Assessing the economic impact of changes to the Energy Profits Levy on UKCS investment projects

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# Section 1. Introduction

On 26 May 2022, the United Kingdom announced the introduction of temporary Energy Profits Levy (EPL) to tax profits of oil and gas companies operating in the UK Continental Shelf (UKCS). The EPL was an answer to record profits being reported by major oil and gas companies due to a high price environement[[1]](#footnote-1). In its original design, the scheme set a temporary 25% levy on oil and gas ring fence profits with an investment allowance of 80% in addition to the existing Ring Fence Corporation Tax (CT) and Supplementary Charge (SC). The levy was due to expire by December 2025.

However, the EPL has since been amended twice with significant changes to its provisions. In the Autumn Statement of November 2022[[2]](#footnote-2) it was announced that EPL rate would increase from 25% to 35% from January 2023, and its duration extended to 31st March 2028. The investment allowance was reduced to 29% to maintain the same cash value of relief given through the allowance. An 80% investment allowance was given for expenditures related to decarbonisation of oil and gas production. Then, in the 2024 Spring Budget[[3]](#footnote-3), it was announced that the EPL will be extended by one year to March 2029 and that the Spring Finance Bill will include legislation supporting the Energy Security Investment Mechanism (ESIM) [[4]](#footnote-4), which sets a price threshold that will remove the EPL if triggered.

Adding to the uncertainty, earlier this year the Labour Party published a revised “green investment plan”[[5]](#footnote-5) with significant changes to the EPL. The plan proposed increasing the rate from 35% to 38%, taking the headline tax rate to 78%. An early version of the plan even suggested that the rate would be backdated to January 2022[[6]](#footnote-6). The plan mentioned that “loopholes” in the Levy will be tackeled, likely meaning the removal of the investment allowance for EPL. There is a possibility, however, that the capital allowance for EPL could also be scraped, deviating significantly from traditional UK oil and gas tax regime practice of allowing capital costs to be deducted when calculating profits.

The amount of changes has raised concerns over the stability and predictability of the UKCS tax environment, which is crucial for long-term investment decisions in the oil and gas sector. Trade body Offshore Energies UK (OEUK) has called for the [[7]](#footnote-7)stability of the tax regime to support investment, and published an industry manifiesto to highlight the importance of the sector within the UK economy[[8]](#footnote-8). The Governement has defended the changes by stating that the one year extension to the Levy will raise an additional £1.5 billion, and that certainty is given with the ESIM which puts a price floor for to the EPL.

Industry, however, has been vocal about the negative effects of the EPL across the UKCS. Companies have made decisions to diversify away from the UKCS[[9]](#footnote-9). Investment cuts have been announced by important North Sea operators[[10]](#footnote-10). Lack of new investment has resulted in reduced capacity of the Forties Pipeline System[[11]](#footnote-11). Energy consultancies like Rystad[[12]](#footnote-12), and investment bank Stifel[[13]](#footnote-13) have warned of the negative impact of the EPL. The prospect of a tougher tax regime if the Labour proposal materialises, has resulted in further backlash from industry. Estimates by Wood Mackenzie suggest that North Sea producers could freeze investment until the EPL sunset in 2029.

In this short note, we extend our previous study[[14]](#footnote-14) of the EPL impact on UKCS investment to to analyse the effect of the one year extension to the Levy and what the potential impact would be if changes like the ones propose by the Labour party were to occur.

We achieve this by developing a simplified economic model of three oil fields designed to be representative of recent UKCS assets. Our contribution to the ongoing debate involves examining if delaying investment and field start-up could improve or worsen project economics. In addition, we evaluate the changes in post-tax Net Present Value (NPV) and tax paid. We begin by outlining the core assumptions of the modeling procedure. We then compare the results by testing the economics of fields under different startup assumptions. Subsequently, we assess the economics under different tax arrangements. Finally, we provide concluding remarks and observations.

# Section 2. Data and Methodology

Our assessment is underpinned by a Discounted Cash Flow (DCF) model for three oil fields designed to be representative of UKCS assets of recent vintage. Table 2 show the cost and size assumptions used for each field based on different reports by the North Sea Transition Authority. Production profiles for the three oil fields were designed to exhibit the typical behaviour of UKCS assets. During the initial years production increases until it hits a plateau and then decline begins. Smaller fields show faster decline rates while larger fields will have slower decline rates.

Table 1. Cost assumptions for model fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Units** | **Field 1 - Small** | **Field 2 - Medium** | **Field 3 - Large** |
| Recoverable reserves | Million barrels (MMbbls) | 10 | 50 | 100 |
| Development costs (DEVEX) | USD/bbl | 19 | 13 | 10 |
| Annual Operating costs (OPEX) | % of DEVEX | 8.75 | 7.75 | 7.25 |
| Decommissioning costs (DECOMX) | % of DEVEX | 10 | 10 | 10 |
| No. of years to complete decommissioning | Years | 1 | 1 | 3 |

The model incorporates the UK oil and gas permanent tax regime and the variations under the different EPL arrangements. Table 2 presents the main elements of the tax regimes under consideration. There are two main elements to the permanent regime: the Ring Fence Corporation Tax (CT) at a 30% rate and the Supplementary Charge (SC) at a 10% rate. Both have capital allowances on 100% first year basis. An additional element for the SC is the Investment Allowance (IA) of 62.5% which further reduces taxable income starting when the related income commences. Regarding decommissioning, the UK Government published in 2013 the Decommissioning Relief Deed (DRD) which is a contract between companies and the UK Government that provides certainty on the tax relief that will be obtained when oil and gas assets are decommissioned. Decommissioning costs are allowed as deductions for RFCT, and SC on 100% first-year basis but are not allowed for EPL. We consider two tax cases: first the case where the operator has existing ring fence income to set against their investment costs and claim immediate relief; second, the case where the operator has no other income available and must use the Ring Fence Expenditure Supplement (RFES)[[15]](#footnote-15).

Table 2. Rates and elements of the modelled tax regimes in %

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CT** | **SC** | **I.A for SC** | **EPL** | **Capital allowance for EPL** | **I.A for EPL** | **Sunset** |
| Permanent system | 30 | 10 | (10 \* 62.5) | - | - | - | - |
| EPL 1 | 30 | 10 | (10 \* 62.5) | 25 | 25 | (25 \*80) | December 2025 |
| EPL 2 | 30 | 10 | (10 \* 62.5) | 35 | 35 | (35\*29) | March 2029 |
| EPL 3a | 30 | 10 | (10 \* 62.5) | 38 | 38 | - | End of 2029 |
| EPL 3b | 30 | 10 | (10 \* 62.5) | 38 | - | - | End of 2029 |

The Energy Profits Levy, as originally designed in May 2022 (EPL 1) is modelled with the following characteristics. A 25% tax on UK oil and gas profits in addition to the existing CT and SC. The headline rate rises to 65%. Second, an Investment Allowance of 80% against the EPL is available at the point of investment. Because we model annual cashflows we assume that the tax takes effect in 2022 and finishes in 2025.

The current arrangement of the Levy (EPL 2) is incorporated with the following characteristics. A 35% tax on UK oil and gas profits, increasing the headline rate to 75%. The investment allowance is reduced to 29%. We do not model the case of decarbonisation expenditures that qualify for the 80% allowance. We make a simplifying assumptiona that EPL 2 takes effect in 2022 and lasts through until end 2028, instead of March 2029 as we model annual cashflows.

We incorporate Labour’s proposed changes in two ways. First, by increasing the rate to 38%, removing the investment allowance for EPL and assuming it will end until 2029; we refer to this arrangement as EPL 3a. We then, also account for the possibility of having the capital allowance on the Levy removed, we refer tho this arrangement as EPL 3b.

Our market environment assumptions seek to be consistent with mid- to long-term price scenarios used by companies and investors when evaluating long term investment opportunities. Current oil price volatility and high inflation, while important in the short-term might not reflect the investment environment in 5 or 10 years. Table 3 sets out the assumed values for various market variables. The scheduling of development costs for each field over time is shown in Table 4.

We model four investment start-up dates for the projects: 2022, 2023, 2024, and 2025. The objective is to understand the potential losses or gains of delaying the projects.

# Section 3. Results and Discussion

## Section 3.1 Impact of EPL for different investment start up dates.

We begin by analysing the incentives to delay or accelerate investments by comparing the post-tax NPV at different start-up dates. In this section we consider only the tax case where the operator has other income against which to claim immediate tax relief, to isolate the impact of EPL 2, EPL 3a, and EPL 3b compared to the permanent system. Economic intuition suggests that there is an incentive to delay investments to the point where the relief available in the EPL is realised, but the operator avoids profits applicable for EPL.

Table 3. Assumptions for market variables

|  |  |  |
| --- | --- | --- |
| **Variable** | **Value** | **Units** |
| Real Brent oil price[[16]](#footnote-16) | 60 | USD/bbl |
| Consumer price index | 2 | % |
| Discount rate | 10 | % |
| Exchange rate | 1.21 | USD per £ |

Table 4. DEVEX schedule (%) for representative fields

|  |  |  |  |
| --- | --- | --- | --- |
| **Project year** | **Field 1** | **Field 2** | **Field 3** |
| **0** | 50 | 30 | 20 |
| **1** | 50 | 30 | 30 |
| **2** |  | 40 | 30 |
| **3** |  |  | 20 |

Figure 1 presents the modelling results for the small field under different tax arrangements. The results indicate that under the permanent system there is no incentive to delay investment. Notice how the post-tax NPV decreases as start-up is delayed. This is explained by the time value of money. Receiving early profits is more valuable to the operator.

Under EPL 1 it made economic sense to delay a year or two before 2025 to achieve relief on the capital allowance, without having profits applicable for EPL. Under EPL 2, the post-tax NPV of the small field remains mostly flat for start dates between 2022 and 2024. However, NPV for 2025 start is slightly higher which suggests delaying makes economic sense. Under Labour’s EPL proposal (EPL 3a), NPV is significantly lower due to the higher headline rate, while the NPV profile remains similar to EPL 2.

However, if we consider EPL 3b, the case where the capital allowance for EPL is, the impact is quite dramatic. This is because the 38% EPL rate is fully realized with no possibility to claim relief. Notice how the post-tax NPV is negative for start-up dates between 2022 and 2024. In this case, delaying is required to derive value from the project, although post-tax NPV is close to cero. In other words, under EPL 3b the project will become uneconomic and potentially not developed even if delayed.

A graph of different colored bars

Description automatically generatedFigure 1.

The implications for the medium-sized field are similar to the small field as shown in Figure 2. Under the permanent system there is no incentive to delay, but in EPL 2 and EPL 3a delaying is sensible as long as relief is claimed and production is delayed to avoid generating profits that will be taxed under the EPL. EPL 3b significantly reduces the value of the field, although compared with the small field it does not turn uneconomic. In EPL 3b there is a clear incentive to delay as is shown by the increasing NPV as start-up date changes.

In the large field (see Figure 3) two dynamics occur depending on the EPL case. Under the the permanent system and EPL 1, there is no incentive to delay investments. This is because the longer lead times make it so that profits will occur after the applicability of the temporary tax. In this case, the operator would want to invest early to claim the additional relief in the EPL 1.

Figure 2.

On the other hand, when EPL 2, 3a or 3b is considered, there is a clear incentive to delay. NPV increases with each additional year. Similar to the small and the medium fields, the operator will want to avoid realizing profits with the higher tax rates. In the same vein, notice how EPL 3b significantly the value of the field. For example, if investment is assumed in 2025, post-tax NPV decreases by 40% in EPL 3b compared with EPL 2.

Figure 3.



Taken together, the results of this section show that operators have an incentive to delay investments. This is especially true in the more strict regime proposed in EPL 3b. By removing the investment and capital allowance for EPL, operators will be better-off delaying any investment to avoid being taxed at the higher rate without the possibility to claim relief. The impact in small projects is quite dramatic as EPL 3b can even turn them uneconomic. In other words, instead of promoting investment, it will curtail it.

The stark reduction in NPV from EPL 3a or 3b compared to other arrangements, even if delaying, supports the claim that UKCS will lack appeal and competitiveness against other basins. The continuous changes to the temporary regimes plus stringent tax measures significantly impact project economics, a condition that will be negatively weighed by potential investors.

## Section 3.2 Impact of EPL on cash flows under different tax cases arrangements.

In this section we assess the impact of the one-year extension of the currently applicable EPL, and the proposed changes by the Labour party on the cashflows of UKCS investment projects. We analyse projects starting up investment in 2024. We present results for the tax case where there is ring fence income available to claim immediate relief, and for the case where there is no income available and the RFES applies. Note that in the case where there is no other income available, EPL 3a and EPL 3b exhibit the same NPV and cashflows because in both cases the investment allowance is removed, and for both schemes the RFES mechanism applies instead of the capital allowance.

Table 5. Post-tax NPV of three oil projects under different tax arrangements (Real NPV@10%)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Tax case – other income** | | | | | **Tax case - no other income** | | | |
| **Field** | **Permanent** | **EPL 1** | **EPL 2** | **EPL 3a** | **EPL 3b** | **Permanent** | **EPL 1** | **EPL 2** | **EPL 3a/b** |
| Small | £116 | £185 | £85 | £55 | -£3 | £106 | £136 | -£2 | -£14 |
| Medium | £785 | £927 | £698 | £553 | £365 | £681 | £743 | £342 | £260 |
| Large | £1,269 | £1,448 | £1,319 | £1,044 | £761 | £1,173 | £1,253 | £862 | £664 |

Notes: All values in £million.

Table 5 presents the post-tax NPV values for the three fields under different tax arrangements. In this study, we focus on the impact of EPL 3a and EPL 3b compared to other arrangements. From the results, both schemes of EPL 3 significantly reduce the post-tax NPV of the fields. The effect is stronger in the small field. In the case where the operator has other income to claim relief, the post-tax NPV becomes negative. In the case where the operator has no other income available. Even under the current EPL 2, the project is also uneconomic[[17]](#footnote-17). This means that, under the hypothetical case of an EPL 3, it will be very unlikely that an operator decides to invest in a small project. The operator will delay the investment as suggested in section 3.1.

For the medium and the large field, the post-tax NPV remains positive, but the removal of the investment and/or capital for EPL severely reduces the project´s value. For example, compared to the permanent system, EPL 3a reduces post-tax NPV by 30% and EPL reduces the value by 61%. For the large field, the reduction is 18% and 47% for EPL 3a and EPL 3b respectively.

Analysing the cashflows for each field under the different tax arrangements is helpful to understand what are the drivers behind the impact of the different EPL schemes. Figure 4 shows the post-tax free cashflow for the small field under different EPL schemes for the case where the operator has ring-fence income available to claim immediate relief on expenditures. In the first two years of investment, the capital allowance in EPL 1, EPL 2 and EPL 3a significantly improves the post tax cash flow for the operator. However, EPL 3b post-tax cashflow is lower than EPL 1 and EPL 2 due to the removal of the investment allowance for EPL. The permanent system and EPL 3b have the lowest cashflows in the first year as the capital allowance only applies for CT and SC but not for EPL. After 2025, the post-tax net cashflow of EPL 2 is slightly higher to that of EPL 3 reflecting the 3% rate increase. The extended duration of EPL 3b is also reflected in the cashflow with all cases converging with the permanent system until 2030.

EPL 3a has a negative impact compared with EPL2, although is not stark. Keeping the capital allowance helps the operator claiming some relief and allows the government to extract additional economic rent by smoothing the net cashflow throughout the project’s lifetime. However, in the case of EPL 3b, the negative impact is stringer because there is no early relief for EPL and the and Levy applies for 5 years.

The cashflow further supports the claim of the previous section about the incentive to delay investments under EPL 3b. The operator of the small field will look to start the investment close to the sunset of the EPL to avoid the profits being extracted at such a high rate, waiting for a net cashflow profile similar in behaviour to that of the permanent system.

A graph of a graph showing the amount of money in the market

Description automatically generated with medium confidenceFigure 4.

In similar manner, Figure 5 shows the post-tax net cashflow for the medium field. The results largely follow the same trend as for the medium field with some differences. For example, under EPL 2 and EPL 2 between 2026 and 2027, the operator is still able to claim relief under the capital allowance for EPL. This improves the cash flow compared with EPL 3b where the cashflow doesn’t peak and remains mostly flat. Moreover, the one expiry of EPL 3a and 3b until the end of 2029 further reduces the cashflow until it converges to the permanent system once the EPL expires. The cash flow once again illustrates how the operator will try to delay investment in the case of EPL 3b to avoid being taxed at the higher rate while not having access to the capital allowance for EPL.

A graph of a graph with numbers

Description automatically generated with medium confidenceFigure 5

The results for the large field as presented in Figure 6, suggest the same effects and incentives as the smaller and medium fields apply. However, the large field has an advantage compared with the other fields: the project lifetime is significantly higher than the other two fields. The additional years of production provide some kind safety net for the project. Despite, the early profits of years 2027-2029 being severely reduced under EPL 3b compared to the permanent system, the longer production period allows the operator to incur in sensible economic profits. Nonetheless, compared the value of the investment under EPL 3b is reduced as the removal of the capital allowance makes the early cash flow worse.

Figure 6.

A graph of a graph showing the number of the same graph

Description automatically generated with medium confidence

Let us now turn to the results of the tax position where the operator has no other income available to claim immediate relief and the RFES applies. This tax position is common in small operators or new players in the basin would not likely have a portfolio of fields to claim relief. These types of companies will, in general, be at a disadvantage when developing a UKCS oil and gas fields because the project has no opportunity to offset early losses from the capital investment.

Figure 7 shows the cash flows for the small field. Comparing to the cashflows from Figure 4, the case where there is other income available, early losses are higher when no other income is available. This is because the operator has no option to immediately claim relief. When revenues are realised, the net cash flow peaks at a slightly higher level while the RFES applies, comparing to the case where there is other income available. However, this effect is not enough to offset the early losses. Because of the time-value of money, early relief is preferred.

Figure 7.

A graph of a graph showing the number of the number of companies

Description automatically generated with medium confidence

Continuing with the cash flow for the small field in Figure 7, notice how EPL 2 and 3 severely reduce the cashflow compared to the permanent system or EPL 1, especially after 2027 when the RFES is exhausted. This is due to a combination of: 1) the operator not being able to claim immediate tax relief and 2) much of the income generated by the field being within the duration of the Levy. In the small field, as seen in Table 5, this leads to a negative NPV.

Figures 8 and 9 show the effect for the medium and large fields. The results show a similar story to the small field. However, the size of the projects makes it so that the projects hold value, but the best part of the early profits are captured by the more stringent conditions of EPL 3 and EPL 3b.

A graph with numbers and lines

Description automatically generatedFigure 8

Figure 9

A graph with numbers and lines

Description automatically generated

The results in Table 5 and Figures 4 through 7 clearly show that the value of UKCS investment projects under tax conditions like the ones proposed for EPL 3a and EPL 3b could be severely reduced. Notably:

1. Small projects will likely not be developed under EPL 3a or EPL 3 for any income case. In the optimistic case that the operator decides to invest, there is a strong incentive to delay delaying the project closer until the EPL sunset.
2. The one-year extension and even removing the investment allowance for EPL, while reducing value, it is not as strong compared to current EPL 2. However, the removal of the capital allowance for EPL reduces value by such a extent that there is no inbuilt incentive to increase capital expenditures while the Levy applies.
3. Operators without other income to claim relief for capital expenditures will, in general, be worse off than those who have other income available. This poses problems mostly to small firms and new players in the UKCS.

# Section 4 Concluding remarks and observations

To be written once we agree on the points to highlight.

1. See <https://www.theguardian.com/business/2022/may/05/shell-profits-windfall-tax> [↑](#footnote-ref-1)
2. See the revised Energy Profits Levy factsheet from November 2022 at <https://www.gov.uk/government/publications/autumn-statement-2022-energy-taxes-factsheet/energy-taxes-factsheet> [↑](#footnote-ref-2)
3. See <https://www.gov.uk/government/publications/spring-budget-2024> [↑](#footnote-ref-3)
4. See the ESIM mechanism here <https://www.gov.uk/government/consultations/energy-profits-levy-and-the-energy-security-investment-mechanism-discussion-note/discussion-note-energy-profits-levy-energy-security-investment-mechanism> [↑](#footnote-ref-4)
5. See here for a summary of Labour’s changes to the oil and gas tax regime <https://www.energyvoice.com/promoted/548737/labour-windfall-tax-proposals-a-summary/> [↑](#footnote-ref-5)
6. See here for the Oil and Gas Levy policy costing document from Labour <https://assets.publishing.service.gov.uk/media/65c66cbf9c5b7f000c951c82/Opposition_costing_-_Oil_and_Gas_Levy__003__final.pdf> [↑](#footnote-ref-6)
7. See <https://www.offshore-mag.com/regional-reports/north-sea-europe/article/14310742/oeuk-urges-more-positive-uk-offshore-energy-policy> [↑](#footnote-ref-7)
8. See <https://oeuk.org.uk/manifesto/> [↑](#footnote-ref-8)
9. See a summar of claims in an analysis by Rystad Energy <https://www.energyindepth.org/after-two-years-its-clear-uks-windfall-tax-harms-north-sea-oil-natural-gas-investment/> [↑](#footnote-ref-9)
10. See the case of Total Energies at <https://oeuk.org.uk/oeuk-calls-on-government-to-rebuild-investor-confidence-after-windfall-tax-changes/> [↑](#footnote-ref-10)
11. See declarations from INEOS <https://www.offshore-energy.biz/ineos-windfall-taxes-and-mixed-signals-from-politicians-tearing-down-uks-oil-gas-industry/> [↑](#footnote-ref-11)
12. See <https://www.energyindepth.org/after-two-years-its-clear-uks-windfall-tax-harms-north-sea-oil-natural-gas-investment/> [↑](#footnote-ref-12)
13. See <https://www.energyvoice.com/oilandgas/north-sea/553700/new-report-finds-north-sea-could-lose-100000-jobs-under-labour-windfall-tax-plans/> [↑](#footnote-ref-13)
14. See North Sea Paper 148 here <https://www.abdn.ac.uk/business/documents/NSP-148_access_final.pdf> [↑](#footnote-ref-14)
15. See Taxation overview by the NSTA on the RFES <https://www.nstauthority.co.uk/exploration-production/taxation/overview/> [↑](#footnote-ref-15)
16. See Shell’s mid-price scenario on p.243 in <https://reports.shell.com/annual-report/2021/_assets/downloads/shell-annual-report-2021.pdf>. See also BP’s Annual Report and Form 20-F 2021, p.32, where the Brent price used for appraising investments is stated at $60 in real terms to 2030 falling thereafter to $55 in 2040 and $45 in 2050. [↑](#footnote-ref-16)
17. For more details on the impact of EPL 2 compared to the permanent system, the reader can access our previous paper on the subject: North Sea Paper – 148 in <https://www.abdn.ac.uk/business/documents/NSP-148_access_final.pdf> [↑](#footnote-ref-17)