
- If the Mansion House Accord fails to deliver £50 billion from UK pension funds;
- If the finance structures presented to investors are not taken up with enthusiasm.

In that case the Public financial institutions will come under pressure from the government to do those things, as the EIB and EIF have, to ensure projects get off the ground, and by playing out the role of the 'missing investor'. That means subsidizing deals by not requiring the same returns as private investors (who in fact are not 'missing', only requiring better security and remuneration). It can mean – as happened in the case of Unicredit's 'Fino' transaction – adding in an extra high-risk layer in a financing and subscribing to it. In those eventualities there will be no profits accruing into the Public financial institutions. There may even be losses, if projects fail and Public financial institutions are left owning high-risk debt layers in structures with very little equity. In that case the Public financial institution becomes the effective 'first-loss' party.

Whatever the situation inside Public financial institutions, the government continues to have to meet the debt service obligations on the borrowings it to took so as to furnish these Public financial institutions with their resources.

To the extent that these Public financial institutions fail to pay over to government the necessary amounts, there is a shortfall at the government level which will have to be met by UK businesses and individuals.

Revenues for government

For substantially the same reasons as apply to Public financial institutions, it would be speculative to imagine that the government will both request and receive revenues on whatever portion of financing it injects directly into schemes.

The government is also likely to play the role of the 'missing investor' and supply, as EIB Group does in InvestEU, a layer of subsidised financing, whilst taking high risk.

Our model does not specifically connect the UK government's increased 'capital envelope' for the period 2025-34 to the investment amount under the 'Direct sale' model for the same period, other than to say that the amount will be directed towards that layer:

- Because it does not need to be directed towards the PFI model;
- Noting that some of it has been directed as £29.4 billion of increased resources to Public financial institutions, who have no role to play in a PFI model, meaning that it will be relayed by them into 'Direct sale' schemes.

If the UK government's has a 'capital envelope' of £270 billion and £29.4 billion will be routed through Public financial institutions, the implication is that the remaining £240.6 billion will be spent directly on projects by the government, which is 5.8% of the investment amount of 'Direct sale' schemes.[47]

The government will need to pay interest on the entire £270 billion, and should be requiring a return on its investments in order to raise that money without having to take it from the day-to-day costs budget. If high returns are made, they could even exceed the cost of the debt. However, one should be conservative in predicting both the amount, timing, and reliability of the returns.

It remains our view that market forces will intervene to necessitate larger risk-absorption layers to be inserted into schemes and for 'missing investors' to play an increasing role. That would include the government, if it wants its schemes to get off the ground, and acting either directly or by furnishing still more resources to Public financial institutions to act for them in the furtherance of the respective public policy objectives.

The question comes up, as it did for Public financial institutions, of whether the revenues for the government on its investments should be calculated and offset against the costs, thereby reducing the net costs.

Once again we believe this would be unsound because of:

- Uncertainties regarding timing and amounts of revenues;
- Risk factors associated with the schemes themselves;
- The relatively modest portion of the whole that the government's 'capital envelope' represents;
- The chance of blurring the main messages of this report if complex and arbitrary adjustments are made;
- The high likelihood that the government's role of the 'missing investor' will expand, in order to get its projects off the ground;
- The very high likelihood, if it was the case that the 'missing investor' had to intervene to get such projects off the ground, that the government would obtain a sub-market return or no return at all.

[47] See Part 4.7 for how the 'capital envelope' has been arrived at for 2025-34

3.9 Section Summary

Having ascertained the potential lifetime costs from the PFI model and the 'Direct Sale' model, for an asset with a cash price of £100,000, we need to take the next step and match the elements in the government's investment plans to the financing model that will sit behind each of them.

A small portion of the lifetime costs may end up in the hands of Public financial institutions and theoretically be attributable to those who will pay the costs. The variables around there being a quantum of 'national wealth' in Public financial institutions are too great to make an allowance for this, and it is even less certain that all who paid into this quantum will benefit from its existence.

Similarly in the case the government, which may make revenues on the portion of the 'capital envelope' it invests directly. The variables are too great for an allowance to be made for this.

The overarching picture is that UK businesses and individuals will pay:

- Higher taxes, being the scheme costs under the PFI model, subsidies paid under the 'Direct sale' model, and shortfalls in the government's budget caused by failure of the government's investments under the 'Direct sale' model – both directly in schemes and through Public financial institutions – to generate the returns needed to cover the government's borrowing costs;
- Higher prices, where schemes are licenced to charge an inflated price for the goods and services they produce.

Part 4 – In-depth analysis of UK initiatives and spending plans

4.1 Introduction

This section describes the organisational arrangements that the UK government has put in place to enable the raising and spending of the 'shadow debt', including the expansion in the remit of organisations already in place.

The section then analyses each main document that the UK government has issued which provides evidence of what amount will be spent, what on, and when.

Finally the section attempts to eliminate duplications and to draw out a global amount that will be spent during the period 2025-34.

The principal sources are:

1. The government's 2024 general election manifesto
2. The Climate Change Committee's Seventh Carbon Budget
3. The Clean Power Action Plan
4. The Solar Roadmap
5. The Industrial Strategy
6. The Infrastructure Strategy
7. The June 2025 Spending Review

4.2 Organisational arrangements being laid down in the UK to enable 'shadow debt'

The new government has been quick to put in place a series of new institutions to take forward its 'decade of national renewal', a central theme in which is 'investment'. It has also built on arrangements put in place by the previous Conservative administration.

These institutions need to be understood as the apparatus for taking on 'shadow debt' and deciding what it will be spent on.

The institutions include those that will act as the EIB Group does within InvestEU.

Climate Change Act, Climate Change Committee, and Carbon Budget

The Climate Change Act 2008 set out the organisational framework within which the UK would become carbon-neutral by 2050. This is its scope:

Climate Change Act 2008

2008 CHAPTER 27

An Act to set a target for the year 2050 for the reduction of targeted greenhouse gas emissions; to provide for a system of carbon budgeting; to establish a Committee on Climate Change; to confer powers to establish trading schemes for the purpose of limiting greenhouse gas emissions or encouraging activities that reduce such emissions or remove greenhouse gas from the atmosphere; to make provision about adaptation to climate change; to confer powers to make schemes for providing financial incentives to produce less domestic waste and to recycle more of what is produced; to make provision about the collection of household waste; to confer powers to make provision about charging for single use carrier bags; to amend the provisions of the Energy Act 2004 about renewable transport fuel obligations; to make provision about carbon emissions reduction targets; to make other provision about climate change; and for connected purposes. 9 [26th November 2008]

The Climate Change Committee is the statutory body established pursuant to the Act, with a wide remit to make all necessary financial, technical, and organisational arrangements to bring about the desired outcome.

This includes producing an annual Carbon Budget for the responsible minister, showing the individual measures being taken, and the effect of each in terms of reducing the UK's carbon emissions. The budget then collates these measures to show how the UK will meet the target and by 2050.

The Carbon Budget must include a Cost/Benefit analysis, showing the investment cost of each of the individual measures and their resultant financial benefits (assuming they have any). It will be a subject of this report whether the Cost/Benefit analysis adequately captures the financing costs of the programme.

British Business Bank ('the BBB')

The BBB is a 'government-owned development bank' and one of the Public financial institutions. It is a facilitator of finance for Small and Medium-Sized Enterprises:

'We work with a broad network of lenders, fund managers, and regional partners to deliver funding that helps smaller businesses grow and thrive. As a government-owned development bank, we don't lend or invest directly, instead, we collaborate with trusted finance providers to make sure support reaches the businesses that need it most'.

This facilitation resulted, prior to the 2024 general election, in outcomes such as:

- The Future Fund[48]
- The Coronavirus Business Interruption Loan Scheme[49]

The BBB is the administrator and facilitator for several 'funds' that form part of the government's financial package, such as:

- The British Growth Partnership
- The Growth Guarantee Scheme (the successor to CBILS)
- The Nations and Regions Investment Funds
    - Investment Fund for Wales
    - Investment Fund for Scotland
    - Investment Fund for Northern Ireland
    - Northern Powerhouse Investment Fund II
    - Midlands Engine Investment Fund
    - South West Investment Fund
- The National Security Strategic Investment Fund

[48] https://www.british-business-bank.co.uk/finance-options/legacy-programmes/future-fund accessed on 25 August 2025
[49] https://www.british-business-bank.co.uk/finance-options/legacy-programmes/coronavirus-business-interruption-loan-scheme-cbils accessed on 25 August 2025

The government has recently announced a significant increase in the BBB's capacity, the key phrases in which are:[50]

- 'Total financial capacity will be increased to £25.6bn, which will enable a two-thirds increase in investments to around £2.5bn each year';
- 'This investment is expected to crowd in tens of billions of pounds of private capital and will support the most innovative UK businesses to access the capital they need to scale in the UK';
- 'The British Business Bank is the largest investor in UK venture and venture growth capital funds';
- 'Our equity programmes have supported more than half of the UK's current unicorns - 22 UK unicorns have been supported by the Bank's equity programmes, representing 56% of all current UK unicorns'.

In the Industrial Strategy the BBB's significance is rendered as:

- That it 'supported 11% of all equity deals over the last decade';[51]
- That it will 'put capital into IS-8 businesses and crowd in £12bn of private capital';[52]
- That it will make direct equity investments of up to £60 million.

To this last point, making direct equity investments is a departure from the previous practice of acting as facilitator and guarantor: it will invest its own money.

In this way the BBB matches two of the activities of the European Investment Fund within InvestEU:

- Issuance of guarantees;
- Equity, albeit that the BBB will henceforth make direct equity investments itself as well as administering funds that make equity investments, whereas the EIF does the latter but not the former. Instead it issues 'equity commitments'.

UK Infrastructure Bank, now known as the National Wealth Fund

UK Infrastructure Bank Limited was incorporated in February 2009 under the name Infrastructure Finance Unit Limited, and changed its name again on 14th October 2024 to the National Wealth Fund or NWF.[53]

NWF's Framework Document was published under the Conservative government.[54]

It is also one of the Public financial institutions.

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[50] https://www.british-business-bank.co.uk/news-and-events/news/british-business-bank-total-financial-capacity-increased-ps255bn accessed on 25 August 2025
[51] Industrial Strategy p. 50
[52] Industrial Strategy p. 51; 'IS-8' businesses being those within the scope of the eight industries that the Industrial Strategy has earmarked for growth
[53] https://find-and-update.company-information.service.gov.uk/company/06816271/filing-history accessed on 25 August 2025
[54] https://www.gov.uk/government/publications/ukib-framework-document accessed on 25 August 2025

The NWF's mission is summed up on its 'About us' page: 'We have £27.8bn to help crowd in private investment and drive growth across the UK'.[55] More detail is contained in its Strategy Statement: 'Our mission is to increase investment across the UK to accelerate delivery of the government's growth and clean energy missions, whilst balancing risk and return for the taxpayer'.

In other words the NWF is to be a fulcrum for channelling funds into general economic growth and into Net Zero specifically. Two statements on p. 6 of the NWF's 'Financing the Future - a statement of intent by the National Wealth Fund' indicate what type of institution it aims to be:

- 'catalyse private investment and unlocking investments that otherwise would not have gone ahead'
- 'utilise an increased appetite for risk to achieve our mission'

Its role will be to act in the higher-risk layers of financing, as the EIB Group does, such that larger amounts of money can be attracted from other investors into the same scheme, but in the lower-risk levels.

NWF's closest counterpart is the EIF, although it may also do senior and mezzanine lending.

The main question is how far £27.8 billion will go in terms of the investment needs for Net Zero according to the Climate Change Committee, and the investment needs for the rest of the economy.

'Missing investor' and the returns this investor should require

The phrase 'unlocking investments that otherwise would not have gone ahead' refers to the theory of the 'Missing investor' as outlined above under 'Key definitions'.

The other NWF statement quoted above – 'utilise an increased appetite for risk to achieve our mission' – serves to confirm that the NWF will be taking high risk.

A key question that remains unanswered, though, is what return the NWF will ask in exchange for taking on a financing that the private sector rejected as representing too low a return for the risk, or as a risk that was not acceptable at any price:

1. No return: the public sector subsidizes the scheme by providing free, high-risk money;
2. The same return the private sector rejected;
3. An even higher return than the private sector rejected in order to justify the risk.

If it is (2) above, a public institution is accepting a risk in exchange for a return that does not match it.

If it is (3) above, how does the scheme itself remain viable, in terms of selling what it produces to willing buyers at a price and on other terms that the buyer finds acceptable, assuming the buyer is at liberty to buy from other sources of supply, or indeed to not buy at all?

NWF's role also matches actions of the EIF within InvestEU in the area of issuance of guarantees.

[55] https://www.nationalwealthfund.org.uk/About-us accessed on 25 August 2025

In addition the NWF will do some of what the EIB does within InvestEU: make loans into the higher-risk layers of financings, such as subordinated debt and mezzanine debt. It does not appear to be planning to make senior debt loans: that appears to be the intended preserve of third-party lenders.

UK Export Finance (UKEF)

UKEF needs to be mentioned as it features in charts of Public financial institutions.

UKEF guarantees banks' loans to foreign buyers of UK exports (a Buyer Credit) and guarantees debts of a foreign buyer to a UK exporter (a Supplier Credit). The loss is limited, in general terms, to the financing being for no more 85% of the export's value, and to the ability of UKEF to obtain money back over time by operating the remedies in the Buyer Credit loan agreement or by having the exporter operate the remedies in the Supplier Credit documentation for them.

UKEF rarely makes a loan itself, which is why its ceiling is only £10 billion for Loans and Equity but £70 billion for Guarantees.

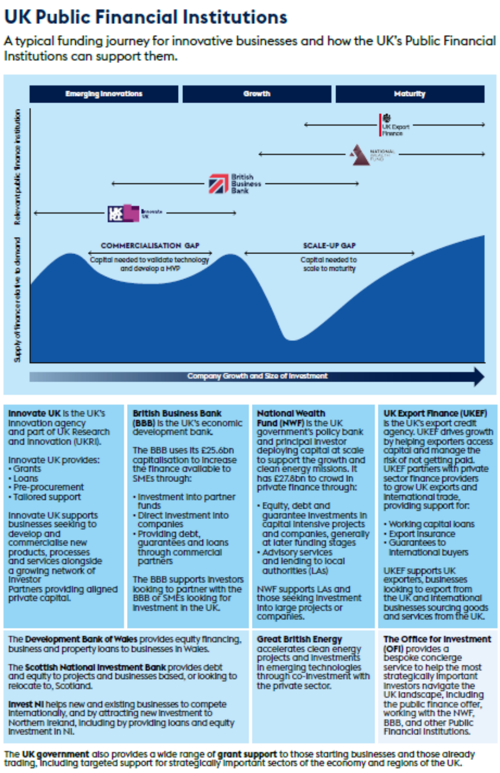
The government has expanded its capacity, which ought to assist export sales, but which adds risks for the taxpayer if the buyer defaults.

There does not seem to be the scope, though, in UKEF's business model, for it to seed a financial bubble in that way that is open to BBB and NWF.

Role of Public financial institutions

The role of Public financial institutions is to support businesses through their whole lifecycle including when they become exporters. UKEF supports them in this latter role.

How the support is forthcoming at each stage is depicted in this illustration on p. 52 of the Industrial Strategy:



New fiscal rules

In their October 2024 budget the government announced a new fiscal framework.[56]

In essence this was that the government's day-to-day costs should be covered by its revenues by the end of the current Parliament in 2029 and remain there.

Borrowing should only occur if it was to fund investment.

Given the new measure of national debt – Public sector net liabilities – this borrowing could be substantial if it was invested and resulted in an asset: the asset can be netted off against the debt that enabled it under the new measure.

Whatever resources the UK government provides to the NWF and other 'Public financial institutions' will perforce be on-balance sheet initially, but any government debt will disappear under 'Public sector net liabilities' because it will have been invested in an asset.

Similarly any debt borrowed by the NWF and other 'Public financial institutions' from third-parties will perforce be on-balance sheet initially, but it will disappear under 'Public sector net liabilities' because it will have been invested in an asset.

Finally any debt borrowed from third-parties by schemes into which the NWF and other 'Public financial institutions' have made investments (via debt, equity, or whatever) will not appear in the UK's public accounting.

Great British Energy[57]

Great British Energy (GBE) has been founded with the following objectives:

Great British Energy comes from a simple idea:
the British people should have a right to own and benefit from our natural resources.

These resources belong to all of us and should be harnessed for the common good.

We are a publicly owned energy company. We'll accelerate the roll-out of clean, secure, home-grown energy and help make Britain a clean energy superpower. The energy we will produce will give energy retailers the opportunity to provide much more home-grown clean power to UK homes and businesses.

We will support tens of thousands of good jobs in the clean energy projects we invest in and in their supply chains.

And because we're owned by the British people for the British people, we're committed to creating opportunities for people across all four nations of the UK, shaping a cleaner, more prosperous future for everyone.

Great British Energy is our national energy champion.

GBE is included in the charts of 'Public financial institutions' but its activity does not point to its being a financial institution: it is an energy company and a public non-financial corporation. Its clear purpose is to insert significant amounts of public money into schemes primarily around Net Zero, and as the scheme owner. The NWF is not limited in its scope to the energy industry whereas GBE is.

It is conceivable that parallel enterprises to GBE will be established for other industry segments, as may possibly be recommended by the Industrial Strategy Advisory Committee (see below). It would therefore be plausible to conclude that the NWF would perform a similar role towards those industry-specific enterprises as it will towards GBE.

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[56] https://www.gov.uk/government/publications/a-strong-fiscal-framework accessed on 26 August 2025
[57] https://www.gbe.gov.uk/ accessed on 26 August 2025

Both GBE and NWF are starting to 'invest' in schemes related to Net Zero. GBE's strategic statements are that it 'will own, manage, and operate clean power projects, such as wind farms, up and down the country. It will be headquartered in Scotland and paid for by a windfall tax on oil and gas giants'.[58] This infers a role of becoming an electricity generation company in competition with others, and from a standing start.

Expanded capacity to issue guarantees, as the European Investment Fund does

Article 1.26 on p. 20 of the Infrastructure Strategy confirms that the government sees the potential in issuing guarantees , in addition to borrowing and investing itself:

'The new fiscal framework also unlocks the benefits of financial transactions (FTs), which enable government to invest alongside the private sector through equity investments, loans and guarantees. The government announced £9.6 billion of additional FTs at the Spending Review 2025. This is part of a £59 billion step change in the financial transaction and guarantee capacity of the UK's Public financial institutions in this Parliament which will help to leverage further investment in UK infrastructure, with details set out in Chapter 2.'[59]

The government then adds a footnote: 'Guarantees do not result in upfront borrowing – there is only a cost if they are called'. That is the advantage, of course: if others lend, the national debt does not rise. The government, or a public sector body, issues a guarantee to the lender: the government or public sector body takes the risk but without triggering an increase in any of the measures of public debt.

The same document, on p. 35, expands on how 'Financial Transactions', including guarantees, will work alongside third-party finance under the new fiscal framework.[60]

Table 2.1 on p. 36 of the same document shows the total of 'Public Financial Institution Capacity', including what the current government has added:[61]

Table 2.1: Public Financial Institution Capacity[40]

Public Financial Institution	Total Capacity (£bn)			Additional Capacity Announced this Parliament (£bn)		
	Total	of which Loans and Equity	of which Guarantees	Total	of which Loans and Equity	of which Guarantees
National Wealth Fund	27.8	17.8	10.0	5.8	5.8	0.0
British Business Bank[41]	25.6	17.5	8.0	10.3	7.1	3.2
UK Export Finance[42]	80.0	10.0	70.0	20.0	2.0	18.0
National Housing Bank[43]	16.0	10.5	5.5	16.0	10.5	5.5
Great British Energy[44]	4.0	4.0	0.0	4.0	4.0	0.0
Total	**153.4**	**59.8**	**93.5**	**56.1**	**29.4**	**26.7**

The new National Housing Bank will undertake housing investment.

Only in the case of UKEF does there appear to be no potential for the institution to take high-risk positions in leveraged financings.

[58] https://www.gov.uk/government/news/what-is-great-british-energy-and-what-does-it-mean-for-me accessed on 10 February 2025
[59] UK_Infrastructure_A_10_Year_Strategy_Web_Accessible p.20
[60] UK_Infrastructure_A_10_Year_Strategy_Web_Accessible p.35
[61] UK_Infrastructure_A_10_Year_Strategy_Web_Accessible p.36

In all the other cases there is scope for the Public Financial Institution to act within a scheme that takes on further debt as well, where the general public is one way or another made responsible for the entirety of the scheme's obligations: both what the Public Financial Institution injects and what is borrowed from other lenders.

This concern relates to all these institutions except UKEF, and how the ceilings for Loans and Equity and for Guarantees could be applied in the same way as the engagements of EIB and EIF have served to support a scheme like InvestEU.

Industrial Strategy Advisory Council

While it is the Department for Energy Security and Net Zero which will sit in control of all things to do with the Net Zero transition and related investments, there was a need for an equivalent body to sit in control of investments into the remainder of the economy.

This is the recently-established Industrial Strategy Advisory Council.[62]

An Industrial Strategy has duly been published under its advice.[63]

10-year Infrastructure Strategy[64]

In parallel – but not connected with the Industrial Strategy – the government has published a '10-year Infrastructure Strategy', which is 'the government's long-term plan for economic, housing and social infrastructure to drive growth'.

Both this strategy and the Industrial Strategy will require investment funds, and they could come from the government's own borrowing-for-investment, the NWF, sector-specific counterparts of GBE (if such are established), the British Business Bank (if the undertaking counts as a small business),[65] and private sources. Most likely it will be a combination, with the authority institutions acting in the higher risk layers of financing as EIB and EIF do in InvestEU.

Once again the wording infers spinning a big wheel and large amounts of money being dealt in.

Summary

The current UK government has established the mechanisms through which to both raise funds externally for schemes and inject a small portion from its own resources into them. Only this latter portion will run through the measures of national debt, and it will be netted off against the asset the money is spent on. In consequence the measure 'Public sector net liabilities' does not rise.

This is an accounting and organisational framework within which a very large wheel can be spun, and without its being visible through the public accounts and in the measures of debt and fiscal probity.

[62] https://www.gov.uk/government/organisations/industrial-strategy-advisory-council accessed on 27 August 2025
[63] https://www.gov.uk/government/publications/industrial-strategy-advisory-council-welcomes-publication-of-the-industrial-strategy accessed on 27 August 2025
[64] https://www.gov.uk/government/publications/uk-infrastructure-a-10-year-strategy accessed on 27 August 2025
[65] www.british-business-bank.co.uk/about accessed on 27 August 2025

Large sums will be raised as 'shadow debt' and conduited into various enterprises, be they connected with the Net Zero transition, infrastructure or industry.

4.3 General Election manifesto[66]

The acceleration towards Net Zero, by 2030, is the centrepiece of the section 'Make Britain a clean energy superpower'.[67] It contains little in the way of concrete statements of what projects will be undertaken and what they will cost.

That is left to the 'Green Prosperity Plan' within Labour's fiscal plan:[68]

Green Prosperity Plan[6]

The Green Prosperity Plan will be funded in part by a time-limited windfall tax on the oil and gas giants making record profits, with the rest of the funding coming from responsible borrowing to invest within Labour's fiscal rules – catalytic investment that will leverage higher private investment and boost economic growth.

For transparency, we have given an annual average across the parliament given the exact profile of projects will be driven by partnership with business.

Funding (annual average)	£bn	Policies funded (annual average)	£bn
Windfall tax on oil and gas giants	1.2	Great British Energy	1.7
		National Wealth Fund	1.5
		British Jobs Bonus[7]	0.3
		Warm Homes Plan[7]	1.1
		Barnett consequentials	0.2
Total	1.2	Total including Barnett consequentials	4.7
Borrowing to invest within fiscal rules	3.5		

The manifesto is only an 'annual average'. The resources for GBE are put at £1.7 billion, but this contrasts with the £8.3 billion that Labour say will be injected over the life of the Parliament, in GBE's Founding Statement:

'Backed by a capitalisation of £8.3 billion of new money over this Parliament, Great British Energy will work closely with industry, local authorities, communities, and other public sector organisations to help accelerate Britain's pathway to energy independence. That means installing thousands of clean power projects across the country, crowding in investment for next-generation technologies, and providing vital support to accelerate large-scale projects'.[69]

Similarly the Founding Statement claims that the NWF will commit far more than £1.5 billion: 'Great British Energy will work with DESNZ [the Department for Energy Security and Net Zero], The Crown Estate, the National Wealth Fund (which has allocated an additional £7.3bn of funding to the UK Infrastructure Bank), and other parts of the public sector to deliver a comprehensive package of support for domestic clean energy supply chains'.[70]

[66] https://labour.org.uk/change/ accessed on 29 August 2025
[67] https://labour.org.uk/change/make-britain-a-clean-energy-superpower/ accessed on 29 August 2025
[68] https://labour.org.uk/change/labours-fiscal-plan/ accessed on 29 August 2025
[69] GBE Founding Statement p. 3
[70] GBE Founding Statement p. 13

The NWF claims to 'have £27.8bn to drive investment and growth across the UK'.[71]

These discrepancies point to the 2024 General election manifesto understating the intended spend. Not only is there a large gap between what is in the manifesto and what the government itself intends to spend, the amounts bear little relation to the size of the overall investment plans.

4.4 the Carbon Budget, Clean Power Action Plan, and Solar Roadmap

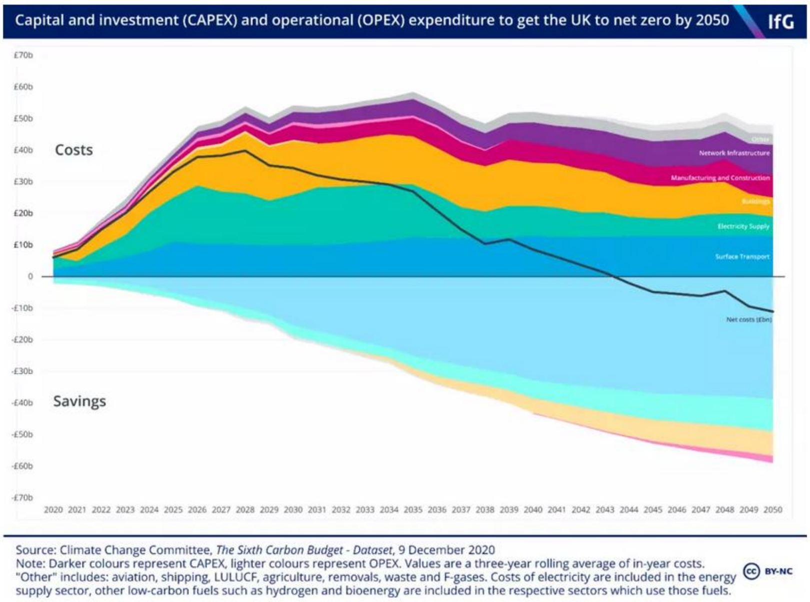
The Climate Change Committee's Seventh Carbon Budget[72]

The Climate Change Committee's Seventh Carbon Budget is not a financial budget, but a statement of how much its proposed measures are supposed to reduce the UK's carbon dioxide output per annum.

The Carbon Budget includes a Cost/Benefit analysis and The Institute for Government has summarised the Costs side of this as follows: 'the independent Climate Change Committee think this needs to rise to about £50 billion per year by the late 2020s – mostly on transport, renewables and buildings – and stay around that level until 2050'.[73]

The following statement is added: 'By the late 2030s, the CCC thinks this extra investment (capital expenditure) will be offset by reductions in day-to-day spending (operational expenditure), including due to the extra efficiency of electric vehicles'.

This is the key chart in the Seventh Carbon Budget, albeit that it is unchanged since the Sixth Carbon Budget in 2020:



[71] https://www.nationalwealthfund.org.uk/ accessed on 15 February 2025
[72] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/ accessed on 25 August 2025
[73] https://www.instituteforgovernment.org.uk/article/explainer/paying-net-zero accessed on 12 February 2025

The size of the numbers involved in the Cost/Benefit Analysis is much larger – cumulatively by hundreds of billions of pounds – than the resources at the disposal of Public Financial Institutions.

The savings look suspiciously linear. The total of costs far outweighs the total of savings. There is a no 'hockey-stick' or 'J-curve' as under a proper financial investment, where returns start to match and then exceed upfront costs. Only in 2043 do the benefits for that year exceed the costs for that year. By 2050 the annual savings of £60 billion – if they materialise at all and come in fully, and on time – are somewhat higher than the costs, which are still running at £50 billion per annum.

Heavy capital expenditure continues until 2050.

Although the chart finishes at 2050, the costs can be expected to continue, certainly what is classified as Operational Expenditure (OPEX) but also presumably Capital Expenditure (CAPEX): it must be considered unlikely that the experience between now and 2050 will suddenly convert into a need for no CAPEX at all.

Over the life of the current Parliament the figures in the chart translate into:

	2025	2026	2027	2028	2029
Costs	-£38bn	-£42bn	-£50bn	-£53bn	-£55bn
Cumulative costs	-£38bn	-£80bn	-£130bn	£183bn	-£238bn
Savings	£8bn	£10bn	£12bn	£14bn	£16bn
Cumulative savings	£8bn	£18bn	£30bn	£44bn	£60bn
Year's balance	-£30bn	-£32bn	-£48bn	-£39bn	-£39bn
Running balance	-£30 bn	-£62bn	-£100bn	-£139bn	-£178bn

Assuming all the savings materialise, in full, and on time, there is still a running negative balance of £178 billion over the life of the Parliament, which is a need for funding from some source.

On the face of it the OPEX does not include financing costs.

The Clean Power Action Plan[74]

The Clean Power Action Plan is taken as being part of the investment in Net Zero and therefore also part of the Cost/Benefit Analysis in the Seventh Carbon Budget.

The main numbers in the plan are, as per Appendix 1:

Main document		
Page	Description	£bn or mil
11	Investment on average annually from 2025 to 2030	£40bn
11	Of which generation assets	£30bn
11	Of which transmission assets	£10bn
112	Net Zero Teesside Carbon Capture ('CCUS') project	£21.7bn
126	At least £5.8bn of NWF's capital will focus on five sectors relevant to clean power, and £8.3bn has been committed to GBE, with no timeline	£14.1bn

[74] https://www.gov.uk/government/publications/clean-power-2030-action-plan-assessment-of-the-clean-energy-skills-challenge accessed on 29 August 2025

This translates, in broad terms, into:

- £200 billion for 2025-30 for generation and transmission assets;
- £35.8 billion on top:
    - £21.7 billion for carbon capture, far from all of it being spent by 2030 and potentially not all of it spent by 2035;
    - £14.1 billion to be spent by the NWF and GBE on clean power.

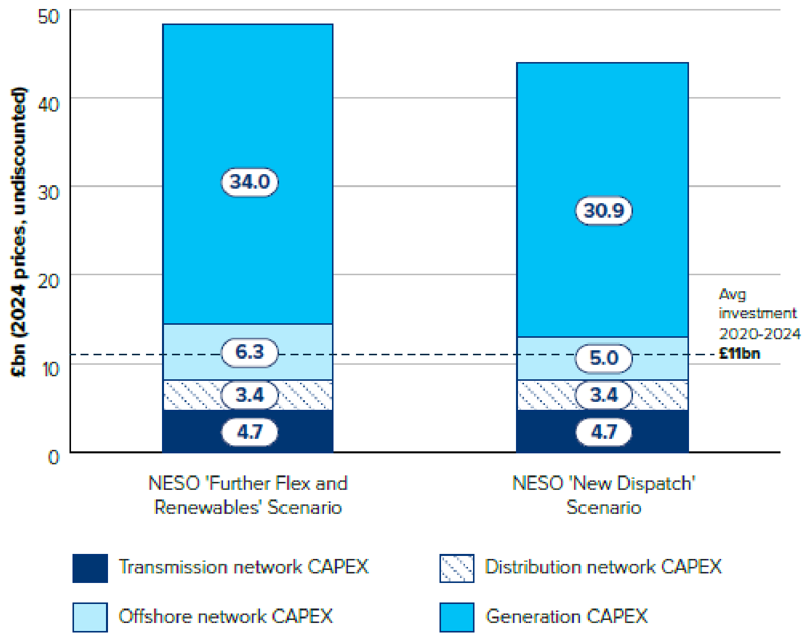
It is worth noting that the government's investment in carbon capture may or may not be routed through the NWF or GBE, and the combined borrowing-for-investment could be £35.8 billion or could be less, if some of the money towards carbon capture, comes from private sources.[75]

Presumably a portion of the £200 billion for generation and transmission assets could be borrowed and invested by the government, and then – in whole or in part – routed through NWF and/or GBE.

If all of the generation and transmission assets are funded with private money, and the remaining £35.8 billion funded by the government/Public financial institutions, there is a ratio between government and private funding of at least 1:5.9.

Figure 9 in the plan projects the average annual investment, but it is noticeable that both scenarios result in annual amounts above £40 billion, one scenario being £48.4 billion:

Figure 9: Average annual investment in the NESO 'Further Flex and Renewables' and 'New Dispatch' scenarios, 2025-2030, £ billions, 2024 prices, undiscounted



Source: NESO (2024), 'Clean Power 2030'

If the higher scenario is the outcome, then the total expenditure for 2025-30 is £242 billion, with amounts for carbon capture and GBE/NWF 'clean power' potentially on top.

[75] https://www.theguardian.com/commentisfree/2024/oct/11/labour-carbon-capture-climate-breakdown?CMP=Share_iOSApp_Other accessed on 29 August 2025

These calculations are a strong indicator of financing models that are highly leveraged, backed up by the fact that the resources announced for the NWF and GBE are small compared to the total requirement.

The Solar Roadmap[76]

The Solar Roadmap is also taken as being part of the investment in Net Zero and therefore also part of the Cost/Benefit Analysis in the Seventh Carbon Budget.

The main numbers in the roadmap are, as per Appendix 2:

Main document		
Page	Description	£bn or mil
25	Warm Homes Plan over the 2025 Spending Review period	£13.2bn
28	UK Warehousing Association believes solar can reduce members' electricity costs by 40-80% per annum	£3bn
Appendix 2 – case studies on wider benefits and addressing misconceptions		
2	Brent Pure Energy: fitting of 659 solar panels to save one school an assumed £10,000 per annum (19.5 year payback period)	£195,000

The Warm Homes Plan is the centrepiece, with a number of £13.2 billion against it as opposed to the £1.1 billion in the 'Green Prosperity Plan'. The 'Green Prosperity Plan' only gave numbers for a single year, so it ought to have been taken to read as £5.5 billion over the 5-year term-of-office.

The UK Warehousing Association, the trade body that lays claim to representing that industry sector, has stated that solar can reduce members' electricity costs by 40-80%, £3 billion presumably being the 80%.

Amongst the examples of successful deployment of solar power is Brent Pure Energy, and the fitting of solar panels costing £195,000 to make an assumed saving of £10,000 per annum. Setting aside that this is an assumption, the payback period is 19.5 years, without discounting the annual benefits to a net present value, as a benefit of £10,000 in 19 years' time does not equate to an expenditure of £10,000 today, with interest rates around 5%. The real payback period is well in excess of 20 years, and even this presumes that the panels will remain serviceable and at near-full output for that long. In reality this case study does not proves that solar is economically viable on its own account.

Finally we have mention of one of the subsidy mechanisms for green energy: a Contract for Difference.

There is no investment spend in the Solar Roadmap that is not also in one of the other major documents, so its existence can be ignored from here onwards.

[76] https://www.gov.uk/government/publications/solar-roadmap accessed on 25 August 2025

Summary

The Carbon Budget and the Clean Power Action Plan project a need for investment out of all proportion to the numbers contained in the Green Prosperity Plan, the increased resources of Public financial institutions, and supposed amount of Labour's 'borrowing for investment'. The Solar Roadmap is taken to be a subset of the investments.

4.5 The Industrial Strategy[77]

Introduction

The Industrial Strategy overlaps with all of the Clean Power Action Plan, the Infrastructure Strategy, and the June 2025 Spending Review. Multiple items are mentioned in one or more, or all, of these documents.

This inhibits a straightforward projection of the figures, and totalling of them. The range of numbers mentioned in the Industrial Strategy goes from huge (tens of billions) to relatively trivial (tens of millions). The timescales over which the expenditure will occur are inconsistent. Many items are part of other items, without there being a listing of main headings, sub-headings, and sub-sub-headings, with numbers against each level.

For these reasons the amounts given here are at a high-level.

The full list of notes is in Appendix 3, with mention of significant policy statements, indications of the source of funding, and the usage of Public financial institutions for the conduiting of money between the government and the projects – and possibly the taking-on of extra debt by these bodies.

This first-level extract contains only the largest expenditures, which include in several instances what an industry will itself spend rather its being limited to what the government will spend:

Page	Description	Timing	£bn or mil
13	Mayoral Recyclable Growth Fund	10-year	£500mil
14	Advanced Manufacturing Sector	Over the next 5 yrs	£4.3bn
17	Affordable Homes	10-year	£39bn
17	Sizewell C	Over SR25	£14.2bn
17	R&D	Per annum by end of SR25	£22.6bn
17	Long-term transport settlements for mayors	NTL	£15.6bn
17	Social and economic infrastructure	Over the next decade	£725bn
20	Advanced Manufacturing will double business investment to...	Per annum by 2035	£39bn
20	Creative Industries business investment will rise to...	By 2035, but not per annum	£31bn
20	Business investment in Clean Energy Industries will double to...	By 2035, but not per annum	£30bn

[77] https://www.gov.uk/government/publications/industrial-strategy accessed on 25 August 2025

Page	Description	Timing	£bn or mil
20	Professional & Business Services business investment will rise to…	By 2035, but not per annum	£65bn
31	Subject to REMA (Review of Electricity Market Arrangements), business plans for Transmission Owners set out proposed business investment of..	For 2026-31	£60bn
44	NWF to commit capital to ports	NTL	£5.8bn
45	Carbon Capture – to launch UK's CCUS industry	Over 25 years	£21.7bn
45	Initial allocation to launch UK's CCUS industry	Over SR25	£9.4bn
46	Small Module Reactor programme	Over SR25	£2.5bn
47	Fusion including UK Atomic Energy Authority including…	Over the next 5 yrs	£2.5bn
47	Civil nuclear	Over the next 4 yrs	£20bn
54	UKRI, R&D funding agency, budget	Per annum	£8.8bn
57	Public investment in frontier industries to reach a ceiling, from £20.4bn in 2025/6	2029/30	£22.2bn
67	Capex to support college maintenance	2026-30	£1.7bn
68	Extra investment in skills	Per annum by 2028/29	£1.2bn
83	Capital funding for motorways and roads	Between 2026 and 2030	£24bn
83	Local Transport Grant	NTL	£2.3bn
83	Bus services	Per annum	£900mil
83	Electric charging infrastructure	NTL	£400mil
109	Transpennine Route Upgrade	From 2026/7 to 2029/30	£3.5bn
109	Transport for City Regions	NTL	£10bn
109	Improving and maintaining the North's road network	Between 2026/7 and 2029/30	£24bn
109	Local Innovation Partnerships Fund allocations	NTL	£150mil
122	Warm Homes Plan	NTL	£13.2bn
127	Creative Places Growth Fund allocations	Over three years	£150mil
127	Tees Valley Creative Investment Zone	Over ten years	£160mil
131	Extra defence budget spending with UK SMEs	By May 2026	£2.5bn
134	Target for annual R&D funding for Digital & Technologies	By 2029/30	£22.6bn

Spending implied by the above figures up to 2035

This next table attempts to isolate - in the absence of the government's own reconciliation - what the government itself will be involved in spending on industry up to 2035. This excludes, when measured against the previous table, what the industry will spend of its own accord, once permissions have been granted, but without using any authority-supplied finance.

The period goes into 2035 because the next general election will occur during the financial year 2029/30, and the following one during 2034/5.

The exercise, at this stage, has not attempted to split all the figures between 2025-30 and 2030-5.

The result is:

- six major headings, several of which (like Affordable Homes and Warm Homes) might not be considered as 'industrial', and three of which (Sizewell C, Warm Homes, and CCUS) may be duplicated in the Cost/Benefit Analysis in the Carbon Budget ;
- a major amount for 'Social and economic infrastructure', all of which can be expected to be duplicated in the Infrastructure Strategy and only a portion of which might considered as 'industrial' or indeed 'economic';
- A total for all of the smaller headings, which are not infrastructural:

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Advanced Manufacturing Sector including up to £2.8bn R&D	£4.3bn	£4.3bn	£8.6bn
Affordable Homes	--	--	£39.0bn
Sizewell C	£14.2bn	£14.2bn	£28.4bn
R&D	£100.0bn	£110.0bn	£210.0bn
Warm Homes	--	--	£13.2bn
CCUS	£9.4bn	£12.3bn	£21.7bn
Social and economic infrastructure	--	--	£725.0bn
Non-infrastructure industrial spending	--	--	£76.1bn
Total	--	--	£1,122.0bn

The line in the above table for 'Non-infrastructure industrial spending' comprises the following items from the previous table:

Page	Description	Timing	£bn or mil
13	Mayoral Recyclable Growth Fund	10-year	£500mil
17	Long-term transport settlements for mayors	NTL	£15.6bn
44	NWF to commit capital to ports	NTL	£5.8bn
46	Small Module Reactor programme	Over SR25	£2.5bn
47	Fusion including UK Atomic Energy Authority including...	Over the next 5 yrs	£2.5bn
47	Civil nuclear	Over the next 4 yrs	£20bn
57	Public investment in frontier industries to reach a ceiling, from £20.4bn in 2025/6	2029/30	£22.2bn
67	Capex to support college maintenance	2026-30	£1.7bn
68	Extra investment in skills	Per annum by 2028/29	£1.2bn
83	Local Transport Grant	NTL	£2.3bn
83	Bus services	Per annum	£900mil
83	Electric charging infrastructure	NTL	£400mil
109	Transport for City Regions	NTL	£10bn
127	Creative Places Growth Fund allocations to six Mayoral Strategic Authorities	Over three years	£150mil
127	Tees Valley Creative Investment Zone	Over ten years	£160mil
--	Total	Over ten years	£76.1bn

The total spend is £1.1 trillion, but if one strips out the £725 billion of 'Social and economic infrastructure', only £400 billion remains as out-and-out spending on industry. Even that includes Warm Homes, Affordable Homes, Carbon Capture and Sizewell C.

4.6 The Infrastructure Strategy[78]

Introduction

The full list of envisioned expenditures is given in Appendix 4. Once again that list includes policy statements, the involvement of Public financial institutions, and some pointers as to where the funding will come from.

The objectives are:

- to reconcile the expenditures in this strategy with the £725 billion for 'Social and economic infrastructure' referred to in the Industrial Strategy;
- to isolate any infrastructure spending that is neither for 'Social and economic infrastructure' nor for Net Zero;
- to crystallize – here and then in the section on Net Zero - the expenditures envisioned in the Clean Power Action Plan and related documents as the infrastructure expenditure on Net Zero, such that any further expenditures mentioned in the Cost/Benefit Analysis of the Carbon Budget are for operating or other costs.

These objectives have been pursued through several steps:

1. Identifying 'Social Infrastructure' expenditure in the Infrastructure Strategy, this being duplicated in the Industrial Strategy;
2. Inferring what the 'Economic Infrastructure' expenditure ought to be within the Infrastructure Strategy: £725 billion less the 'Social Infrastructure' expenditure in the Infrastructure Strategy;
3. Reconciling the figure inferred above with what is in the Infrastructure Strategy that complies with the definition of 'Economic Infrastructure', but which is not connected to Net Zero;
4. Isolating what is in the Infrastructure Strategy that is connected to Net Zero and which should be the infrastructure component of the Cost/Benefit Analysis in the Carbon Budget.

Breakout for Point 1 above: 'Social infrastructure' items in Appendix 4 that sit within the £725 billion figure for 'Social and economic infrastructure' in the Industrial Strategy

Page	Para	Description	Timing	£bn or mil
12	--	Annual 'Social investment' rising from £9bn in 2025/6 to…	By 2034/5	£10bn
12	--	'Social investment' to have totalled…	Over 10 years	£119bn
12	--	Health: for targeted infrastructure replacement, critical safety and wider DHSC portfolio	OverSR25	£70bn

[78] https://www.gov.uk/government/publications/uk-infrastructure-a-10-year-strategy accessed on 25 August 2025

Page	Para	Description	Timing	£bn or mil
12	--	Health: annual maintenance on NHS estate included in the above	Apr35	£6bn
12	--	Health: new hospital programme	2030/1 to 2034/5	£49bn
12	--	Education: capex	Over SR25	£38bn
12	--	Education: school rebuilding programme	Apr35	£20bn
12	--	Education: increase in annual maintenance expenditure from £2.4bn in 2025/6	By 2034/5	£3bn
12	--	Justice: new prison plans and annual maintenance to rise from £500mil in 2025/6 to…	By 2034/5	£600mil
13	--	Northern Ireland: Investment Strategy for Northern Ireland to total £30bn including public funding of..	Apr35	£26bn
19	--	Total list of spending	N/A	N/A
86	5.7	Social infrastructure priorities total	Over SR25	£119bn
86	5.7	Including Health	Over SR25	£70bn
86	5.7	Including Education	Over SR25	£38bn
86	5.7	Including Justice	Over SR25	£11bn
89	5.15	Schools-based nurseries	Over SR25	£370mil
89	5.16	New school places	Over SR25	£2.6bn
89	5.17	New prison places	2026/7 to 2030/1	£6.3bn
89	5.19	NHS technology and transformation	By 2028/9	£10bn

The total is £129 billion: £10 billion for NHS technology and transformation, and £119 billion for Health, Education and prisons.

What the inferred 'Economic Infrastructure' expenditure is within the Infrastructure Strategy

This answers Point 2 above. The amount for 'Economic Infrastructure' ought to be £596 billion if the 'Social Infrastructure' expenditure is £129 billion of the total for 'Social and Economic Infrastructure' of £725 billion.

This amount will be tested against what is stated in Appendix 4.

Breakout for Point 3 above: all expenditures listed in the full notes in Appendix 4 about the Infrastructure Strategy which are 'economic', and should sit within the £596 billion inferred expenditure on 'Economic Infrastructure', but which should not sit in in the Clean Power Action Plan and/or the Cost/Benefit Analysis in the Carbon Budget

Page	Para	Description	Timing	£bn or mil
8	--	Fixing the basics in long-term investment in road and rail maintenance (backlogs, potholes)	Between 2026/7 and 2029/30	£24bn
9	--	Lower Thames Crossing, initial amount	2026/7	£590mil
9	--	AI Opportunities Action Plan	Apr35	£2bn
10	--	Flood defences and related measures	Apr35	£7.9bn
31	1.61	Construction workers	By 2028/9	£625mil
31	1.61	New Technical Excellence Centres	By 2028/9	£80mil

Page	Para	Description	Timing	£bn or mil
31	1.61	Bespoke training at individual employers	By 2028/9	£80mil
31	1.61	Other additional resource investment in skills	By 2028/9	£1.2bn
39	--	Requirements/Digital: £5bn per annum spend	Apr35	£50bn
39	--	Requirements/Water	Over SR25	£104bn
51	3.24	All rail enhancements	Over SR25	£35.5bn
54	3.25	HS2	Over SR25	£25.3bn
54	3.25	Transpennine Route Upgrade	Over SR25	£3.5bn
54	3.25	Leeds station enhancement and progressing the Midlands Rail Hub	Over SR25	£240mil
57	3.40	AI Opportunities Action Plan	Over SR25	£2bn
58	3.44	Building Digital UK	Over SR25	£1.9bn
68	3.105	Defence R&D programme rising from a base of...	Over SR25	£2bn
68	3.105	Defence AI Fund	Over SR25	£100mil
68	3.105	Establishment of UK Defence Innovation, with annual budget of...	Over SR25	£400mil
68	3.105	Sovereign warhead programme	Over SR25	£15bn
68	3.105	Munitions	Over SR25	£6bn
68	3.105	Autonomous military systems	Over SR25	£4bn
69	3.109	Modern and sustainable MoD buildings	Apr35	£5.1bn
69	--	Barrow-in-Furness regeneration	Apr35	£200mil
90	5.19	Probation service per annum	By 2028/9	£700mil
90	5.19	Children's social care system	Over SR25	£560mil
94	6.3	Sustainable farming and nature recovery	2026/7 to 2028/9	£2.7bn
95	6.9	Environmental planning reform package	2026/7 to 2028/9	£500mil

Summary of the above 'Breakout for Point 3': the main headings

- This summary eliminates expenditures which are part of other expenditures;
- Smaller expenditures are stated as one total of 'Other';
- An explanation of what is in 'Other' follows below.

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Fixing the basics in long-term investment in road and rail maintenance (backlogs, potholes)	£24.0bn	£10.0bn	£34.0bn
Pipeline of capital investment to maintain existing and invest in new flood defences and related measures	£4.0bn	£3.9bn	£7.9bn
Requirements/Digital: £5bn per annum spend	£25.0bn	£25.0bn	£50.0bn
Requirements/Water	£104.0bn	£75.0bn	£179.0bn
All rail enhancements including £2.5bn for East-West Rail	£35.5bn	£14.5bn	£50.0bn
HS2	£25.3bn	£25.3bn	£50.6bn

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Sovereign warhead programme	£15.0bn	£10.0bn	£25.0bn
Munitions	£6.0bn	£6.0bn	£12.0bn
Autonomous military systems	£4.0bn	£4.0bn	£8.0bn
Modern and sustainable MoD buildings	£2.6bn	£2.5bn	£5.1bn
Sustainable farming and nature recovery per annum	£5.4bn	£13.5bn	£18.9bn
Other (assuming SR25 spending is repeated in 2030-35 where not stated)	£18.5bn	£9.7bn	£28.2bn
Sub-total	£269.3bn	£199.4bn	£468.7bn
Add back 'Social Infrastructure' and NHS technology	£64.5bn	£64.5bn	£129.0bn
Total for Infrastructure Strategy	£333.8bn	£263.9bn	£597.7bn

£468.7 billion comes out as the amount of infrastructure spending that is 'economic'. The figure is £127.3 billion lower than the result of deducting the £129 billion of the 'Social Infrastructure' expenditure from the total for 'Social and Economic Infrastructure' of £725 billion.

This area is a particular weakness in a 10-year strategy, in not stating in many cases what the expenditure will be in the second 5-year period. Assumptions have had to be made, in most cases that the expenditure will be slightly lower in the second period, except in the case of HS2 where it will be the same again. There appear to be several one-off expenditures, all within the timeframe of SR25. There seem to be instances of day-to-day costs which will ramp up during 2025-30: it can then be assumed that the implied annual spend after the completion of the ramp-up will be sustained over 2030-35 (e.g. Children's social care system).

One might also ask why 'Sovereign warhead programme', 'Munitions' and 'Autonomous military systems' are sitting within an Infrastructure Strategy and not within the normal budget of the Ministry of Defence.

'Other' in the previous table

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Lower Thames Crossing	£2.4bn	£2.2bn	£4.6bn
AI Opportunities Action Plan	£1.0bn	£1.0bn	£2.0bn
Skilled construction workers	£625mil	£0.0	£625mil
New Technical Excellence Centres	£80mil	£0.0	£80mil
Bespoke training at individual employers	£80mil	£0.0	£80mil
Other additional resource investment in skills	£1.2bn	£0.0	£1.2bn
Transpennine Route Upgrade	£3.5bn	£0.0	£3.5bn
Leeds station enhancement and progressing the Midlands Rail Hub	£240mil	£0.0	£240mil
AI Opportunities Action Plan	£2.0bn	£0.0	£2.0bn

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Building Digital UK	£1.9bn	£0.0	£1.9bn
Defence R&D programme rising from a base of...	£2.0bn	£0.0	£2.0bn
Defence AI Fund	£100mil	£0.0	£100mil
Establishment of UK Defence Innovation, with annual budget of...	£800mil	£2.0bn	£2.8bn
Barrow-in-Furness regeneration	£100mil	£100mil	£200mil
Probation service per annum	£1.4bn	£3.5bn	£4.9bn
Children's social care system	£560mil	£940mil	£1.5bn
Environmental planning reform package	£500mil	£0.0	£500mil
Total	£18.5bn	£9.7bn	£28.2bn

Breakout for Point 4 above: infrastructure expenditures in the Infrastructure Strategy that should sit in in the Clean Power Action Plan and/or the Cost/Benefit Analysis in the Carbon Budget

Page	Para	Description	Timing	£bn or mil
11	--	Hydrogen infrastructure	Apr35	£500mil
11	--	GBE and GBE-Nuclear for homegrown clean power	Over SR25	£8.3bn
11	--	Decarbonising transport	Over SR25	£2.6bn
39	--	Requirements/Energy: Clean Power requires £40-50bn per annum over SR25 and £35bn per annum up to 2050, the 'vast majority' to come from 'private sources'	Up to 2050	£1,075bn to £1,125bn
71	4.8	Budget increase for the Clean Energy Bonus for Allocation Round 7	Apr35	£544mil
75	4.29	Fusion	Apr35	£2.5bn
77	4.37	Transmission network extra annual investment	In the 2030s	£37-50bn
80	4.55	Efficiency upgrades for the poorest households	Apr35	£1.8bn
84	4.67	Allocation to Office for Zero Emission Vehicles	Apr35	£1.4bn
84	4.67	Rollout of EV charging infrastructure	Apr35	£400mil
84	4.69	Zero Emission HGV and Infrastructure Programme	By March 2026	£200mil

Summary of the Breakout for Point 4 above:

Item	Amount to 2030	Amount 2030-35	Amount to 2035
GBE and GBE-Nuclear for homegrown clean power	£8.3bn	£8.3bn	£16.6bn
Requirements/Energy: Clean Power	£225.0bn	£175.0bn	£400.0bn
Transmission network extra annual investment	£0.0bn	£217.5bn	£217.5bn
Other (assuming SR25 spending is repeated in 2030-35 where not stated)	£6.3bn	£6.2bn	£12.5bn
Total	£239.6bn	£407.0bn	£646.6bn

'Other' in the above table:

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Hydrogen infrastructure	£250mil	£250mil	£500mil
Decarbonising transport	£2.6bn	£2.6bn	£5.2bn
Budget increase for the Clean Energy Bonus for Allocation Round 7	£272mil	£272mil	£544mil
Fusion	£1.25bn	£1.25bn	£2.5bn
Efficiency upgrades for the poorest households	£900mil	£900mil	£1.8bn
Allocation to Office for Zero Emission Vehicles	£700mil	£700mil	£1.4bn
Rollout of EV charging infrastructure	£200mil	£200mil	£400mil
Zero Emission HGV and Infrastructure Programme	£200mil	--	£200mil
Total	£6.3bn	£6.2bn	£12.5bn

Section 4.9 is dedicated to the examination of the Carbon Budget to make sure it contains all of these items, as well as whatever is contained in the Clean Power Action Plan and the Solar Roadmap.

Further expenditures in the Carbon Budget beyond what has been captured here should in principle not be of an infrastructural nature.

Total of expenditures

Now we go on to total the expenditure across the three areas – Industrial, Infrastructure, and Clean Energy - for the first and second 5-year periods, and then across the entire 10-year period.

We have needed to do a revision of the expenditure in Industrial Strategy to back 'Social and Economic Infrastructure' out into the Infrastructure Strategy, and to spread the spending on Affordable Homes, Warm Homes and Non-infrastructure industrial items: this spreading has been done evenly across the first and second 5-year periods:

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Advanced Manufacturing Sector including up to £2.8bn R&D	£4.3bn	£4.3bn	£8.6bn
Affordable Homes	£19.5bn	£19.5bn	£39.0bn
Sizewell C	£14.2bn	£14.2bn	£28.4bn
R&D	£100.0bn	£110.0bn	£210.0bn
Warm Homes	£6.6bn	£6.6bn	£13.2bn
CCUS	£9.4bn	£12.3bn	£21.7bn
Non-infrastructure industrial spending	£38.0bn	£38.1bn	£76.1bn
Total	£192.0bn	£205.0bn	£397.0bn

Finally we can summarise the proposed expenditure across the three Breakout areas, noting again that there is no investment spend in the Solar Roadmap that is not also in one of the other major documents:

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Industrial Strategy only	£192.0bn	£205.0bn	£397.0bn
Infrastructure Strategy without Clean Power/Carbon Budget	£333.8bn	£263.9bn	£597.7bn
Infrastructure for Clean Power/Carbon Budget	£239.6bn	£407.0bn	£646.6bn
Total	£765.4bn	£875.9bn	£1,641.3bn

One must note again that the figure above for 'Infrastructure Strategy without Clean Power/Carbon Budget' is £127.3 billion lower than the amount stated in the Industrial Strategy as the proposed expenditure on 'Social and Economic Infrastructure'. It was possible to identify the 'Social Infrastructure' element but not the 'Economic Infrastructure' element.

Summary

The Infrastructure Strategy including the element for Clean Power/Carbon Budget infers expenditure of £573.4 billion up to 2030, and a further £670.9 billion up to 2035, or £1,244.3 billion in all. The expenditure on the Industrial Strategy raises the total expenditure to £1.6 trillion up to 2035.

Very large amounts are at stake. The expenditures include elements that would not normally be termed 'investments', such as spending on maintenance and training, and many 'investments' that will not produce direct financial returns, such as on health, education and prisons.

The infrastructure expenditure of £646.6 billion on Net Zero will need to be validated against the Carbon Budget to ensure that the latter does not state further infrastructure investment on top of this figure.

4.7 The Carbon Budget: costs

Introduction

We need to examine the Carbon Budget in further detail:

- To verify the investment spend implied by it, to the extent possible;
- To validate this against the calculation above that the government's plan envisages an infrastructure spend on Net Zero over the next ten years of £646.6 billion;
- To ascertain what further investment is required by Net Zero by 2050, and then after 2050;
- To obtain further evidence of the dependency of the Net Zero plans on the playbook of subsidies and legal structures which cause the costs to fall directly on UK businesses and consumers;
- To ensure that financing costs form part of the Cost/Benefit Analysis in the Carbon Budget.

Scope

The examination focusses on Chapter 4 'Costs and Investments in the Balanced Pathway' pp. 85-102, Section 8.4 'Wider costs and benefits' affecting households pp. 317-9, and Chapter 9 'Economy, businesses and workers' pp. 328-53.

The document ought to embrace all of the Clean Power Action Plan, the Solar Roadmap, and the respective portion of infrastructural spending mentioned in the Infrastructure Strategy.

Chapter 4 'Costs and Investments in the Balanced Pathway' pp. 85-102

The average annual investment is stated to be £26 billion from 2025 to 2050, with an element of front-loading. That adds up to £650 billion between now and 2050, compared to the government's figure for investment in infrastructure for the purposes of Net Zero of £646.6 billion by 2035. There is a considerable mismatch, unless the investment is significantly front-loaded. We must also consider a possibility regarding the figure for 'Economic Infrastructure' other than for the purposes of Net Zero. This came out as £127.3 billion lower in our calculations than the amount that was derived from the government's total for 'Social and Economic Infrastructure': it is possible that part of what we have recognised as for Net Zero is, in the government's version, for 'Economic Infrastructure'. If £127.3 billion should be backed out of the infrastructural spending on Net Zero, it would drop £519.3 billion by 2035. We have no way of reconciling these figures and, in any case, it neither affects the totals nor what proportion of the totals will be funded under the PFI model and the 'Direct sale' model respectively.

The savings are projected at £22 billion per annum, mainly due to improved efficiency and a greater usage of 'low-cost renewable energy', assuming it does turn out to be low-cost.

The overall cost of the Net Zero transition is stated as £4 billion per annum from 2025 to 2050.

However, an important accounting policy is stated in 4.1.2 on p. 86 – 'Investment costs are accounted for in the years of construction and do not include a cost of capital (cost of borrowing)'.

This is a major inadequacy if, as p. 85 states, 'the private sector can provide the majority of the required investment, as long as the right incentives are in place':

- It is admitted that the money must be paid for, including via 'incentives';
- Yet no cost-of-money is included in the Cost/Benefit Analysis, and no scaling or costing of the 'incentives';
- It is nevertheless contended that major benefits will result in the form of 'low-cost renewable energy'.

The document puts an estimate against what investment would be publicly funded, namely 'We estimate that for the Balanced Pathway, approximately £6–£23 billion of additional capital investment would be publicly funded in 2035, falling to £1–£4 billion in 2050 (Figure 4.7).

Public spend per year in our estimates never exceeds 2% of total managed public expenditure':

- These are wide ranges and we assume the word 'annual' has been unintentionally omitted, as well as an explanation that the figures are for two time periods: 2025-35, and 2036-50;

- If we take the mean between £6 and £23 billion, we have £14.5 billion of public investment funding per annum for 2025-35, or £145.0 billion overall;
- For 2036-2050 the same calculation would produce an average annual spend of £2.5 billion or £37.5 billion overall.

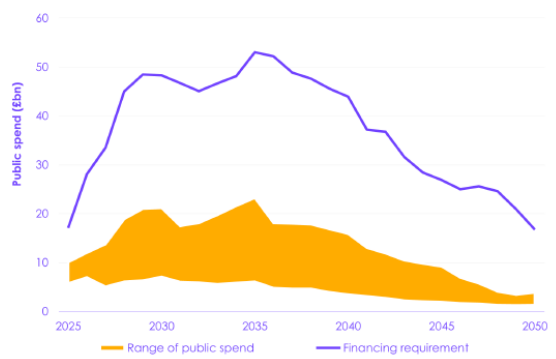
The problem with the figure of £145 billion for 2025-35 is that it mismatches to such a degree with the government's own figure for infrastructure spending on Net Zero of £646.6 billion for the same period, and the mismatch is only moderately reduced if £127.3 billion of spending on 'Economic Infrastructure' is backed out:

- A reconciliation is needed between the infrastructure spending on Net Zero and the total investment on Net Zero;
- It is assumed that there are Net Zero investments contemplated that are not infrastructural;
- If £646.6 billion does turn out to be the full investment cost for the period, and the government only inserts £145 billion, it assumes that £501.6 billion is raised from private sources;
- This would fulfil the phrase 'the private sector can provide the majority of the required investment', but leaves the costs and 'incentives' of that money unstated.

The loss to the government finances due to the decline in Fuel Duty does merit mention in 4.3.2, but the costs in terms of debt service and 'incentives' could be of the same order of magnitude and merit greater discussion.

As it is, Figure 4.7 on p. 100 illustrates the gap between assumed government funding and the total funding requirement:

Figure 4.7 Estimated range of public expenditure



Description: We anticipate public spend being higher early in the transition and to reduce in later years. Throughout the transition, estimated public spend is a relatively small proportion of the financing required.
Source: CCC analysis.
Notes: (1) Data represent a range based on illustrative policy options. Actual policy choices are for government to decide. (2) We used Balanced Pathway additional capital expenditure (before double counting adjustments) and applied upper and lower estimates of the proportion of this that would be publicly funded. We based this assessment on economic incentives for private actors to adopt Balanced Pathway measures, committed budgets, and distributional considerations. (3) The financing requirement line used here is different to the additional capital expenditure used for the whole-economy costs analysis, where the cost of generating additional energy is maintained in sector operating costs and removed from capital costs, to avoid double counting. As this analysis considers only capital expenditure, we use the pre-adjusted numbers. Numbers are still consistent with whole-economy costs.

Section 8.4 'Wider costs and benefits' affecting households pp. 317-9

Despite having the word 'costs' in its title, this section contains only benefits: 'quantified co-impacts [that] are estimated to provide £2.4–£8.2 billion per year in net benefit by 2050'.

The sources of these benefits include 'improved air quality, better insulated homes, increased active travel, and healthier diets'. 'Active travel' means walking and cycling.

The wider beneficial impacts merit being quoted in full: 'households may experience wider co-benefits beyond those relating to household low-carbon choices outlined above. For example, decarbonising industrial sectors and waste processing will bring further benefits in terms of reduced air pollution, while changes to land use (such as woodland creation) can provide health and wellbeing benefits through increased access to green space, as well as increased resilience to floods and storms'.

There is no mention of the impact if the renewable energy turns out not to be low-cost, or of any potential impact of the cost-of-financing of the investments and of the 'incentives' needed to attract private money into them.

Chapter 9 'Economy, businesses and workers' pp. 328-53.

This chapter projects that the main impact of the 'Balanced Pathway' towards Net Zero is a greater degree of 'resilience to economic shocks', either ones caused directly by climate events, or by increases in fossil fuel prices.

The chapter lays its emphasis on the potential impact on the economy of not responding to climate change, quoting, for example, on p. 328 the Bank of England's 2021 climate biennial exploratory scenarios, which 'estimated that 3.3°C of warming could result in a 7.8% decrease in GDP in the UK in 2050'.

The effect is to downplay any potential negative impact of taking action, and to emphasize both the upside potential of taking action and the supposed risk of doing nothing.

Mismatch between the numbers in the Carbon Budget and those in other government papers

The Carbon Budget's investment estimate of £26 billion per annum on average between 2025 and 2050 adds up to £650 billion. This significantly mismatches the figure of £646.6 billion by 2035 solely for the infrastructure investments towards Net Zero.

The Carbon Budget makes no reference to this figure, and does not offer a breakdown of its own figures into infrastructure assets and other investment purposes.

The figure of £646.6 billion significantly mismatches both:

- The £26 billion per annum in the Carbon Budget, which would equate to £260 billion by 2035 for infrastructure assets and all other purposes;
- The figures in the two scenarios given in Figure 9 of the Clean Power Action plan, which is quoted in section 4.4 above, of either £44.4 billion per annum or £48.4 billion per annum between 2025 and 2030, those figures totalling £222 billion and £242 billion respectively, and £444 billion and £484 billion if they were to be repeated for 2031-35.

The conclusion to be drawn is that none of these numbers are reliable.

Absence of the cost of capital/borrowing

The absence of a cost of capital/borrowing is significant as this component of cost will be considerable given:

- The amounts in play;
- The long financing period;
- The need to raise the majority of the funds from private sources;
- The experience of PFI where the ratio of capital cost to total cost was over 1:5.5, with the periodic payments to the asset owner containing financing costs as a main component.

The Carbon Budget as a reliable cost/benefit analysis

The cost/benefit analysis in the Carbon Budget is an unreliable indicator of the costs and benefits of the Net Zero transition for the country as a whole, and for businesses and individuals in it.

It fails to reconcile the issue of the need for 'incentives' to attract private financing – which will be funded one way or another by UK businesses and individuals - with the contention that the result will be low-cost renewable energy for UK businesses and individuals.

It fails to address, let alone quantify, the issue of the cost-of-financing and of the cost of 'incentives' for the providers of funds within an investment programme in which a majority of the funds are to be raised from private sources.

It neither extrapolates what these costs could be, nor sets them against the benefits that it projects.

These are the leading issues with the analysis, but there are further ones:

- The accuracy of its estimates of the amounts of the benefits;
- Whether the timing of the flow of benefits is correct when, in many cases, they flow as a result of a multi-year investment project that goes through a lifecycle of design, build, test, cut-over, bed-in...;
- The analysis lacks detail on any mismatch between who makes the investment, who incurs the costs, and who reaps the benefits;
- Loss of Fuel Duty is identified as a major fiscal issue, namely as a loss of revenue for the government, and it may well be meaningful, but one is entitled to ask whether its size is not smaller than that of other issues which are glossed over.

The cost/benefit analysis should not have been accepted by the Secretary of State.

Summary

The Carbon Budget was examined with the following aims, and with the following outcomes:

Aim	Outcome
To verify the investment spend implied by it	It was not possible to verify the investment spend
To validate this against the calculation above that the government's plan envisages an infrastructure spend on Net Zero over the next ten years of £646.6 billion	There are three versions of the investment spend, differing in amount, scope and timing

Aim	Outcome
To ascertain what further investment is required by Net Zero by 2050, and then after 2050	It was not possible to identify the investments the government terms 'infrastructural', and it was not possible to identify the other investments, or a total
To obtain further evidence of the dependency of the Net Zero plans on the playbook of subsidies and legal structures which cause the costs to fall directly on UK businesses and consumers	It is acknowledged that 'incentives' will be required to attract private funding, but there is no quantification or qualification, and no flag raised that the cost of these 'incentives' might threaten the realisation of the major claimed benefit: low-cost renewable energy
To ensure that those costs form part of the Cost/Benefit Analysis in the Carbon Budget	These costs therefore do not form part of the Cost/Benefit Analysis in the Carbon Budget

The Cost/Benefit Analysis in the Carbon Budget is unreliable and needs to be re-done.

4.8 The June 2025 Spending Review[79]

Introduction

We now look at the government's June 2025 Spending Review, which covers the period until the next General Election, which will be at the latest three months into the financial year 2029/30.

The objectives are:

- To identify coherence, or otherwise, of the planned expenditure stated in this document with the other plans issued by the government;
- To ascertain the government's own financial contribution to the expenditure.

The June 2025 Spending Review only covers expenditure under the current Parliament, up to the financial year 2029/30. Under our model, that expenditure will be £765.4 billion.

While some attention will be paid to how many of the current government's proposed investments were already contained in the Conservatives' spending plans, had they been re-elected, and what 'capital envelope' was put against those plans, the emphasis must surely be to take new government's contentions at face value: they have increased the 'capital envelope' for the period by £120 billion since July 2024 and unveiled schemes with a price tag far higher than that.

There is a key difference between the plans of the current government and those its predecessor. This government's plans presuppose leverage: the government intends to borrow a certain amount of money to inject as quasi-equity in its new schemes, on the back of which the schemes will borrow in their own name. The Conservatives planned to spend on schemes but not to have those schemes also borrow themselves.

The purpose is to ascertain how much of the £765.4 billion that it intends should be spent by 2030 has been catered for in its own calculations of its revenues and borrowings.

[79] https://www.gov.uk/government/publications/spending-review-2025-document accessed on 15 August 2025

That would then lead on to a calculation of how much the government assumes will come from third-party sources.

The endpoint of this calculation will be the leverage between the government’s funds and the third-party funds, which will need to be borrowed ‘off the government’s books’ in order for the full cost of the assets to be met.

It also to be assumed that the government, if re-elected during 2029/30, would maintain the ‘capital envelope’ for the period 2030-35 at the same level at which it has set it for 2025-30, namely at least a repeat of its £120 billion increase for 2025-30, in addition to whatever the previous government had planned for the same period. This assumption accords with the evidence that the present government’s plans foresee approximately the same amount of expenditure in 2030-35 as its Spending Review projects for 2025-30.

Capital Departmental Expenditure Limits under the Spring 2024 Budget

The Capital Departmental Expenditure Limits set by the previous government are visible in table 2.3 on p. 29 of the Spring 2024 Budget document:[80]

Table 2.3: Total Managed Expenditure (TME)[1,2]

£ billion (current prices)	Outturn 2022-23	Plans 2023-24	Plans 2024-25	Plans 2025-26	Plans 2026-27	Plans 2027-28	Plans 2028-29
Current Expenditure							
Resource AME	589.2	565.5	580.9	598.1	622.5	640.5	664.2
Resource DEL excluding depreciation	441.4	455.4	462.2	473.0	485.9	499.8	514.4
Ringfenced depreciation	20.5	62.0	47.4	48.4	49.6	51.0	52.5
Total Public Sector Current Expenditure	**1,051.1**	**1,082.9**	**1,090.4**	**1,119.6**	**1,158.0**	**1,191.3**	**1,231.1**
Capital Expenditure							
Capital AME	6.0	22.7	17.8	13.8	14.1	14.2	13.9
Capital DEL	100.3	110.7	118.1	118.3	118.2	117.6	116.7
Total Public Sector Gross Investment	**106.3**	**133.4**	**136.0**	**132.1**	**132.2**	**131.7**	**130.6**
Total Managed Expenditure	**1,157.4**	**1,216.3**	**1,226.3**	**1,251.7**	**1,290.3**	**1,323.1**	**1,361.7**
Total Managed Expenditure % of GDP	*45.3%*	*44.5%*	*44.0%*	*43.5%*	*43.2%*	*42.8%*	*42.5%*
o/w Total DEL	*541.7*	*566.1*	*580.3*	*591.3*	*604.1*	*617.4*	*631.1*

[1] Resource DEL excluding ringfenced depreciation is the Treasury's primary control within resource budgets. Capital DEL is the Treasury's primary control within capital budgets. The Office for Budget Responsibility (OBR) publishes Public Sector Current Expenditure in DEL and AME, and Public Sector Gross Investment in DEL and AME. A reconciliation is published by the OBR.
[2] Grant funding to local authorities for business rates reliefs and tax policy changes is reclassified from DEL to AME at Spring Budget 2024 due to volatility and uncertainty in cost estimates. The amount of spending that has been reclassified is equal to £5.1 billion in 2024-25, and has been backdated to all outturn years in which applicable spending took place. Local authorities will receive the same funding, as will the devolved administrations through the Barnett formula. This change therefore has no impact on Total Managed Expenditure or public borrowing.

Source: HM Treasury Public Spending Statistics, HM Treasury DEL plans, Office for Budget Responsibility and Office for National Statistics.

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The Conservatives’ plans can be summed as being:

Year	2023/4	2024/5	2025/6	2026/7	2027/8	2028/9	2029/30	Total
Capital DEL	£110.7bn	£118.1bn	£118.3bn	£118.2bn	£117.6bn	£116.7bn	--	£699.6bn

[80] E03057752_HMT_Spring_Budget_Mar_24_TEXT_PRINT available at https://www.gov.uk/government/publications/spring-budget-2024 accessed on 15 August 2025

The amount the Conservatives would have spent during the 2024-29 Parliamentary term-of-office would have excluded all of the £110.7 billion for 2023/4, and £35.4 billion for the period in 2024/5 between the start of the financial year and the General Election, that being around 30% of the £118.1 billion figure. On the other hand one should add back in around 30% of what would subsequently have been planned for the start of 2029/30, assuming the next General Election is in July 2029. As expenditure was to be on a mildly downward trend, one would imagine that the annual amount for 2029/30 would have been £115.8 billion and that the consequential add-back would have been £34.7 billion.

On that basis one can project that the Conservatives would have planned to spend £588.2 billion during the 2024-29 Parliamentary term-of-office.[81]

Capital Departmental Expenditure Limits under the June 2025 Spending Review

The new government's plans can be found in Table B.3 on pp. 125-6 of the June 2025 Spending Review:

Year	2023/4	2024/5	2025/6	2026/7	2027/8	2028/9	2029/30	Total
Capital DEL	£106.8bn	£114.6bn	£131.3bn	£142.7bn	£145.3bn	£149.1bn	£151.9bn	£941.7bn

The amount for what will be the 2024-29 Parliamentary term-of-office needs to have the amount for 2023/4 of £106.8 billion deducted, as well as 30% of the £114.6 billion for the start of 2024/5, or £34.4 billion, and also 70% of the figure for 2029/30 of £151.9 billion, or £106.3 billion. That makes the planned expenditure for the Parliamentary term-of-office £694.2 billion.[82]

All these figures include 'Financial Transactions' that are 'off-balance-sheet'.

The result of this calculation is that Labour appears to have added £106 billion to the 'capital envelope', rather than the £120 billion claimed, which still represents a meaningful increase. The £14 billion is somewhat large for being attributable to variations in the deductions and add-backs to take account of the dates of the financial year and of General Elections, but it was not deemed expedient to delve further into this discrepancy. Once again, one takes at face value the government's own contention that it has added £120 billion to the 'capital envelope' for the current Parliament.

'Capital envelope' for the following Parliamentary term-of-office

The 'capital envelope' for the following Parliamentary term-of-office, if the current governing party is re-elected, can be anticipated to be on the same level as that for 2024-2029 because:

- the scale of the overall capital expenditure plans appears to be on the same level as for 2024-29;
- where we have concrete evidence of the timing of expenditures between the two Parliamentary terms-of-office, it does not point to the spending being front-loaded;
- the current government have spoken of a 'decade of national renewal', expecting a second term-of-office and the opportunity to spend at the same level as during the first.

[81] £699.6bn - £110.7bn - £35.4bn + £34.7bn = £588.2bn
[82] £941.7bn - £106.8bn - £34.4bn - £106.3bn = £694.2bn

For these reasons we feel confident in projecting a 'capital envelope' for 2029-34 of £145 billion per annum, and thus of £725 billion overall. Under this version the government's 'capital envelope' rises to its longer-term target in 2027/8 and remains there as long as the party itself stays in government.

Under the projections of the previous government, the size of the 'capital envelope' for the current Parliamentary term-of-office was falling, towards £115.8 billion for 2029/30. It therefore seems reasonable to posit that it would have been on average £115.0 billion per annum during 2030-35, or £575 billion overall.

Under these figures the government's 'capital envelope' for 2030-35 comes out as £30 billion per annum higher, and £150 billion in all higher, than the one the Conservatives would have adopted, had they remained in office for two more full Parliamentary terms.

The working assumption is that the government's increases in the 'capital envelope' equate to its financial contribution into the schemes that they will direct, which would not have occurred under the Conservatives, and that this incremental financial contribution is:

- £120 billion for the current Parliamentary term-of-office; and
- £150 billion for the next Parliamentary term-of-office;
- £270 billion in all.

Comparison of capital amounts to be spent, by department

The layout of Table B.3 on p. 125 of the June 2025 Spending Review is nearly identical to that of Table 2.1 on p. 27 of the Spring 2024 Budget: these are the lists of spending departments.

The current government has broken HS2 out from 'Transport', and Sizewell C out from 'Energy Security and Net Zero'.

The following table shows the spending areas that are subject to major increases under this government:

Department	2024/5 Tory	2024/5 Labour	2025/6	2026/7	2027/8	2028/9	2029/30	Growth 2025-30[83]
Health & Social Care	£12.6bn	£11.6bn	£13.6bn	£14.0bn	£13.5bn	£14.8bn	£14.6bn	3.2%
Education	£6.1bn	£5.7bn	£6.8bn	£8.3bn	£7.7bn	£7.7bn	£7.7bn	1.4%
Justice	£1.8bn	£1.7bn	£2.0bn	£2.3bn	£2.3bn	£2.3bn	£2.0bn	3.0%
Defence	£18.9bn	£22.7bn	£23.2bn	£25.9bn	£30.0bn	£31.5bn	£33.2bn	7.1%
Housing, Communities, Local Gov't	£7.1bn	£8.4bn	£8.8bn	£9.8bn	£9.2bn	£9.2bn	£9.5bn	3.2%
Science, Innovation & Technology	£13.9bn	£13.3bn	£14.7bn	£15.1bn	£15.7bn	£15.8bn	£16.2bn	2.2%
Transport	£20.5bn	£13.8bn	£14.7bn	£17.0bn	£17.3bn	£18.3bn	£19.6bn	1.9%
HS2	n/a	£6.9bn	£7.1bn	£7.1bn	£7.1bn	£5.6bn	£5.5bn	-7.8%
Energy Security & Net Zero	£8.2bn	£4.0bn	£9.4bn	£8.0bn	£9.1bn	£10.9bn	£11.3bn	16.0%
Sizewell C	n/a	£1.8bn	£2.7bn	£2.9bn	£3.2bn	£2.5bn	£2.8bn	14.5%

83 Average Annual Real Growth

- These figures bear out the scale of the ramping-up attested to by the government papers examined so far;
- They also bear out the distribution of the ramping-up between different departments;
- Energy Security & Net Zero is the largest increase in percentage terms;
- In money terms there remains a disparity between what the government states it will invest and the overall investment need.

Summary

The examination of the June 2025 Spending Review tolerably bears out the incremental amount that the government has added to the 'capital envelope' for the current Parliamentary term-of-office, and it more closely bears out the breakdown of where the government's money will be spent.

The incremental amount of the 'capital envelope' over two terms-of-office comes out as £270 billion.

The main working assumption is that this increase equates to the government's financial contribution to the schemes that they will direct, which would not have occurred under the Conservatives.

On the other hand, and given this government's new fiscal rule, it is likely that they will borrow the entire amount of the two 'capital envelopes', account for them as 'borrowing for investment', and net them off against what they spend the money in within their measure of the national debt which is 'Public sector net liabilities'.

Total 'capital envelope'	Amount
Current Parliamentary term-of-office	£694.2 billion
Next Parliamentary term-of-office	£725.0 billion
Addition to 'Public sector net debt'	£1,419.2 billion
Addition to 'Public sector net liabilities'	£0.0 billion

A further major difference between the approaches of the Conservatives and the current government is that the Conservatives envisaged government investment as paying, more or less, for the entire cost of the investment object. Labour talk about 'crowding in' private investment to 'match' the government's contribution.

The next step will be to draw together what we know so far about how much money will need to be 'crowded in', and in what way, given the spread of different purposes to which the investment will be put.

4.9 Summary of investment plans revealed so far, and resources to set against them

Introduction

This section will compare the investment plans we have identified so far with the resources that are to be put against them. This reveals the size of the funding gap.

At the conclusion of section 4.6 it was posited, based on the research undertaken for this report, that the government plans an expenditure over the coming ten years of £1,641.3 billion on Industrial and Infrastructure assets (including on infrastructure assets to achieve Net Zero), over and above what the previous government was planning.

By way of comparison, the UK's entire economic output – its Gross Domestic Product or GDP – was £2,851 billion in 2024.[84]

This implies that the government intends that an extra amount equating to 58% of current GDP should be spent on purposes which the state directs, over and above what the government spends itself on its day-to-day costs. That is over a 10-year period, so it is 5.8% of today's GDP per annum. This compares with the approximately 0.66% of EU GDP being spent per annum through the InvestEU programme.

What the government intends to contribute itself to this 'investment'

At the conclusion of section 4.8 it was posited, based on examination of the government's June 2025 Spending Review and of the previous government's 2024 Spring Budget, that the government's share of the incremental expenditure on these new assets will be £270 billion.

That is around 16% of the total.

What the government's new fiscal rule allows it to borrow

At the same time the government's new fiscal rule – that it can permit itself to borrow if the borrowing is for investment – would allow the borrowing of the total amount of the 'capital envelopes' for the 10-year period of its 'decade of national renewal'.

The fiscal rule is quite simple:

- By the end of the current Parliamentary term-of-office, no borrowing in respect of day-to-day costs;
- Any and all investment may be funded with borrowing;
- The borrowing is netted off against the investment asset under 'Public sector net liabilities'.

Under this fiscal rule the government could borrow the entirety of the 'capital envelopes' and not just the incremental amounts it wishes to 'invest' over and above what the Conservatives were planning to invest.

As the 'capital envelopes' would be in the region of £1.4 trillion, an amount equating to 49% of today's GDP could be added to the national debt, as long as by that one meant 'Public sector net debt': 'Public sector net liabilities' would remain static.

Even more can be borrowed if lines of cost can be recharacterized as investments.

[84] https://commonslibrary.parliament.uk/research-briefings/sn02783/ accessed on 31 August 2025

Treatment of Maintenance and Training Costs

The government's papers mention instances of both maintenance costs and training costs as being 'investments'. Normally they are treated as day-to-day costs.

This has necessitated the letter to the Office for Budget Responsibility (the 'OBR') in Appendix 6.

The initial series of questions that the OBR has been asked to issue an opinion on are as follows:

- Is it the OBR's understanding that, because this expenditure is an 'investment', the government will permit itself within its fiscal rules to borrow to fund it?
- If the answer to the question above is a Yes, is the government's proposed treatment going forward a change from the current treatment of maintenance and training expenditure within the public accounts?
- In other words is the expenditure currently treated:
    - As a day-to-day cost; or
    - As an investment; or
    - Part one, and part the other, in which case please state the criteria for the categorisation?

The further questions were based on the assumption that part or all of the maintenance/training costs used to be treated as day-to-day costs, but will henceforth be treated as 'investments'. The questions focus on:

- What kind of asset will be created as the counterpart in the public accounts to the debt?
- For what cause(s) will the value of that asset be increased or decreased?
- Will the asset be netted off against the debt that funded the 'investment' in it, such that PNSL remains static?
- Will the value of the asset be independently tested at any point, to ensure that the value of the asset in the public accounts is realistic and is not just reflective of the amount spent on it?
- What is the depreciation/amortisation policy regarding the asset itself?
- From what source does the extra debt taken on to fund the asset get repaid, given that these assets - maintenance or training - are not directly revenue-generating in their own right?

The suspicion is that these accounting treatments are designed to create more 'headroom' for spending on day-to-day costs, or to make it easier for the government to meet the other part of the new fiscal rule, that day-to-day costs should be covered by revenue.

Resources already identified

The government's 'capital envelope' has been increased by £270 billion.

£29.4 billion of this is being put at the disposal of Public financial institutions as cash resources during SR2025, and it is possible that this would be repeated for SR2030.

The permission for Public financial institutions to issue guarantees has been raised by £26.7 billion for SR2025, and it is possible that this would be repeated for SR2030. This does not necessarily create extra cash resources, although it could do, if a Public financial institution issued a guarantee to another financier of a project in order to induce them to invest.

The Industrial Strategy contains the following on sources of funding:

Page	Description	Timing	£bn or mil
49	Amount from UK's biggest pension funds for investment in UK businesses and infrastructure	NTL	£50bn
151	List of investment commitments received	N/A	N/A

List of investment commitments received on p. 151:

Investment commitments

Since securing £63 billion in investment commitments ahead of the International Investment Summit in October 2024, the Government has continued to work closely with investors to secure major capital commitments for the UK, creating new jobs, funding house-building, improving infrastructure, and driving growth in the IS-8. Transformative deals include:

- **A strategic partnership between the MoD and Rheinmetall** to unlock over £400 million of long-term investment into the defence manufacturing industry, including in a new large-calibre gun barrel production facility in the UK. This initiative is set to create up to 400 jobs [May 2025].
- **£170 million investment from Knauf Insulation** in a state-of-the-art manufacturing facility in Shotton, North Wales, creating around 140 jobs [May 2025].
- **Universal's multi-billion pound investment** in a major new theme park and resort in Bedford, bringing nearly 20,000 jobs during the construction period and a further 8,000 jobs across hospitality and the Creative Industries when it opens in 2031 [April 2025].
- **A new partnership between the Government and OCBC, Singapore's second largest bank**, to facilitate £10 billion of investment into key priority sectors in the UK, including energy, infrastructure, and real estate [April 2025].
- **£12 billion commitment from Vantage Data Centers** to expand their footprint across the UK, delivering 11,500 jobs [January 2025].
- **£4 billion investment by Malaysian-owned YTL businesses** over the next five years, with around £2 billion going towards the Brabazon Bristol development, delivering more than 30,000 jobs [January 2025].
- **£550 million in impact investing commitments from three major financial institutions, Schroders, Man Group, and Resonance**, to fund the building of at least 5,000 new homes to address social inequality [October 2024].

The Infrastructure Strategy refers to the £600 billion of assets managed by defined contribution multi-employer workplace pension schemes.[85] It further claims an amount of £43.7 billion for private investment in clean energy industries since July 2024.[86]

Resources identified to meet investment requirement

We can draw up a table comparing the investment requirement with the resources so far identified to meet it:

Investment amount	-£1,641.3 billion
Borrowing-for-investment	£270 billion
International Investment Summit in October 2024	£63 billion
Pension funds under the Mansion House Accord	£50 billion
Amount still to be found	-£1,260.1 billion

[85] Infrastructure Strategy p. 34 para 2.6
[86] Infrastructure Strategy p. 70 para 4.2

There are reasons to be sceptical even about the amounts claimed to have been identified:

- The £63 billion of commitments claimed to have been made at the International Investment Summit is not borne out by the amounts in the specific list, which only total around £14 billion;
- The Mansion House Accord is a voluntary agreement with the UK pension funds, and is linked to a percentage of funds held in their discretionary portfolios: pension fund members are at liberty to switch their holdings out of the discretionary portfolios, in which case their holdings fall outside the scope of the Mansion House Accord.

The amount still to be found, even accepting that these two amounts will materialise, comes out as at £1,260.1 billion, and is 77% of the whole, and equating to 44% of the UK's GDP in 2024.

4.10 Missing amount of 'shadow debt' implied by the Carbon Budget and other plans

Introduction

The next step is to identify, on the basis of the amount of money that the government intends should be spent by 2035 on all the purposes within the scope of this paper, what 'shadow debt' amount will need to be raised to finance these plans.

The report now reverts to the preceding work to identify the amounts of money needed.

Total amount to be spent by 2035

This table, from section 4.6, is the result of our preceding work and shows the total amount to be spent by 2035:

Item	Amount to 2030	Amount 2030-35	Amount to 2035
Industrial Strategy only	£192.0bn	£205.0bn	£397.0bn
Infrastructure Strategy without Clean Power/Carbon Budget	£333.8bn	£263.9bn	£597.7bn
Infrastructure for Clean Power/Carbon Budget	£239.6bn	£407.0bn	£646.6bn
Total	£765.4bn	£875.9bn	£1,641.3bn

The government's contribution and what should come from third parties

Notwithstanding that the government's 'capital envelope' up until 2035 has been posited as £1,419.2 billion in section 4.8, a much lower amount than that - £270 billion - is incremental to pre-existing plans.

We have the following statement from section 4.9 of which third-parties are involved and what size of contribution has been indicated so far:

Investment amount	-£1,641.3 billion
Borrowing-for-investment	£270 billion
International Investment Summit in October 2024	£63 billion
Pension funds under the Mansion House Accord	£50 billion
Amount still to be found	-£1,260.1 billion

That leaves a major gap. Furthermore, the entirety is borrowed, from one source or another.

Leverage of guarantees by Public financial institutions

It is contemplated that, in addition to whatever monies are taken on as debt, Public financial institutions will be in a position to increase the amount of risk that the taxpayer takes on through 'Financial transactions', those being guarantees or other financial commitments.

The ceiling for guarantees is £93.5 billion, of which UK Export Finance accounts for £70 billion.[87] UKEF's guarantee capacity has been increased by £18 billion by the government: the nature of the UKEF's business does not include its guarantees being used as to support a layer of subordinated debt in an investment scheme, which is then used as credit enhancement to attract a large layer of senior debt.

That is exactly how the £23.5 billion guarantee capacity of the National Wealth Fund, the British Business Bank, and the National Housing Bank could be used. This does not increase the amount of debt, but enables its raising, notably into the higher-risk rungs lower down the 'creditor ladder'.

4.11 Section Summary

Large investments are planned, which the government only wishes to part-fund. Even this funding which the government nominally provides will have been borrowed by the government itself.

We have an 'Investment amount' of £1,641.3 billion and take the government's contentions at face value that this is new and represents their own plans, not plans inherited from the Conservatives.

Against that we have the increase in the 'capital envelope' of £270 billion, leaving £1,371.3 billion to be sourced externally, of which supposedly £113 billion have been identified. We are entitled to be sceptical about how firm a commitment sits behind this £113 billion. Even if that amount does materialise, it still leaves a shortfall of £1,260.1 billion.

It was not possible to fully reconcile the amounts for Industry, Infrastructure, and Net Zero, due to the inadequacy of the government's papers, with duplication, unclear timelines, and lack of summaries.

The Cost/Benefit Analysis in the Carbon Budget is wholly inadequate and needs to be re-done. It should neither have been accepted by government nor failed to be robustly challenged by HM Treasury, the Office for Budget Responsibility, and the Bank of England.

Not factoring in the cost of capital/borrowing is an unforgiveable error when the projects are so large, of such long duration, and will be funded mainly from outside sources, rather than from government debt. To refer to a precedent of not taking the cost of capital/borrowing into account is invalid, given the huge scale of the economic and societal change represented by the Net Zero transition.

[87] See Section 4.2

Part 5 – Allocation of projects into PFI and 'Direct sale' models, cash prices, the amount of 'shadow debt' that will be contracted, and the amount of 'shadow taxation'

5.1 Introduction

In this chapter we will allocate projects to the PFI model where it is suitable. So much money needs to be raised that it follows that the government will be compelled to use PFI where the user is a public sector entity and where the project produces no goods or services that can be sold directly to UK businesses and individuals.

The balance will be subjected to the 'Direct sale' model.

The amount to be raised is the full £1,643.1 billion in Labour's plans, as even the incremental 'capital envelope' of £270 billion will be borrowed.

The amount to be subjected to the 'Direct sale' model is simply this total less the amount that can be subjected to PFI.

It is important to stress that the entire £1,643.1 billion will be an addition to the UK's 'shadow debt', the incremental 'capital envelope' of £270 billion being concealed in the measure 'Public sector net liabilities'.

5.2 Allocation of projects into the PFI model

Projects are allocated to the PFI model if they fulfil the criterion that the principal – and therefore the maker of the payments – is likely to be a public sector entity.

Any asset connected with power generation or distribution should be able to have its costs factored into bills presented to UK businesses and individuals, and therefore falls outside the scope of PFI-eligibility.

PFI-eligible headings – from the Industrial Strategy

The projects drawn from the list in Appendix 3 are:

Page	Description	Timing	£bn or mil
63	National Data Library	NTL	£100mil
63	Health Data Research Library	NTL	£600mil
67	Capex to support college maintenance	2026-30	£1.7bn
83	Capital funding for motorways and roads	Between 2026 and 2030	£24bn
100	New government hubs outside London	NTL	£244mil
109	Transport for City Regions	NTL	£10bn
109	Improving and maintaining the North's road network	Between 2026/7 and 2029/30	£24bn
139	Genomics England	Over 5 years	£650mil
139	Our Future Health	NTL	£354mil
139	Preclinical infrastructure	NTL	£30mil
139	UK Biobank	NTL	£20mil
--	Total	--	£61,698 mil

The Transpennine Route Upgrade, priced at £3.5 billion, is included as part of 'All rail enhancements' in the Infrastructure Strategy.

PFI-eligible headings – from the Infrastructure Strategy

The projects drawn from the list in Appendix 4 are:

Page	Para	Description	Timing	£bn or mil
10	--	Pipeline of capital investment to maintain existing and invest in new flood defences and related measures	Apr35	£7.9bn
12	--	Health: for targeted infrastructure replacement, critical safety and wider DHSC portfolio	OverSR25	£70bn
12	--	Health: annual maintenance on NHS estate included in the above	Apr35	£6bn
12	--	Health: new hospital programme	2030/1 to 2034/5	£49bn
12	--	Education: capex	Over SR25	£38bn
12	--	Education: school rebuilding programme	Apr35	£20bn
12	--	Education: increase in annual maintenance expenditure from £2.4bn in 2025/6	By 2034/5	£3bn
12	--	Justice: new prison plans and annual maintenance to rise from £500mil in 2025/6 to…	By 2034/5	£600mil
31	1.61	Capex for ten new Technical Excellence Centres in 'every region'	By 2028/9	£80mil
51	3.24	All rail enhancements including £2.5bn for East-West Rail	Over SR25	£35.5bn
54	3.25	HS2	Over SR25	£25.3bn
68	3.105	Sovereign warhead programme	Over SR25	£15bn
68	3.105	Munitions	Over SR25	£6bn
68	3.105	Autonomous military systems	Over SR25	£4bn
69	3.109	Modern and sustainable MoD buildings	Apr35	£5.1bn
89	5.19	NHS technology and transformation	By 2028/9	£10bn
--		Total	--	£286,480 mil

Water projects will be funded by water companies themselves, hence the wording on p. 10 of the Infrastructure Strategy claiming that £7.9 billion of investment will be 'unlocked' over the next five years after the government approved water companies' water resource plans. Companies like Thames Water already adhere to the 'Direct sales' finance model.[88]

[88] pp. 27-8 of our paper "Borrowing for investment' – what signs we have of how this will manifest itself under the current Labour regime' of April 2025 and available under https://www.lyddonconsulting.com/borrowing-for-investment-all-the-signs-point-to-a-debt-funded-disaster/

Total of PFI-eligible headings from the above tables

Source	Amount
Industrial Strategy	£61,698 mil
Infrastructure Strategy	£286,480 mil
Total	£348,178 mil

5.3 Cash prices of projects allocated into PFI and 'Direct sale' models

The cash price of PFI projects is £348.2 billion. The cash price of 'Direct sale' projects is the Investment Amount of £1,643.1 billion less this amount:

Heading	Amount
Investment Amount	£1,643,000 mil
Less PFI-eligible headings	-£348,178 mil
'Direct sale' headings	£1,294,822 mil

Units of £100,000 under each financing model

In the previous chapter we calculated the lifetime cost under each model of an investment of £100,000.

Now we need to derive how many units of that size will be invested under each model:

Category	Amount	Units of £100,000
PFI-eligible headings	£348,178,000,000	3,481,780
'Direct sale' headings	£1,294,822,000,000	12,948,220

Units invested in per annum

Since the government's plans run over a 10-year period, it is realistic to model that one tenth of the units is invested per annum, in a finance model that runs for 20 years from the year of investment. This will result in a similar profile of payments to that which New Labour committed to under PFI when in power from 1997 to 2010, and where the final payments are due in 2052/3.

Therefore the number of units of investment per annum is:

Category	Units of £100,000	Units per annum
PFI-eligible headings	3,481,780	348,170
'Direct sale' headings	12,948,220	1,294,822

5.4 Lifetime burden of 'shadow taxation' that the plans will place upon UK businesses and individuals

Introduction

Now that we have the amounts to be invested under each model and have spread them over the 10-year investment period, we can proceed to calculate an illustrative lifetime cost of the entirety of the government's plan for the 'decade of national renewal'.

The result is the amount of 'shadow taxation' that will need to be drawn from UK businesses and individuals to service and repay the 'shadow debt' of £1.6 trillion that is to be taken on.

Where each scheme is taken to have a 20-year life, the total timespan of the programme is 30 years, given that the expenditure is taken be incurred evenly over the 10 years that the current government hopes to remain in office.

The calculations here show that only 21% of the investment amount is eligible for PFI, and 79% will be arranged through the 'Direct sale' model. This is indicative of how much of the investments will be aimed towards Net Zero, and will invoke all the 'incentives' mechanisms for breaking up into chunks the total burden placed on UK businesses and individuals, and feeding it to UK businesses and individuals through different channels.

This section contains the final step in the calculations – what is the total lifetime cost, given how much cash expenditure the government plans, given the funding model that will be used in each case, and given the payments each funding model entails per £100,000 of cash expenditure?

PFI model – cost per annum when 348,170 units of £100,000 are spent per annum

	Units p.a.	348,170
	Annual cost	Annual cost
Year	per unit	of 1y investment
1	-13,506	-4,702,372,953
2	-13,506	-4,702,372,953
3	-13,506	-4,702,372,953
4	-13,506	-4,702,372,953
5	-13,506	-4,702,372,953
6	-13,506	-4,702,372,953
7	-13,506	-4,702,372,953
8	-13,506	-4,702,372,953
9	-13,506	-4,702,372,953
10	-13,506	-4,702,372,953
11	-1,815	-631,759,128
12	-1,815	-631,759,128
13	-1,815	-631,759,128
14	-1,815	-631,759,128
15	-1,815	-631,759,128
16	-597	-207,949,619
17	-597	-207,949,619
18	-597	-207,949,619
19	-597	-207,949,619
20	-597	-207,949,619

PFI model – total lifetime cost if the per annum expenditure is repeated over the 10 years of our ‘decade of national renewal’

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total
1	-4,702,372,953										-4,702,372,953
2	-4,702,372,953	-4,702,372,953									-9,404,745,906
3	-4,702,372,953	-4,702,372,953	-4,702,372,953								-14,107,118,858
4	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953							-18,809,491,811
5	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953						-23,511,864,764
6	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953					-28,214,237,717
7	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953				-32,916,610,669
8	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953			-37,618,983,622
9	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953		-42,321,356,575
10	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-47,023,729,528
11	-631,759,128	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-42,953,115,703
12	-631,759,128	-631,759,128	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-38,882,501,878
13	-631,759,128	-631,759,128	-631,759,128	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-34,811,888,054
14	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-30,741,274,229
15	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-26,670,660,404
16	-207,949,619	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-4,702,372,953	-4,702,372,953	-4,702,372,953	-4,702,372,953	-22,176,237,070
17	-207,949,619	-207,949,619	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-4,702,372,953	-4,702,372,953	-4,702,372,953	-17,681,813,736
18	-207,949,619	-207,949,619	-207,949,619	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-4,702,372,953	-4,702,372,953	-13,187,390,402
19	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-4,702,372,953	-8,692,967,068
20	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-4,198,543,734
21		-207,949,619	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-631,759,128	-631,759,128	-631,759,128	-631,759,128	-3,566,784,606
22			-207,949,619	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-631,759,128	-631,759,128	-631,759,128	-2,935,025,478
23				-207,949,619	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-631,759,128	-631,759,128	-2,303,266,350
24					-207,949,619	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-631,759,128	-1,671,507,222
25						-207,949,619	-207,949,619	-207,949,619	-207,949,619	-207,949,619	-1,039,748,094
26							-207,949,619	-207,949,619	-207,949,619	-207,949,619	-831,798,475
27								-207,949,619	-207,949,619	-207,949,619	-623,848,856
28									-207,949,619	-207,949,619	-415,899,238
29										-207,949,619	-207,949,619
30											-512,222,732,620

The total of payments under this part of the programme is £512 billion.

‘Direct sale’ model – cost per annum when 1,294,822 units of £100,000 are spent per annum

	Units p.a.	1,294,822
	Annual cost	Annual cost
Year	per unit	of 1y investment
1	-28,892	-37,410,411,555
2	-28,892	-37,410,411,555
3	-28,892	-37,410,411,555
4	-28,892	-37,410,411,555
5	-28,892	-37,410,411,555
6	-28,892	-37,410,411,555
7	-28,892	-37,410,411,555
8	-28,892	-37,410,411,555
9	-28,892	-37,410,411,555
10	-28,892	-37,410,411,555
11	-19,264	-24,943,532,685
12	-19,264	-24,943,532,685
13	-19,264	-24,943,532,685
14	-19,264	-24,943,532,685
15	-19,264	-24,943,532,685
16	-17,973	-23,272,158,732
17	-17,973	-23,272,158,732
18	-17,973	-23,272,158,732
19	-17,973	-23,272,158,732
20	-17,973	-23,272,158,732

'Direct sale' model – total lifetime cost if the per annum expenditure is repeated over the 10 years of our 'decade of national renewal'

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total
1	-37,410,411,555										-37,410,411,555
2	-37,410,411,555	-37,410,411,555									-74,820,823,110
3	-37,410,411,555	-37,410,411,555	-37,410,411,555								-112,231,234,665
4	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555							-149,641,646,220
5	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555						-187,052,057,775
6	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555					-224,462,469,330
7	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555				-261,872,880,885
8	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555			-299,283,292,440
9	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555		-336,693,703,994
10	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-374,104,115,549
11	-24,943,532,685	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-361,637,236,680
12	-24,943,532,685	-24,943,532,685	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-349,170,357,810
13	-24,943,532,685	-24,943,532,685	-24,943,532,685	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-336,703,478,941
14	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-324,236,600,071
15	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-311,769,721,202
16	-23,272,158,732	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-37,410,411,555	-37,410,411,555	-37,410,411,555	-37,410,411,555	-297,631,468,379
17	-23,272,158,732	-23,272,158,732	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-37,410,411,555	-37,410,411,555	-37,410,411,555	-283,493,215,556
18	-23,272,158,732	-23,272,158,732	-23,272,158,732	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-37,410,411,555	-37,410,411,555	-269,354,962,733
19	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-37,410,411,555	-255,216,709,911
20	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-241,078,457,088
21		-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-24,943,532,685	-24,943,532,685	-24,943,532,685	-24,943,532,685	-216,134,924,402
22			-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-24,943,532,685	-24,943,532,685	-24,943,532,685	-191,191,391,717
23				-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-24,943,532,685	-24,943,532,685	-166,247,859,032
24					-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-24,943,532,685	-141,304,326,346
25						-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-116,360,793,661
26							-23,272,158,732	-23,272,158,732	-23,272,158,732	-23,272,158,732	-93,088,634,929
27								-23,272,158,732	-23,272,158,732	-23,272,158,732	-69,816,476,196
28									-23,272,158,732	-23,272,158,732	-46,544,317,464
29										-23,272,158,732	-23,272,158,732
30											-6,151,825,726,373

The total of payments under this part of the programme is £6.2 trillion.

Total cost of all the government's investment plans - from 2025 until 2055

Model	Amount
PFI	£512.2 billion
'Direct sale'	£6,151.8 billion
Total	£6,664.0 billion

5.5 Total 'shadow debt' and 'shadow taxation' and comparison to UK GDP

Introduction

The application of these financing models on this scale will be disastrous for the UK's wealth, meaning for UK businesses and individuals.

The entirety of the investment amount will be borrowed, becoming an additional 'shadow debt' of £1,641.3 billion, either borrowed by the schemes themselves, or by the government and then netted off within 'Public sector net liabilities'.

UK businesses and individuals will pay the debt service on all of it, including the significant interest premia, which are the penalty of the debt being contracted in the shadows.

This 'shadow taxation' will amount to £6.66 trillion to be extracted from UK businesses and individuals over 30 years, according to our financial model.

This equates to 234% of 2024 GDP.

Addition to the nation's financial burdens on account of new usage of PFI

7.7% of that - £512 billion - will derive from renewed usage of the PFI model, and in respect of a cash spend of £348 billion, which is 21% of the total investment amount. This disparity arises from the more favourable terms available for a PFI project than for a 'Direct sale' project:

- Lower credit risk for investors;
- Smaller premia over the interest benchmark;
- Thinner loss-absorption cushions;
- Thicker layer of the lowest-risk, lowest-cost layer of finance.

One caveat has to be placed against this. The ratio of spend-to-lifetime cost is less than 1:2 in our PFI model. The 'real life' outcome of New Labour's usage of PFI was that a £50 billion spend resulted in a lifetime cost of £278 billion, a ratio of 1:5.56.[89] This is partially attributable to a longer average life: New Labour's projects do not finally pay off until 2052-3, indicating projects with a 40-year financing period, rather than the 20-year one in our model. This adds to the interest amount but not to the capital payments, which total the same amount whatever the financing period is.

The higher amount is not attributable to higher nominal interest rates at the time. Interest rates were ¾-1% lower. A report was drawn from the Debt Management Office's 'Historical Average Daily Conventional Gilt Yields', from the start of the database in January 1998 until January 2010.[90]

Appendix 7 contains a version of the Term Sheet and Cashflows reflecting a £50 billion expenditure, a full term of 40 years, at then-current interest rates. The interest payments will naturally be greater, due to the longer term. The total of payments comes out as £133 billion, a ratio of expenditure/lifetime cost of 1:2.7, and is around half of the actual bill. If the current government permits its new PFI to be on the same terms as New Labour's, then our estimate of a lifetime cost of £512 billion could turn out to be very low.

Addition to the nation's financial burdens on account of usage of the 'Direct sale' model

92.3% of the burden derives from the 'Direct sale' model, which is more expensive to finance because of the greater level of risk for investors.

For this reason it is important to note again the likelihood that the resources of Public financial institutions will be deployed in this area, to reduce the risk for other investors. However, the entire resources of the relevant Public financial institutions – BBB, NWF and GBE – total only £57.4 billion against an investment amount under this model of £1.3 trillion, or 4%.

The addition to the nation's financial burdens from this source is £6,151.8 billion – 216% of 2024 GDP – over a 30-year period.

[89] Source: HM Treasury spreadsheet of March 2023 'Current-PFI-PF2-projects-as-at-31-March-2023'
[90] https://www.dmo.gov.uk/data/ExportReport?reportCode=D4H accessed on 17 September 2025

Channel for payment of PFI-related bills

The PFI bills become obligations as debtor of a public sector entity. As such they become part of the day-to-day costs of the public sector and therefore ultimately of the government.

Generating extra day-to-day costs threatens fulfilment of the fiscal rule that day-to-day costs must be covered by revenues. That is why the government is reluctant to use PFI, even if it is a cheaper financing model than the 'Direct sale' one.

Keeping over 79% of the investment off the books for the government comes at a price of a much higher cost, but at the same time distances the total cost of its plans from impacting the fiscal rule.

As stated earlier, the pace at which the government wishes to move and the total scale of its plans necessitate usage of PFI where it is relevant, albeit that it is only relevant to quite a small portion of the investments.

For UK businesses and individuals, the costs of the PFI-related portion will be passed to them as higher taxes.

Channel for payment of bills related to the 'Direct sale' model

The channel through which UK businesses and individuals will be made to bear the costs of the investments under the 'Direct sale' model is higher bills for whatever the project produces.

This is 'shadow taxation'.

There are two other elements in the process of breaking the burden into chunks and feeding it to UK businesses and individuals down different channels:

- The cost of subsidies or 'incentives' which, if they are channelled through public sector entities, increase the government's day-to-day costs and result in higher taxation for UK businesses and individuals;
- The cost of the government and/or Public financial institutions playing the role of the 'missing investor' with inadequate or no remuneration: this will present itself as a shortfall in the government's accounts between the cost of the debt it raised to make its contribution into the schemes, and the returns it earns, either itself or through Public financial institutions. The shortfall increases the government's day-to-day costs and results in higher taxation for UK businesses and individuals.

There is an additional potential source of a shortfall in the government's accounts: a loss of the capital it or a Public financial institution contributed to a scheme, or the calling of a guarantee issued by a Public financial institution or by itself, where either:

- The government or a Public financial institution takes ownership of a worthless asset in exchange for its paying out on a guarantee; or
- The government or a Public financial institution has an Account Party which is unable to reimburse it when the guarantee, issued on behalf of the Account Party, is called by its beneficiary.

Commentators have become most vexed about Fuel Duty, and what amount would be lost and by when under the Net Zero plans.[91] The discussion has focussed on how it would need to be replaced e.g. by road pricing, motorway tolls and so on, meaning by overt taxation.

Little focus by contrast has been targeted onto the financing cost of Net Zero, which is absent from the Carbon Budget. In essence what we have in this report is the amount that will be levied upon UK businesses and UK individuals, one way or another, to finance the transition to Net Zero as 'shadow taxation'.

Impact on GDP

The act of spending £1641.3 billion over 10 years will naturally raise GDP on a 1-to-1 basis from £2,851 billion to £4,492 billion. That cannot be claimed as an achievement if it is GDP growth bought with an equal-and-opposite increase in liabilities.

One should not be beguiled by the fact that, given that the debt will be hidden and will not be counted within any of the measures of the national debt, the UK's Debt-to-GDP ratio will fall.

The debt comes with significant costs.

Measurement of viability of investments

The investments must generate returns in excess of their costs in order to rank as an achievement: the 'sugar rush' of statistical growth in the short term should not be replaced by a strongly deflationary effect in the medium term.

There should be a 'J-curve' or 'hockey stick' effect, demonstrating how the returns firstly amortise the investment costs and then bring the enterprise into profit.

It was observed earlier that this 'J-curve' or 'hockey stick' effect was notable by its absence in the Cost/Benefit analysis in the Carbon Budget: expenditures continued at a high level all the way though until 2050, and there is every reason believe that they will continue after 2050.

It must be obvious that the government's investment programme is only viable, when they plan to spend 58% of 2024 GDP, if the investments return 58% of GDP (the capital amount), plus all the financing costs, plus all the operating costs, plus a profit on top of that.

Setting these figures in context

If the financing costs alone of the government's programme are in the range of 8% per annum on 58% of GDP, then the investments must catalyse GDP growth of at least 4.6% just to cover the financing costs.

If the nation is to borrow-and-spend 5.8% of GDP per annum for 10 years, the resulting investments must be catalysing annual, compound GDP growth of nearer to 10%, sustained for 20 years and without further investment, if the programme is to be seen as economically worthwhile.

[91] https://www.theguardian.com/commentisfree/2025/aug/14/fuel-duty-rachel-reeves-uk-chancellor-motorists accessed on 15 September 2025

The burdens represent a huge expansion of the state-directed sector, to the detriment of the private sector, and a huge expansion of effective taxation. It is in year 10 of our model that the 'shadow taxation' peaks, at £417 billion. That is 15% of current GDP, to add to the current tax burden, which the OECD put at 35.3% of GDP for 2023.[92] The total effective tax burden would then exceed 50% of GDP.

5.6 Gap between the figures in this report and official projections

Introduction

The costs highlighted in this report scarcely feature in the official papers on the UK's financial situation, no doubt because the authorities that compile these reports do so based on what runs through the public accounts.

The financing models discussed in this report are deliberately constructed so as to minimise what runs through the public accounts, although a certain footprint will be left, whatever funding model is used.

Both that footprint, and all the other costs calculated in this report, are therefore a blind spot for the authorities charged with overseeing the nation's finances.

Cost/benefit analysis in the Seventh Carbon Budget

The Climate Change Committee exempt themselves from including financing costs in their calculations. If they had, the supposed benefits of Net Zero would have evaporated and been replaced by an enormous cost.

2025 June Spending Review

We have demonstrated that only the government's increase to the 'capital envelope' appears in the spending review. Our calculations are based upon that increase being repeated and even increased for the following Spending Review period under Labour's plans.

The 'capital envelope' increase includes the extra cash resources for the Public financial institutions, ever if the presentation makes it appear that one is additional to the other.

At any rate the government's increase to the 'capital envelope' of £270 billion for 2025-35 is only 12% of the investment amount.

Even that – as well as the pre-existing 'capital envelope' – would not cause the nation's 'Public sector net liabilities' to rise, since a debt whose proceeds are 'invested' in an asset can be netted off against the value assigned to the asset – which is naturally the value of the debt.

We thus have a Spending Review into which accounting legerdemain is fully baked, and which conceals the financial burden that it will contribute to placing on UK businesses and individuals.

[92] https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/global-tax-revenues/revenue-statistics-united-kingdom.pdf accessed on 18 September 2025

The OBR's 'Fiscal risks and sustainability' report of July 2025

The OBR acts as the nation's watchdog over the government's fiscal probity, by looking at the public accounts.

It has so far failed to object to how the measure 'Public sector net liabilities' will serve to obscure the debts the government takes on to fund 'investment'. The additional debt becomes a 'shadow debt' because it is not visible in the main measure that the government and the OBR are focussing on in order that the nation not become over-indebted.

It is hard to credit that the OBR has failed to become engaged by the disparity between the government's investment plans of £1.6 trillion and an 'own-funds' contribution by the government to it of £270 billion – an amount which is not really 'own-funds' but borrowed.

PFI is little more than an afterthought in its July 2025 Report: the existing contracts, put on by New Labour, being the bottom category on p. 61 under 'Public sector net worth'. PFI does not feature at all in any discussion of the future, notwithstanding the government's frequent mention of it in the Infrastructure Strategy.

Chapter 4 of the report is on Climate Change, the economic and fiscal costs of climate change, and the fiscal effects of climate change mitigation.

Chart 4.7 on p. 103, for example, plots out the potential increases in debt as a percentage of GDP if temperatures should rise by 3c, amounting to a 56% increase in Public Sector Net Debt by the financial year beginning in April 2073.

The 'downside risks' – meaning the chance that this scenario should prove optimistic – outnumber the 'upside risks'.

The fiscal effects of climate change mitigation on pp. 105-9 are in large part copied over from the Carbon Budget, although the OBR note, in Box 4.2 on p. 109, that 'At £59 billion, when including £19 billion of investment in nuclear energy, the Spending Review departmental spending plans are £7 billion lower than our central scenario for the government's share of investment costs over the next five years'. In other words the OBR is still speaking about the 'investment' that the government will deploy towards Net Zero, not the overall amounts called for, as if the debt service on the overall amounts would not have a major impact on the affordability of day-to-day public spending and of the public debt.

The OBR, on pp. 110-2 of its report, proceeds to attempt to quantify the give-up by the government of revenues due to the cessation of the usage of fossil fuels, and it puts this loss at '£43.2 billion (1.0 per cent of GDP) by 2050-51 or £20.5 billion (0.5 per cent of GDP) a year on average'. Fuel duty, as shown in Chart 4.10 on p. 112, contributes 70% to the loss of revenue.

The OBR appears not to have grasped that the government's 'investment' in Net Zero is no more than an amount to be inserted at a low rung on the 'creditor ladder' in a highly leveraged financing, inserted so as to 'unlock' private investment into rungs higher up the 'creditor ladder'.

The 'Direct sale' model is outside the OBR's scope because the bills mainly go straight to the user and bypass the public accounts. This is a myopic approach, as bills on the scale indicated in this report would eliminate the UK economy and with it the government's revenues and ability to service its debt.

The planning of ‘investments’ on the scale laid out by the government, allied to the usage towards them of a finance model whose main objective is to bypass the public accounts, seems also to have bypassed the OBR.

That negates the reason for having an OBR, if it cannot observe developments which, if they materialise on anything like the scale outlined in this report, render the government’s finances and the nation’s debts unsustainable.

5.7 Section Summary

The UK government’s programme threatens to erase the UK’s wealth.

The spending programme is enormous, diffuse, and sustained, and will be funded with newly-contracted ‘shadow debt’, that will bypass the authorities’ figures for the national debt.

The ‘shadow debt’ will be expensive, and it is questionable whether the resulting ‘investments’ will catalyse economic growth of the order and duration necessary for the debt to be serviced.

Instead the ‘shadow taxation’ needed to service the ‘shadow debt’ will simply pile on top of the visible taxation needed to service the acknowledged debt, and the total will require the diversion of over 50% of the UK’s current GDP at its peak into paying it.

The incremental burden imposed by the ‘shadow taxation’ makes it unlikely that it will be possible for the state to collect the amount of visible taxation it projects and needs.

This seems to have eluded all of the authorities responsible for ensuring the affordability of the UK’s obligations: HM Treasury, the OBR, the Bank of England, and the Office for National Statistics. These authorities appear to have failed to observe and understand the combined impact of expansive investment plans and high-leverage, off-balance-sheet financing models.

They really should be required to do their homework again, whilst agreeing that the measure ‘Public sector net liabilities’ for the nation’s debts should not be used.

If there is one ‘original sin’ at the base of this, it is the acceptance of the Cost/Benefit Analysis in the Carbon Budget, which excludes by its own admission the capital/borrowing costs of the investments it contains.

This is a shocking oversight when it must have been clear to its authors that the investment programme would be 100% debt-funded, with most of it being priced at a considerable premium over a benchmark interest rate.

It is even less acceptable that the OBR has taken the Cost/Benefit Analysis at face value, and based its opinions on the sustainability of the UK’s finances on a document that excluded such a large amount of debt and interest.

Summary and conclusions

The current UK's government's industrial, infrastructure and Net Zero plans will act as a sandbox for testing whether a Western, nominally capitalist, economy and society can sustain an increase in 'shadow debt' of 58% of its GDP, on top of a visible debt of 100% of GDP.

The necessity of contracting this debt so that it falls outside the traditional measures of national debt adds substantially to its cost, and to the amount required to service and repay the debt.

This is 'shadow taxation', and the UK will act also as a sandbox for testing how much 'shadow taxation' a country – meaning its businesses and individuals – can sustain before they become unable to meet their costs of living and the cost of the visible taxation that the government levies upon them.

There are two levels of incremental cost – represented by the two funding models - over the government simply borrowing the money, adding it to the amount of national debt, and increasing taxes to raise the debt service.

The first level involves a relaunch of Private Finance Initiative, where the debt remains in the shadows, but the scheme costs do not: the scheme costs are passed on to a public sector entity as day-to-day costs, only with a financing complexity premium added to the interest rate that the government would have had to pay itself, had it financed the scheme by issuing more gilts.

Under this level the 'shadow debt' materialises as a need for incremental, real taxation, just as Private Finance Initiative has done in its original form.

The second level involves schemes whose costs are mainly passed directly to UK businesses and individuals – i.e. to taxpayers. This is the same constituency that stands behind the UK government's debts, and which constitutes the 'full faith and credit' of the UK.

Scheme incentives and public authorities acting as the 'missing investor' in such schemes may lighten the direct burden placed on UK businesses and individuals in terms of higher prices, only for these interventions to be passed to them as higher taxes.

For investors in the schemes, this right to pass costs on to this constituency is akin to a tax-raising power: the investors take more or less the same credit risk as if they were buying gilts and lending to the same constituency but through the conduit of the UK government.

This model, though, involves a far higher financing complexity premium. Given the quantum of schemes to be financed and the fact that the principal of most of them is not a public sector entity, the vast majority of schemes will be based on this other model.

This is the level within which the UK's 'shadow debt' will expand the most, and under which the greatest amount of 'shadow taxation' will be required to service and repay the 'shadow debt'.

Our models indicate a total cost under the PFI model of £512 billion for a capital investment of just under £350 billion, on a ratio of 1:1.5. Under the other model the total cost comes out as £6.2 trillion for a capital investment of £1.3 trillion, on a ratio of 1:4.8. These multiples compare to the 1:5.6 that has applied to the historical usage of PFI.

The total additional financial burden comes out as £6.7 trillion over a 30-year period, or 234% of current UK GDP.

Appendix 1 - Analysis of Clean Power Action Plan and Annexes

Main document		
Page	Description	£bn or mil
11	Investment on average annually from 2025 to 2030	£40bn
11	Of which generation assets	£30bn
11	Of which transmission assets	£10bn
37	Breakdown tables for investments under two scenarios	£43-49bn
91	Reference to CfD Reforms	--
112	Net Zero Teesside, first at-scale gas power plant with carbon capture to start production in 2028, and Dispatchable Power Agreement with industry, thanks to government commitment towards Carbon Capture ('CCUS'), no further timeline	£21.7bn
113	Other CCUS projects including the HyNet Cluster for storage of 4.5 million tonnes of Carbon Dioxide per annum by 2030	--
126	At least £5.8bn of NWF's capital will focus on five sectors relevant to clan power, and £8.3bn has been committed to GBE, with no timeline	£14.1bn
Technical Annex (9 pages)		
--	No more depth behind the figures	--
Connections Reform Annex (19 pages)		
--	No figures	--
Assessment of the clean energy skills challenge – Evidence annex (42 pages)		
--	No figures beyond salary estimates	--
Clean energy jobs ads analysis		
--	No figures	--

Appendix 2 - Analysis of Solar Roadmap and Annexes

Main document		
Page	Description	£bn or mil
9	Reforms to the Contract for Differences regime	--
25	Warm Homes Plan over the 2025 Spending Review period	£13.2bn
25	Private Green Finance – reduce consumer protection under the Consumer Credit Act 1974	--
26	Grant for the Green Home Finance Accelerator programme	£20mil
28	UK Warehousing Association believes solar can reduce members' electricity costs by 40-80% per annum	£3bn
29	GBE has match-funded installation of solar on 200 schools and 200 hospitals to be deployed in 2025/2025.	--
39-40	BBB, NWF and UKEF helping scale up solar businesses, with deployment of the 'flagship' CfD scheme	--
58	Investment into planning system, no timeline	£46mil
59	More on CfDs and changes to them	--
60	Changes to CfDs for Floating solar PV (FPV)	--
Annex 1 – Analytical methodologies		
--	Data and assumptions on modelling schemes	--
10-11	Summaries of support from Public Financial Institutions	--
Appendix 2 – case studies on wider benefits and addressing misconceptions		
2	Brent Pure Energy: fitting of 659 solar panels to save one school an assumed £10,000 per annum (19.5 year payback period)	£195,000

Appendix 3 - Analysis of Industrial Strategy and Technical Annex

NTL means 'no timeline stated', i.e. the document gives no timeframe within which or by the end of which the action should be completed

'Over SR25' means 'over the period of the Spending Review 2025', which means from now up to and including financial year 2029/30'.

In some cases a timing is given against an action in the first clause in a sentence, and then another action is given in the following clause, but without its being made clear whether the same timing applies to it. In those cases 'NTL' is given against the second action.

Main document			
Page	Description	Timing	£bn or mil
12	Expand access to finance/BBB: extra capital for the 'IS-8', and expanded capacity and capability	NTL	£4bn
12	Expand access to finance/NWF: capitalisation to be deployed to support growth	NTL	£27.8bn
13	Strategic Sites Accelerator	NTL	£600mil
13	Local Innovation Partnerships	NTL	£500mil
13	Edinburgh Supercomputer	NTL	£750mil
13	Mayoral Recyclable Growth Fund to support Local Growth Plans	10-year	£500mil
14	Advanced Manufacturing Sector including up to £2.8bn R&D	Over the next 5 yrs	£4.3bn
14	Creative Places Growth Fund	NTL	£150mil
14	Health Data Research Service	NTL	£600mil
14	Development and adoption of quantum computers of which £500mil delivered through Sovereign AI Unit and a new programme of AI Growth Zones	NTL	£670mil
14	Expansion of Made Smarter scheme and other measures to increase tech adoption in Professional & Business Services sector	NTL	£150mil
17	Autumn 2024 Budget 'increased the capital envelope by over £100bn and by a further £13bn over the same period at Spring Statement 2025', meaning an additional £120bn 'compared with plans set out at Spring Budget 2024'	Over SR25	£120bn
17	Affordable Homes	10-year	£39bn
17	Sizewell C	Over SR25	£14.2bn
17	R&D	Per annum by end of SR25	£22.6bn
17	Long-term transport settlements for mayors	NTL	£15.6bn
17	Social and economic infrastructure	Over the next decade	£725bn
18	Shortfall in fulfilment of economic potential by which 'city regions – traditionally engines of economic growth in other countries' are falling short	N/A	£90bn

Page	Description	Timing	£bn or mil
20	Advanced Manufacturing will double business investment to…	Per annum by 2035	£39bn
20	Creative Industries business investment will rise to…	By 2035, but not per annum	£31bn
20	Business investment in Clean Energy Industries will double to…	By 2035, but not per annum	£30bn
20	Professional & Business Services business investment will rise to…	By 2035, but not per annum	£65bn
31	Subject to REMA (Review of Electricity Market Arrangements), business plans for Transmission Owners set out proposed business investment of..	For 2026-31	£60bn
44	NWF to commit capital to ports including £55mil to Port of Cromarty Firth (operational by start of 2028) and £80mil for Future Port Talbot	NTL	£5.8bn
44	For training up skilled construction workers	NTL	£625mil
45	Carbon Capture – to launch UK's CCUS industry	Over 25 years	£21.7bn
45	Initial allocation to launch UK's CCUS industry, under which 'financial close' was achieved on the East Coast Cluster and the Liverpool Bay Cluster 'securing £8bn of private sector investment' (leverage of around 1:1)	Over SR25	£9.4bn
45	Cyber Essentials accreditation scheme for which industry co-investment of £200mil was achieved (leverage 1:3)	Already invested	£80mil
46	Small Module Reactor programme	Over SR25	£2.5bn
47	Fusion including UK Atomic Energy Authority including…	Over the next 5 yrs	£2.5bn
47	STEP prototype 'fusion' power station in West Burton	By 2040	N/A
47	Civil nuclear	Over the next 4 yrs	£20bn
47	Projected spend through UK defence nuclear suppliers	Over the next 10 yrs	£100bn
49	NWF – total portfolio, £3bn of which put on in last year, and mobilising £14bn of private finance (leverage 1:2½)	N/A	£6bn
49	BBB – supporting '11% of equity deals over the last decade'	N/A	N/A
49	UKEF – amount of 'support issued'	Over the last 3 yrs	£22.7bn
49	Amount from UK's biggest pension funds for investment in UK businesses and infrastructure	NTL	£50bn
50	UKEF – total amount on offer to 'stimulate overseas demand, of which at least £3bn is dedicated to defence exports', thanks to additional £3bn of Direct lending capacity	NTL	£13bn
50	GBE – for investment in domestic offshore wind supply chains	NTL	£300mil
50	NWF – to 'homegrown clean power'	Over SR25	£8.3bn

Page	Description	Timing	£bn or mil
50-1	BBB – new ceiling for total financial capacity, a 66% 'increase in support for innovative UK businesses'	NTL	£25.6bn
51	BBB – capital amount to be put into IS-8 businesses so as to 'crowd in' £12bn of private capital (leverage 1:3)	NTL	£4bn
51	BBB – making of direct equity investments	NTL	£60mil
51	BBB – commitment of extra amount to regional debt and equity programmes, city regions and clusters', 'underrepresented entrepreneurs and investors'	NTL	£2.6bn
54	UKRI, R&D funding agency, budget	Per annum	£8.8bn
57	Public investment in frontier industries to reach a ceiling, from £20.4bn in 2025/6	2029/30	£22.2bn
57	Local Innovation Partnerships, with £1bn of co-investment (leverage 1:2)	NTL	£500mil
57	A new Sovereign AI Unit	NTL	£500mil
58	Higher Education Innovation Funding worth...	In 2024/5	£280mil
58	Made Smarter Adoption programme, up to...	From 2026	£99mil
62	UK Data Sharing Infrastructure Initiatives	From April 2026	£12mil
63	Smart Data schemes	NTL	£36mil
63	National Data Library	NTL	£100mil
63	Health Data Research Library	NTL	£600mil
66	Recruiting high-quality teachers in Further Education	In 2025/6	£400mil
66	Recruiting high-quality teachers: colleges and other providers	In 2025/6	£160mil
67	Capex within the Skills Mission Fund	NTL	£200mil
67	Capex to support post-16 capacity	NTL	£375mil
67	Capex to support college maintenance	2026-30	£1.7bn
68	Extra investment in skills	Per annum by 2028/29	£1.2bn
68	Bringing digital and AI skills to all classrooms	NTL	£187mil
68	Supporting engineering skills	Over 3 years	£100mil
69	Training up 60,000 more skilled construction workers	Over the next 4 years	£600mil
71	Global Talent Fund to attract 10 world-class researchers and their teams	NTL	£54mil
71	Funding through Turing AI 'Global Fellowships' for academics to conduct ground-breaking AI research at UK universities	'multi-year'	£25mil
77	New threshold, raised from £10mil, of amount of a subsidy such that it is the subject of an enquiry by the Competition & Markets Authority	NTL	£25mil
83	Capital funding for motorways and roads	Between 2026 and 2030	£24bn

Page	Description	Timing	£bn or mil
83	For the largest city regions to improve transport, under Transport for City Regions settlement	Up to 2031	£15.6bn
83	Local Transport Grant	NTL	£2.3bn
83	Bus services	Per annum	£900mil
83	Electric charging infrastructure	NTL	£400mil
98	BBB – 'Cluster Champions Programme' underpinned with expansion of Nations and Regions Investment Funds of...	NTL	£100mil
98	Expansion of Nations and Regions Investment Funds to include South-East and East of England	NTL	£350mil
99	Local Government Pension Schemes 'will be required to consider local growth priorities in their investment strategies and to work with Mayors in England and Corporate Joint Committees in Wales in support of regional investment opportunities'	NTL	£400bn
100	Local Innovation Partnerships Fund, to unlock £1bn of co-investment 'and add £700 million to local economies...including through new jobs, products and services' (leverage 1:2)	Over SR25	£500mil
100	New local growth fund 'for specific mayoral city regions in the North and Midlands with the highest productivity catch-up and agglomeration potential'.	10-year...from 2026-27	N/A
100	Regarding the new local growth fund in Scotland, Wales, and Northern Ireland, funding across this scheme and for communities will be at the same overall level in cash terms as under the UK Shared Prosperity Fund	2025-26	N/A
100	New government hubs outside London	NTL	£244mil
101	From Local Innovation Partnerships Fund for an office in each of Scotland, Wales, and Northern Ireland	Over SR25 (implied)	£30mil
109	Transpennine Route Upgrade	From 2026/7 to 2029/30	£3.5bn
109	Transport for City Regions	NTL	£10bn
109	Improving and maintaining the North's road network	Between 2026/7 and 2029/30	£24bn
109	Local Innovation Partnerships Fund allocations for each of Greater Manchester, Liverpool City Region, South Yorkshire, North East, and West Yorkshire, along with new British Business Bank Cluster Champions for each	NTL	£150mil
109	A share of an allocation from the Creative Places Growth Fund for each of the same cities	NTL	£150mil
111	Rail networks in Wales	NTL	£445mil
119	New network of Robotics Adoption Hubs	NTL	£40mil

Page	Description	Timing	£bn or mil
119	A network of Industrial Strategy Zones (Investment Zones and Freeports)	Over 10 years	£160mil
122	Clean Energy Supply Fund including £300mil for offshore wind supply chains	NTL	£1bn
122	Clean Energy Bonus for offshore wind developers	NTL	£544mil
122	Sizewell C	Over SR25	£14.2bn
122	Small Modular Reactors	NTL	£2.5bn
122	Fusion	Over the next 5 years	£2.5bn
122	CCUS projects	Up to 2029	£9.4bn
122	Warm Homes Plan	NTL	£13.2bn
123	Clean growth finance through UKEF	Between 2025 and 2029	£10bn
123	To stimulate growth in Clean Energy Clusters	Between 2024 and 2029	£160mil
126	For the 'next wave of creative clusters'	Over SR25	£100mil
126	Creative Futures Programme	NTL	£25mil
126	Refresh of the creative careers service and the National Film & TV School, with £11mil of co-funding	NTL	£9mil
127	Film & TV	Over the next 3 years	£75mil
127	Video games	Over the next 3 years	£30mil
127	Music	Over the next 3 years	£300mil
127	Creative Places Growth Fund allocations to six Mayoral Strategic Authorities	Over three years	£150mil
127	Tees Valley Creative Investment Zone	Over ten years	£160mil
130	UK Defence Innovation	NTL	£400mil
131	Extra defence budget spending with UK SMEs	By May 2026	£2.5bn
134	Target for annual R&D funding for Digital & Technologies	By 2029/30	£22.6bn
139	Genomics England	Over 5 years	£650mil
139	Our Future Health	NTL	£354mil
139	Preclinical infrastructure	NTL	£30mil
139	UK Biobank	NTL	£20mil
140	Life Sciences Manufacturing Fund	NTL	£520mil
140	New, bespoke approach to supporting life sciences investments above...	NTL	£250mil
151	List of investment commitments received	N/A	N/A
Technical Annex			
--	About methodology and assumptions	--	--

Appendix 4 - Analysis of Infrastructure Strategy

This paper is entitled as a 10-year Infrastructure Strategy, so, where no different timeline is indicated against a certain action, it is assumed that the action is to be completed by the end of the financial year 2034/5. The lack of a different stated timing is indicated below by the phrase 'Apr 2035'. 'Apr35' has also been used instead of phrases like 'over the next decade', 'over ten years', or 'over the next ten years', in order to reduce the proliferation of different time periods.

'Over SR25' means 'over the period of the Spending Review 2025', which means from now up to and including financial year 2029/30'. 'Over SR25' has also been used instead of phrases like 'within this Parliament', 'over five years' or 'over the next five years', or subsets of this period such as 'from 2026/7 to 2029/30'.

In some cases a timing is given against an action in the first clause in a sentence, and then another action is given in the following clause, but without its being made clear whether the same timing applies to it. In those cases 'NTL' is given against the second action.

Main document				
Page	Para	Description	Timing	£bn or mil
3	--	Strategic statement: the strategy' is long-term in nature – backed by at least £725 billion of government funding for infrastructure over the next decade. It is comprehensive – covering both economic and social infrastructure for the first time, recognising that schools and hospitals are just as vital to living standards as road and rail'	Apr35	N/A
5	--	'National Wealth Fund: helping crowd in private investment and drive growth across the UK.	Apr35	N/A
7	--	Making commitments beyond the government's term-in-office: 'the government is committing to longer-term certainty with some projects and programmes receiving funding certainty even beyond 5 years and up to 10 years in some cases, including the school and college estate, the health estate, and justice estate'.	Apr35	N/A
8	--	The government intends to use pension money, money channelled through Public Financial Institutions, and Public Private Partnerships (like Private Finance Initiative)	Apr35	N/A
8	--	Fixing the basics in long-term investment in road and rail maintenance (backlogs, potholes)	Between 2026/7 and 2029/30	£24bn
9	--	Transport for City Regions settlement	Apr35	£15.6bn
9	--	East-West Rail for Oxford to Cambridge Corridor	Over SR25	£2.5bn
9	--	Lower Thames Crossing, initial amount	2026/7	£590mil
9	--	AI Opportunities Action Plan	Apr35	£2bn
10	--	Social and affordable housing	Apr35	£39bn
10	--	National Housing Bank, on top of existing £6bn	Apr35	£16bn

Page	Para	Description	Timing	£bn or mil
10	--	Unlocking of investment after the government approved water companies' water resource plans	In the next five years	£7.9bn
10	--	Pipeline of capital investment to maintain existing and invest in new flood defences and related measures	Apr35	£7.9bn
11	--	CCUS deployment maximisation	Apr35 (?)	£9.4bn
11	--	Hydrogen infrastructure	Apr35	£500mil
11	--	Fusion	Apr35	£2.5bn
11	--	GBE and GBE-Nuclear for homegrown clean power	Over SR25	£8.3bn
11	--	Warm Homes Plan including £5bn of Financial Transactions	Over SR25	£13.2bn
11	--	Decarbonising transport	Over SR25	£2.6bn
12	--	Annual 'Social investment' rising from £9bn in 2025/6 to...	By 2034/5	£10bn
12	--	'Social investment' to have totalled...	Over 10 years	£119bn
12	--	Health: for targeted infrastructure replacement, critical safety and wider DHSC portfolio	OverSR25	£70bn
12	--	Health: annual maintenance on NHS estate included in the above	Apr35	£6bn
12	--	Health: new hospital programme	2030/1 to 2034/5	£49bn
12	--	Education: capex	Over SR25	£38bn
12	--	Education: school rebuilding programme	Apr35	£20bn
12	--	Education: increase in annual maintenance expenditure from £2.4bn in 2025/6	By 2034/5	£3bn
12	--	Justice: new prison plans and annual maintenance to rise from £500mil in 2025/6 to...	By 2034/5	£600mil
13	--	Northern Ireland: Investment Strategy for Northern Ireland to total £30bn including public funding of..	Apr35	£26bn
16	--	Estimate of public estate maintenance backlog	N/A	£49bn
16	--	Increased ceiling for 'capital envelope' thanks to £100bn increase in Autumn 2024 Budget and £13bn at Spring 2025 Statement	Over SR25	£120bn
19	--	Total list of spending	N/A	N/A
30	1.58	GBE to invest in domestic supply chains for offshore wind including (?) the new Clean Energy Bonus	Apr35	£300mil
31	1.61	60,000 more skilled construction workers in England	By 2028/9	£625mil
31	1.61	Capex for ten new Technical Excellence Centres in 'every region'	By 2028/9	£80mil

Page	Para	Description	Timing	£bn or mil
31	1.61	Capital funding for bespoke training at individual employers	By 2028/9	£80mil
31	1.61	Other additional resource investment in skills	By 2028/9	£1.2bn
34	2.6	Amount of assets managed by defined contribution multi-employer workplace pension schemes	N/A	£600bn
34	2.8	Amount of pension assets to go into ‘productive assets, like infrastructure, in the UK’	Apr35	£50bn
35	2.14	60% increase in the ceiling for Financial Transactions to reach…	Over SR25	£153bn
38	2.22	The second National Infrastructure Assessment estimated that £40-50bn per annum of private investment would be needed to ‘meet priorities in economically-regulated sectors during the 2030s’	During the 2030s	£400-500bn
39	--	Requirements/Energy: Clean Power requires £40-50bn per annum over SR25 and £35bn per annum up to 2050, the ‘vast majority’ to come from ‘private sources’	Up to 2050	£1,075bn to £1,125bn
39	--	Requirements/Digital: £5bn per annum spend	Apr35	£50bn
39	--	Requirements/Water	Over SR25	£104bn
40	2.27	Guidelines for economic regulators, incorporating the inference that the costs of the investments in economically-regulated sectors will be met through users’ bills	Apr35	N/A
42	2.35	Deploying private finance to projects: ‘In addition to the existing tools and models, the government encourages innovation and continued development of models that can crowd in private investment amid international competition for capital’	Apr35	N/A
43	2.36	‘Existing tools and models’: Regulated Asset Base	Apr35	N/A
43	2.37	‘Existing tools and models’: Contracts for Difference	Apr35	N/A
43	2.38	‘Existing tools and models’: Capacity market auctions	Apr35	N/A
43	2.39	‘Existing tools and models’: ‘Cap and floor’ model	Apr35	N/A
43	2.40	Usage of ‘Public Private Partnerships’, up to 2.47 (PPP being where the principal is a part of General government or is a public corporation)	Apr35	N/A
51	3.24	All rail enhancements including £2.5bn for East-West Rail	Over SR25	£35.5bn
54	3.25	HS2	Over SR25	£25.3bn
54	3.25	Transpennine Route Upgrade	Over SR25	£3.5bn

Page	Para	Description	Timing	£bn or mil
54	3.25	Leeds station enhancement and progressing the Midlands Rail Hub	Over SR25	£240mil
56	3.32	Expansion of the Port of Cromarty Firth	By start of 2028	£55mil
57	3.40	AI Opportunities Action Plan	Over SR25	£2bn
58	3.44	Building Digital UK	Over SR25	£1.9bn
60	3.58	Low-earth-orbit satellite connectivity for InterCity trains	Apr35	£41mil
60	3.59	Target for annual government funding for R&D	Over SR25	£22.6bn
60	3.59	Including Advanced Research and Invention Agency	Over SR25	£1bn
60	3.59	Including Edinburgh supercomputer	Over SR25	£750mil
61	3.63	Affordable Homes	Apr35	£39bn
61	3.63	10-year 'social rent settlement at CPI+1%'	Apr35	N/A
61	3.63	Low-interest loans for housing	Apr35	£2.5bn
61	3.63	Acceleration of remediation of social housing	Apr35	£1bn
62	3.71	Recyclable Mayoral Growth Fund for the North and Midlands	Apr35	£500mil
68	3.105	Defence R&D programme rising from a base of...	Over SR25	£2bn
68	3.105	Defence AI Fund	Over SR25	£100mil
68	3.105	Establishment of UK Defence Innovation, with annual budget of...	Over SR25	£400mil
68	3.105	Sovereign warhead programme	Over SR25	£15bn
68	3.105	Munitions	Over SR25	£6bn
68	3.105	Autonomous military systems	Over SR25	£4bn
69	3.109	Modern and sustainable MoD buildings	Apr35	£5.1bn
69	--	Barrow-in-Furness regeneration	Apr35	£200mil
70	4.2	Private investment in clean energy industries since July 2024	N/A	£43.7bn
71	4.8	Budget increase for the Clean Energy Bonus for Allocation Round 7	Apr35	£544mil
73	4.27	Sizewell C	Over SR25	£14.2bn
75	4.28	Small Module Reactors	Over SR25	£2.5bn
75	4.29	Fusion	Apr35	£2.5bn
77	4.37	Transmission network extra annual investment	In the 2030s	£37-50bn
79	4.49	Hydrogen infrastructure	Apr35	£500mil
80	4.52	Warm Homes Plan including £5bn of Financial Transactions	Apr35	£13.2bn
80	4.54	Boiler upgrade scheme *per household*	Apr35	*£7,500*
80	4.55	Efficiency upgrades for the poorest households	Apr35	£1.8bn
84	4.67	Allocation to Office for Zero Emission Vehicles	Apr35	£1.4bn
84	4.67	Rollout of EV charging infrastructure	Apr35	£400mil
84	4.69	Zero Emission HGV and Infrastructure Programme	By March 2026	£200mil
86	5.7	Social infrastructure priorities total	Over SR25	£119bn

Page	Para	Description	Timing	£bn or mil
86	5.7	Including Health	Over SR25	£70bn
86	5.7	Including Education	Over SR25	£38bn
86	5.7	Including Justice	Over SR25	£11bn
87	5.9	Maintenance being characterised as infrastructure	Spr35	£9.1-10.6bn
89	5.15	Schools-based nurseries	Over SR25	£370mil
89	5.16	New school places	Over SR25	£2.6bn
89	5.17	New prison places	2026/7 to 2030/1	£6.3bn
89	5.19	NHS technology and transformation	By 2028/9	£10bn
90	5.19	Probation service per annum	By 2028/9	£700mil
90	5.19	Children's social care system	Over SR25	£560mil
94	6.3	Sustainable farming and nature recovery per annum	2026/7 to 2028/9	£2.7bn
95	6.9	Environmental planning reform package	2026/7 to 2028/9	£500mil

Appendix 5 – the Creditor Ladder

What the 'creditor ladder' is

The 'creditor ladder' is the order in which different classes of creditor of an enterprise are paid out when the enterprise is liquidated.

The rung upon which a creditor stands determines the amount of credit risk they are taking when extending credit to the enterprise.

The lower down the rung is on the ladder, the more credit risk is being taken.

Standing on a higher rung indicates lower risk, because losses the assets of the enterprise, when they are liquidated, are attributed to the creditors on the lower rungs first.

The investments of creditors on the lower rungs act as a loss-absorption cushion for the creditors on the higher rungs.

The degree of enhancement that the claims of those on the lower rungs offer to the claims of those on the higher rungs is determined by:

- The thickness of these layers of credit enhancement – 5%, or 10%, or 25%…
- The quality of the assets themselves.

How the 'creditor ladder' operates

Categories are set out in the order of the priority of the creditor's claim on the assets of the enterprise, and the ladder is broadly set out with these 6 rungs:

Rung	Type of creditor
1.	Legally-preferred creditors (e.g. HMRC, employees)
2.	Secured lenders (e.g. with a mortgage on land&buildings)
3.	Senior unsecured creditors – trade and lenders
4.	Mezzanine lenders
5.	Subordinated lenders
6.	Shareholders/Equity investors

This is the order in which the parties are paid out when an enterprise is liquidated.

The creditors in each rung, starting on Rung 1, get paid out in full, before creditors in lower rungs receive anything. This assumes there is any money at all. If there is insufficient money to pay out creditors on a rung in full, they receive a partial payment. The relationship between this payment and their entire claim is referred to as the 'pence-in-the-pound' for creditors on that rung: the proportion of their claim that they get back.

All creditors in a given category are treated the same: they rank equal – or 'pari passu' – with one another. Creditors on different rungs have agreed to be – and are – treated differently. This extends to some rungs receiving 100-pence-in-the-pound and others receiving 0-pence-in-the-pound.

How the statuses of different classes of creditor are created

The treatment accorded to preferred creditors on the top rung of the ladder and to the shareholders on the bottom-most rung is dictated by the normal operation of applicable company law: no special contracts are required.

Special contracts are required to define the four layers of debt, their security (if any), their ranking, and the rights of the creditors in each category:

2. Secured
3. Senior unsecured
4. Mezzanine (and therefore also unsecured)
5. Subordinated (and therefore also unsecured)

Risk and return

The lenders under each agreement take on a different level of risk, in exchange for which they receive a different return: the higher the risk, the greater the interest rate specified in the contract as applying to the debts in that category. Normally all of these debts will carry to same base interest rate, but will have different interest margins added, with the Subordinated debt having the highest margin added and the Secured debt the lowest.

The risk comes down to any security they have or, if they have none, the amount of the loss-absorption cushion represented by parties lower down on the 'creditor ladder', including the shareholders.

Shareholders come right at the bottom. They are the party that takes the 'first loss'. Subordinated lenders take the 'second loss' and so on. This expression of 'first..second...third loss' reflects that each type of creditor only receives anything back in a liquidation once all the creditors in the layers above them have had their claims satisfied in full.

Example of the application of the "creditor ladder" is in practice

The liquidator has to realise the assets of the enterprise, and then distribute the proceeds to the parties on the 'creditor ladder' in the order of priority determined by applicable law and the special debt contracts.

In this example, an enterprise goes into liquidation with a total balance sheet size of 200, its assets having a book value of 200. However, when these assets are realised by the administrator of the liquidation they only furnish 150 of cash to be distributed. There has been an overall depletion of value of 25%, meaning 50 has been lost.

Rung	Type of creditor	Claims	Pence-in the-pound	Amount recovered by this level	Available after claims at this level were met	Loss
1.	Legally-preferred creditors	30	100	30	120	0
2.	Secured lenders	20	100	20	100	0
3.	Senior unsecured creditors	90	100	90	10	0
4.	Mezzanine lenders	20	50	10	0	10
5.	Subordinated lenders	20	0	0	0	20
6.	Shareholders/Equity investors	20	0	0	0	20

The Shareholders in the ‘first-loss’ position lose all their money. The Subordinated lenders in the ‘second-loss’ position lose all their money. The Mezzanine lenders in the ‘third-loss’ position are paid out ‘50p-in-the-pound’ and lose half their money. Everyone else is paid out in full.

It is also important to note that the amount of money available for the rungs carrying lower risk is much greater than is available for investment in rungs carrying higher risk. This is a function of financial markets and investor appetite: the market actors with the largest amounts of money at their disposal (pension funds, insurance companies, banks) tend also to be the ones with a lower appetite for risk.

Appendix 6 - Letter to the Office of Budget Responsibility about Maintenance and Training costs

4th September 2025

Richard Hughes Esq.
Chair
Office for Budget Responsibility
14T - 102 Petty France
London SW1H 9AJ

Dear Mr. Hughes,

Recording of expenditures on maintenance and training within the government’s capital envelope rather than as day-to-day costs

I am a management consultant in finance and banking, my website URL being:
https://lyddonconsulting.com

I am the author of a book on the shadow liabilities of the EU member states, which examined – inter alia - financial schemes based on the principles of PFI, and schemes where EU businesses and individuals were put ‘on risk’ for debts that fell below the visible horizon, which in the EU’s case is General government gross debt:
The shadow liabilities of EU Member States, and the threat they pose to global financial stability (Bruges Group, London, 2023)

I have now been engaged to create a report on UK government plans around the capital envelope by the Institute for Economic and Fiscal Research:
https://en.irefeurope.org/information/article/who-we-are/

The report will address matters such as:

- The total amount that will be spent pursuant to the government’s Carbon Budget, Infrastructure Strategy, and Industrial Strategy;
- How much of that amount will be raised by borrowing-for-investment by the government, and what will need to be raised elsewhere;
- How much of the new borrowing-for-investment will be netted off within Public sector net liabilities (PSNL) – on the grounds that there is an asset of some kind that can be identified against it - whereas the borrowing would appear in Public sector net debt (PSND);
- What the UK’s ‘shadow debt’ will be as result of all of:
    - Government debt that is netted off within PSNL;
    - The new round of PFI where the principal is a Public sector entity;
    - Debt within state-directed schemes that are structured similarly to PFI but where the scheme is assured of sales to UK businesses and individuals;
- What the servicing costs will be of the UK’s ‘shadow debt’.

This letter addresses two areas that have arisen from my study of the government’s papers and upon which I would be most grateful for your insight.

The areas are the treatment of maintenance costs, and of training costs.

Maintenance costs

Page 5 of the Infrastructure Strategy – headed 'Investing for the long term' – leads off with the phrase 'The government is funding at least £725 billion of economic and social infrastructure over the next decade'. It is therefore clear that anything mentioned on page 5 is an 'investment'. This includes the expenditure against the bullet point '**Essential maintenance:** providing funding certainty up to 2035 for schools, colleges, prisons, courts and hospitals maintenance programmes'.

Page 87 proceeds to lay out the expenditure planned against this heading:

Table 5.1: 10 year maintenance budgets for the public estate

£billion	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35
Health: Maintenance	6.2	6.2	6.3	6.3	6.3	6.5	6.6	6.7	6.9	7.0
School and College Maintenance	2.4	2.4	2.5	2.5	2.6	2.6	2.7	2.7	2.8	2.9
Justice: Maintenance	0.5	0.6*	0.6*	0.6*	0.6*	0.6	0.6	0.6	0.7	0.7

*This is the expected minimum spend on average for MoJ maintenance (across prison, probation and courts) per year – final maintenance budgets to be confirmed by MoJ and are subject to change.

The inference of the above is that, firstly, because this expenditure is an 'investment', the government will permit itself within its fiscal rules to borrow to fund it. Is this your understanding?

My next question is whether this is a change from the current treatment of maintenance expenditure within the public accounts. Is the expenditure currently treated:

- As a day-to-day cost; or
- As an investment; or
- Part one, and part the other, in which case please state the criteria for the categorisation?

My further questions are based on the assumption that part or all of the maintenance costs used to be treated as day-to-day costs, but will henceforth be treated as 'investments':

- Will the value of the asset being so maintained be increased in the public accounts by the exact amount of the 'investment' spend on it?
- Will PNSL remain static on the basis that the debt proceeds have been 'invested' in an asset and are therefore eligible for netting-off?
- Will the value of the asset be independently tested at any point, to ensure that the value of the asset in the public accounts is realistic and is not just reflective of the amount spent on it?
- What is the depreciation policy regarding the asset itself and the value of the maintenance expenditure added to it?
- From what source does the extra debt taken on to fund the maintenance get repaid, given that these assets do not appear to be revenue-generating?

Training costs

Page 1 of the Infrastructure Strategy contains the following statement: 'This 10 Year Infrastructure Strategy, coupled with long-term capital budgets, the modern Industrial Strategy and a commitment to investing in skills and training, presents a lifetime of opportunities'.

The wording makes clear that this expenditure is also an 'investment'. The wording infers that, because this expenditure is an 'investment', the government will permit itself within its fiscal rules to borrow to fund it. Is this your understanding?

Does this represents a change from the current treatment of training expenditure within the public accounts? Is the expenditure currently treated:

- As a day-to-day cost; or
- As an investment; or
- Part one, and part the other, in which case please state the criteria for the categorisation?

My further questions are, again, based on the assumption that part or all of the training costs used to be treated as day-to-day costs, but will henceforth be treated as 'investments':

- What asset will be created as a result of the newly-raised debt being 'invested' in training?
- This would perforce be an intangible asset:
    - what intangible assets sit in the public accounts at the moment?
    - Will a new category be added or will an existing one be expanded?
    - If the latter, which one?
- Will the value of this new intangible asset, or the existing one, be increased in the public accounts by the exact amount of the 'investment' spend on it?
- Will PNSL remain static on the basis that the debt proceeds have been 'invested' in an asset and are therefore eligible for netting-off?
- Will the value of the asset be independently tested at any point, to ensure that its valuation in the public accounts is realistic and is not just reflective of the amount spent on it?
- What is the amortization policy regarding the intangible asset itself and the value of the training expenditure being added to it?
- From what source does the extra debt taken on to fund the training get repaid, given that the asset is both intangible and has no direct revenue stream attached to it?
- How does the government intend to ensure that the individual who has benefited from the training goes on to use the training in a way that generates the revenues needed to pay off the enabling debt?

The report has a target publication date of 1st November 2025. I would therefore be most grateful if you could respond to this letter by 15th October.

Thank you in advance for your kind assistance on this matter.

Yours sincerely,

Bob Lyddon

R.J.Lyddon

Appendix 7 - Emulation of PFI costs under New Labour 1997-2010

- 40-year full term
- Transactions put on evenly from 1998 until 2010, with a total spend of £50 billion
- The financing term sheet uses gilt yields within the middle of the range in the Debt Management Office’s database for the period
- The interest premia added to the gilt rates are larger than in the base illustration because of the longer maturity

The cashflows add up to £133 billion. The lifetime cost of New Labour’s schemes will amount to £278 billion according to HM Treasury.

Financing term sheet

Tranche	Ranking	Percentage	Interest	Ref Gilt	Gilt yield	All-in	Repayment
A	Senior	85%	Gilts plus 3%	20 year	4.60%	7.60%	25-year annuity
B	Mezzanine	10%	Gilts plus 5%	25 year	4.55%	9.55%	30-year annuity
C	Subordinated	4¾%	Gilts plus 7%	30 year	4.50%	11.50%	40-year annuity
D	Equity	¼%	--	N/A	N/A	N/A	Dividends

Cashflows

Annual cost of 1y investment	Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
-386,123,104	1	-386,123,104													-386,123,104
-386,123,104	2	-386,123,104	-386,123,104												-772,246,207
-386,123,104	3	-386,123,104	-386,123,104	-386,123,104											-1,158,369,311
-386,123,104	4	-386,123,104	-386,123,104	-386,123,104	-386,123,104										-1,544,492,415
-386,123,104	5	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104									-1,930,615,518
-386,123,104	6	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104								-2,316,738,622
-386,123,104	7	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104							-2,702,861,725
-386,123,104	8	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104						-3,088,984,829
-386,123,104	9	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104					-3,475,107,933
-386,123,104	10	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104				-3,861,231,036
-386,123,104	11	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104			-4,247,354,140
-386,123,104	12	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104		-4,633,477,244
-386,123,104	13	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	14	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	15	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	16	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	17	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	18	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	19	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	20	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	21	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	22	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	23	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	24	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-386,123,104	25	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-5,019,600,347
-65,605,960	26	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-4,699,083,204
-65,605,960	27	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-4,378,566,060
-65,605,960	28	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-4,058,048,917
-65,605,960	29	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-3,737,531,773
-65,605,960	30	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-3,417,014,630
-23,056,766	31	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-3,053,948,292
-23,056,766	32	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-2,690,881,954
-23,056,766	33	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-2,327,815,617
-23,056,766	34	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-386,123,104	-1,964,749,279
-23,056,766	35	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-386,123,104	-1,601,682,941
-23,056,766	36	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-386,123,104	-1,238,616,603
-23,056,766	37	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-386,123,104	-875,550,265
-23,056,766	38	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-512,483,928
-23,056,766	39	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-65,605,960	-469,934,733
-23,056,766	40	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-65,605,960	-427,385,539
	41		-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-65,605,960	-361,779,579
	42			-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-65,605,960	-296,173,618
	43				-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-230,567,658
	44					-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-207,510,892
	45						-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-184,454,127
	46							-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-161,397,361
	47								-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-138,340,595
	48									-23,056,766	-23,056,766	-23,056,766	-23,056,766	-23,056,766	-115,283,829
	49										-23,056,766	-23,056,766	-23,056,766	-23,056,766	-92,227,063
	50											-23,056,766	-23,056,766	-23,056,766	-69,170,297
	51												-23,056,766	-23,056,766	-46,113,532
	52													-23,056,766	-23,056,766
															-132,751,775,651