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# DECOMMISSIONING: A LOOK UNDER THE BONNET



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## INTRODUCTION



In May 2020, BNPP AM published **Decommissioning: a \$3.6 Trillion Challenge**. The paper presented a top-down analysis of the decommissioning liabilities faced by the nuclear, oil & gas, power and mining sectors. The publication and a subsequent series of online events outlined the rationale for decommissioning liability pre-funding. Following our 2020 efforts, this new paper presents a bottom up review of balance sheet data from over 150 nuclear, power, mining and oil & gas companies over the past 5 years. It shows the impact decommissioning liabilities can have on the financial standing of a company and the resulting implications for long-term corporate strategy.

Despite often representing the single largest liability on nuclear, oil & gas, power, mining and other company balance sheets, decommissioning (remediation / rehabilitation / restoration) has long been overlooked. With the decline of traditional energy however, decommissioning is making its way to the forefront of many corporate agendas. Decommissioning obligations vary noticeably depending on geographical legislation, regulations, technologies and the industrial scenarios involved. These industrial and environmental obligations create long-term debts which are being magnified by a change in attitude from investors and public opinion. Nuclear, traditional power, mining and oil & gas companies now face a change in environmental priorities accompanied with increasing political and regulatory pressures.

The Covid-19 crisis is accelerating the Energy Transition and the shift away from non-renewable power sources and polluting mining assets. As a consequence, changes in technology and societal preferences threaten to turn many corporate production capabilities into stranded assets. Decommissioning projects, which were scheduled to take place many years in the future, and are last in the queue of corporate priorities, have become of immediate importance. Analysing decommissioning liabilities is now a fundamental strategic requirement.

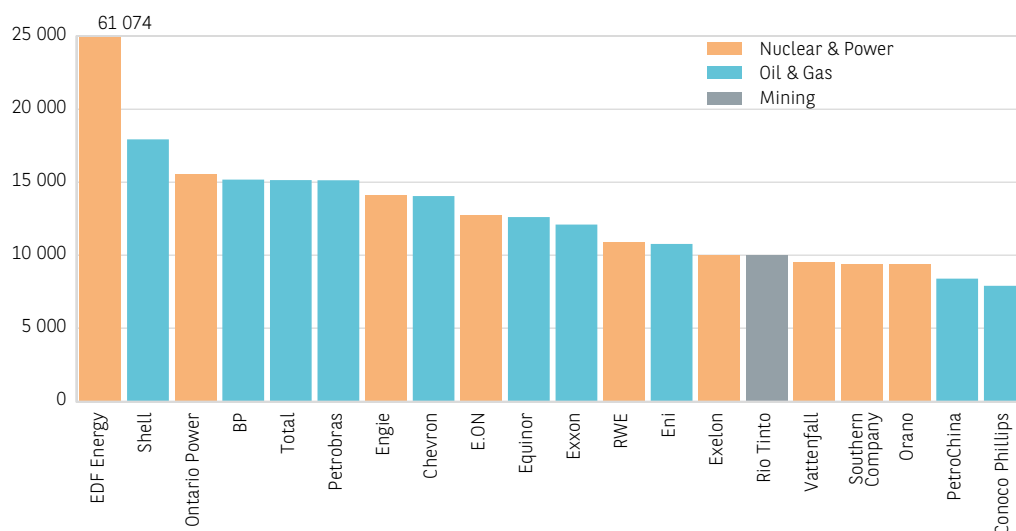
Decommissioning is a key source of industrial and environmental provision uncertainty. Drawing parallels to pension obligations faced by companies, decommissioning accounting includes a number of volatile components related to operational considerations, corporate activity, discounting practices, financial and market inputs (such as inflation and foreign exchange). Aside from the nuclear sector, companies only face an obligation to recognise, rather than fund, decommissioning liabilities. This lack of pre-funding can create operational complexity and financial strain as multi-year and non-income generating expenses affect debt capacity, dilute earnings and drain available cash flows.

## 150 COMPANIES WITH \$400BN OF DECOMMISSIONING LIABILITIES

Three key metrics are utilised to highlight the likelihood of companies meeting their environmental obligations:

- Decommissioning Payments vs Free Cash Flow;
- Decommissioning Liabilities vs Market Capitalisation; and
- Decommissioning Liabilities vs Company Net Debt.

**Fig.1 Sector Review - Decommissioning Liabilities (\$ 'm)**



Source: BNP Paribas Asset Management. Annual Report Review - Data as at 31/12/2018

The analysis, undertaken before the COVID-19 pandemic, relies on publicly available data from Annual Reports dated 2014-2019. A subsequent paper in the series will assess the resulting implications of the significant drop in energy demand following the COVID-19 outbreak.

The data on company balance sheets show a liability requirement of over \$400bn across the 150 companies analysed. Over \$100bn of this stems directly from seven oil and gas operators: Shell (\$19.01bn), BP (\$16.7bn), Total (\$15.2bn), Equinor (\$14.7bn), Eni (\$13.0bn), Chevron (\$12.8bn) and Exxon (\$11.3bn).

Global demand for oil peaked in 2019 and could fall a further 50% by 2040<sup>1</sup>. This drop in demand, coupled with a 62% increase in oil and gas bankruptcies year-on-year<sup>2</sup> could leave the O&G industry unable to meet decommissioning commitments. In many cases (also seen in abandoned mines and power plants) the decommissioning bill and environmental clean-up operation of permanently abandoned assets, will likely fall to local governments and ultimately the taxpayer. Under the lens of increased regulatory scrutiny and with public health and the environment at stake, the multi-billion dollar decommissioning question facing these industries is becoming critical.

## SHORT VS LONG TERMISM

Following the oil price collapse amid the Covid-19 pandemic, the challenge facing O&G companies is one of continuing price volatility. This inherently brings liquidity management, a once peripheral consideration for O&G companies, sharply into focus. In recent years, the major energy and O&G companies have been less successful in generating adequate revenues from the sale of oil, gas, refined products and petrochemicals due to competition and changing societal preferences. As a consequence, the sector has collectively taken on over \$100bn of new debt to cover cash shortfalls. Moreover, the longer travel restrictions limit the movement of economic agents, the increased likelihood that consumer and travel behaviours adopted within the Covid-19 environment may become accepted as the norm. Therefore, the experienced temporary drop in demand in 2020 has the potential to develop into a long-term demand reduction, further destabilising the oil market. Add to this the decrease in the costs of renewables (solar costs for example have plummeted 80% since 2010<sup>3</sup>), and the fact that renewables can now deliver cheaper energy than fossil fuels, companies operating polluting assets need to address both the short and long-term implications of the changing environment and their business strategy.

Some companies are struggling to cover operational expenses, capital expenditures and dividend payments with traditional revenue streams. Aside from the rare cases of pre-funding, asset sales and bank loans are the main sources of capital that traditional energy and mining companies utilise to adequately address decommissioning. In addition to this, decommissioning expense volatility often exposes the companies responsible to potential over-runs. Reviewing decommissioning liabilities alongside free cash flow, market capitalisation and net debt should expedite strategic decision-making bodies into reviewing how long-term liabilities are to be funded and met most efficiently and effectively.

Environmental and industrial obligations can affect the financial standing of an operator. *The Decommissioning Liabilities : Market Capitalisation ratio* (Fig.2) provides an insight into the individual scale of decommissioning that companies face relative to their size. EDF Energy, RWE, E.ON and EnBW all have decommissioning liabilities that represent over 50% of their market capitalization. Nuclear operators face higher decommissioning costs comparatively to Oil and Gas and Mining sectors. For example, nuclear companies must ensure the residual radioactivity of end of life nuclear fuel rods meet the expected regulatory standards. This requires a myriad of different costs. These costs inherently lead to longer dated liabilities and a more expensive cost profile comparatively to Oil & Gas and Mining counterparts as demonstrated in Fig.2. *The Decommissioning Payments: Free Cash Flow Ratio* presented in Fig.3 shows a four-year average of annually reported decommissioning payments equated to a four-

1. BP 2020 Energy Outlook

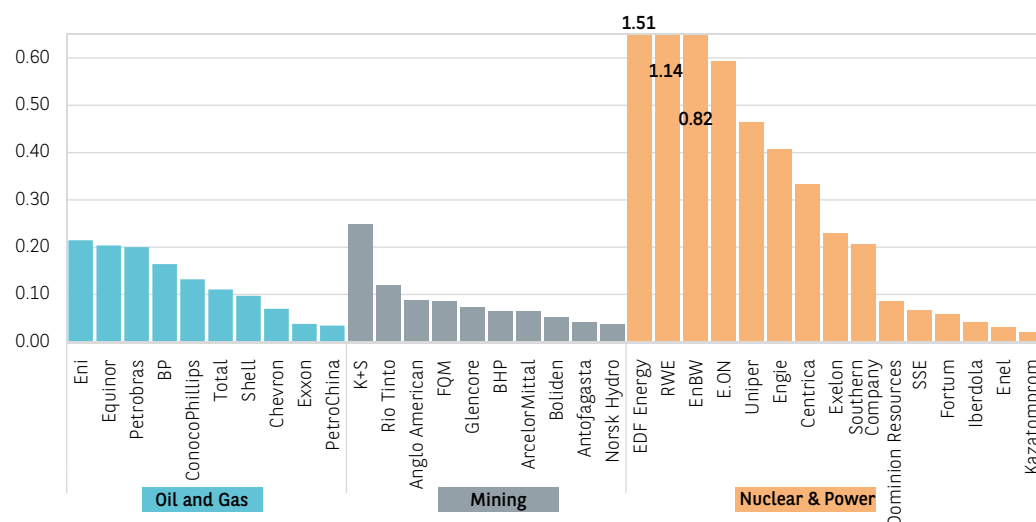
2. Forbes 2020

3. BNP Paribas Asset Management 2020

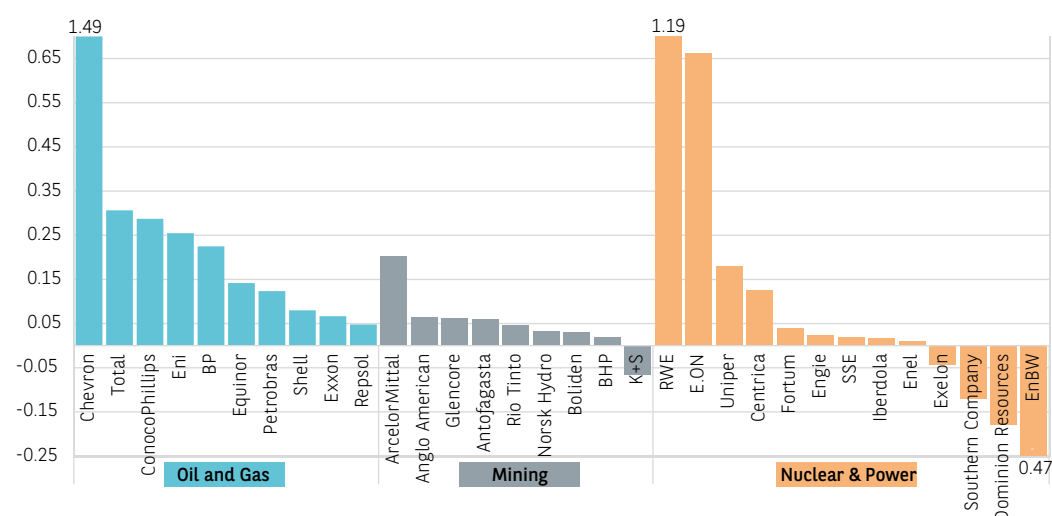
year average of Free Cash Flow levels. Larger Oil and Gas operators such as Total, Chevron, Eni, Petrobras and Conoco Phillips have all made decommissioning payments equating to over 15% of their free cash flow levels over 2014 - 2019. In this accelerated environment of declining demand for traditional energy sources, assets will reach the end of their useful life more quickly than previously expected. The need for decommissioning payments will increase sharply and companies should have a sufficient funding strategy in place. Relying on free cash flows linked to increasingly volatile commodity markets could lead to balance sheet instability in the near and long term. Pre-funding may provide a complementary tool to weather this uncertainty.

Additionally, the discussion around the accuracy of decommissioning liability estimates is rapidly evolving. Separate evaluations<sup>4</sup> have questioned whether the information published by companies is sufficient to draw definitive conclusions about the provisions made, or the funds available, to sufficiently cover decommissioning costs. Due to the increased regulatory focus and corporate accountability, we may expect significantly increased decommissioning obligations and payments on the horizon.

**Fig.2 Decommissioning Liabilities vs Market Capitalisation Ratio**



**Fig.3 Decommissioning Payments vs Free Cash Flow Ratio**

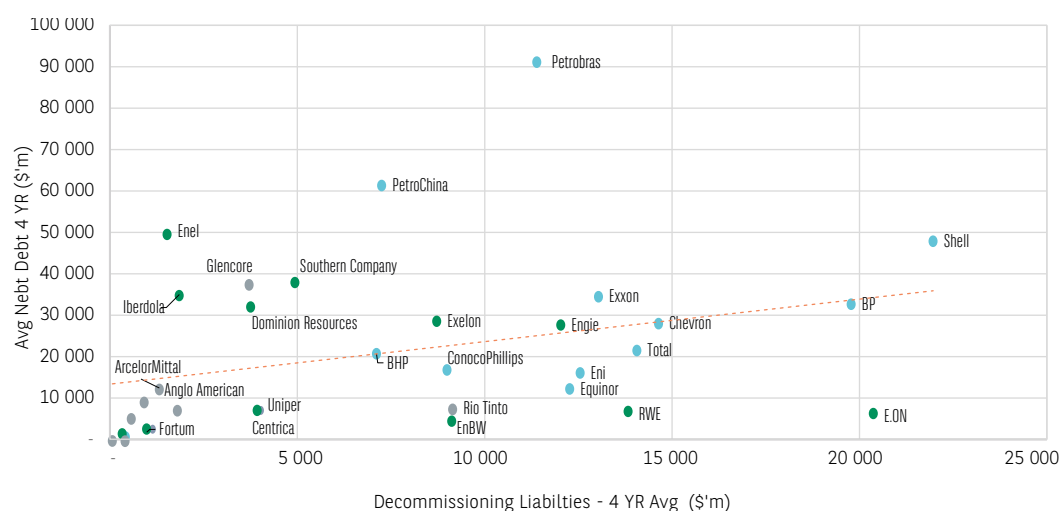


Source: BNP Paribas Asset Management. Annual Report Review - Data as at 2014-2019. Note EDF Energy (1.51), RWE (1.14), EnBW (0.82) figures extend beyond Y-axis in Fig 2. Chevron (1.49), RWE (1.19) extend beyond Y-axis in Fig 3.

Fig.4 provides a cross sector overview of the largest companies by decommissioning liabilities comparatively to respective levels of net debt across Nuclear, O&G, Mining and Traditional Power. EDF Energy has been excluded from Fig.4 as it has the largest decommissioning liabilities recorded in the study (in excess of \$50bn alongside \$44 bn of net debt, or 126% in percentage terms). Companies such as Glencore (10%), Enel (3%), Iberdola (5%) and Anglo American (25%) have decommissioning liabilities of less than \$5bn whilst holding varying levels of net debt between \$10-50bn. More significant issues may arise for companies such as Shell (46%), Chevron (52%), ConocoPhillips (54%), Uniper (58%), BP (61%) and Centrica (62%), Total (65%), Eni (78%) where decommissioning liabilities equate to roughly half or more of net debt levels. Topping the scale are Equinor (101%), Rio Tinto (120%) and Nuclear operators RWE (225%), EnBW (247%), and E.ON (363%).

Nuclear operators have longer term liabilities that can stretch beyond 100+ years and are subject to higher environmental rehabilitation costs. In the UK alone, Nuclear provisions are estimated to range between £99billion and £239billion<sup>5</sup> over the next century. The cost of radioactive waste management leads to increased decommissioning liabilities comparatively to other sectors. Reviewing the linear regression in Fig.4 we can see that companies below the industry average will have less difficulty funding their liabilities. Above this level however companies will essentially need to raise more debt to close the decommissioning gap and address the energy transition. In Q2 2020 alone we saw the seven oil majors raise \$60bn<sup>6</sup>, a record volume of debt, as the industry faced a collapse in revenues. Pre-funding would reduce the need to raise yet more debt for companies wishing to appropriately address their decommissioning obligations.

**Fig.4 Decommissioning Liabilities vs Net Debt**



Source: BNP Paribas Asset Management. Annual Report Review. 2014-2019.

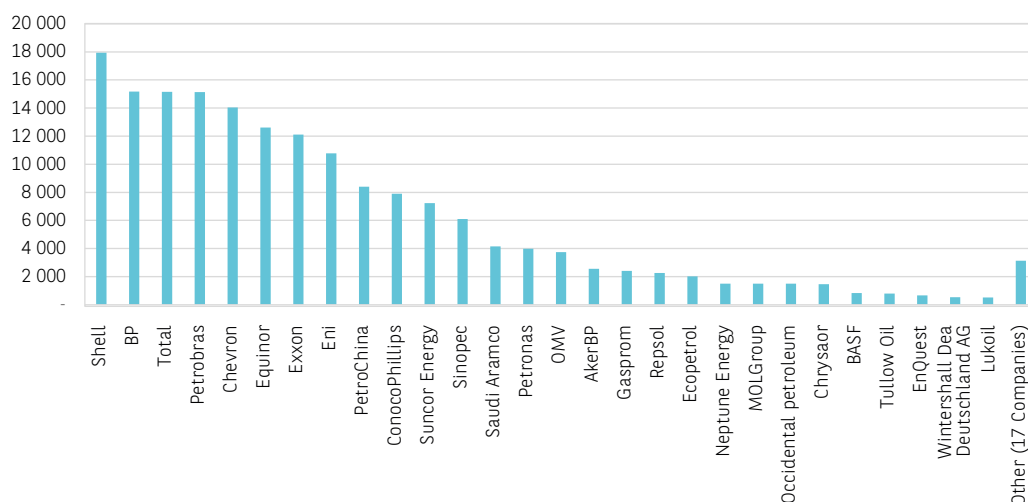
## SECTOR DEEP DIVE

The following four sector overviews demonstrate the scale of the decommissioning challenge. From the Oil and Gas companies analysed the average decommissioning liability held on balance sheet stands at \$4bn. The 10 largest Oil and Gas companies account for 73% of the total sector decommissioning liability requirement. The UK Oil & Gas Authority estimates that decommissioning in the UK Continental Shelf (UKCS) alone will cost up to £51bn<sup>7</sup>. Other oil-producing regions such as North-America, the Middle-East, Africa or South-East Asia are also faced with large decommissioning bills and the 45 oil and gas companies within the study provisioned for \$184bn of long-term global decommissioning liabilities in 2019.

5. Gov UK 2020

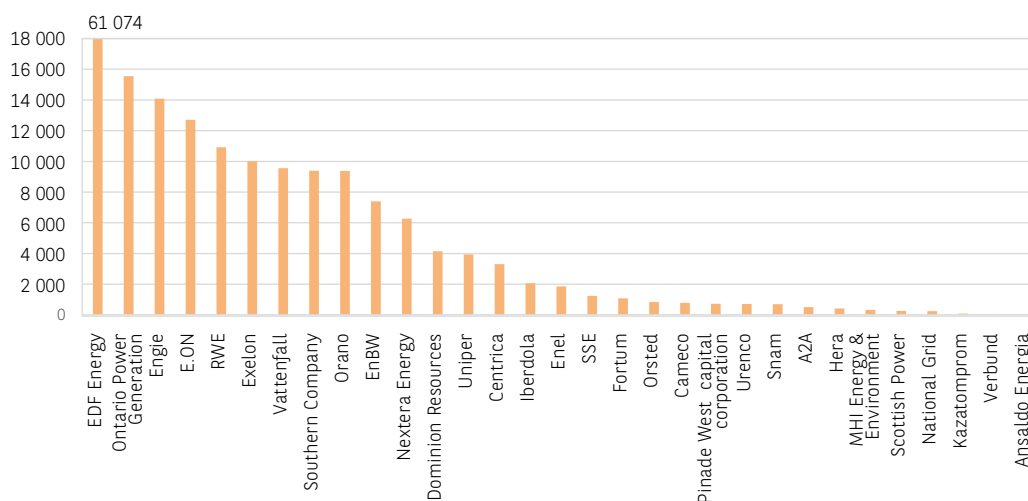
6. Reuters 2020

7. OGA 2019

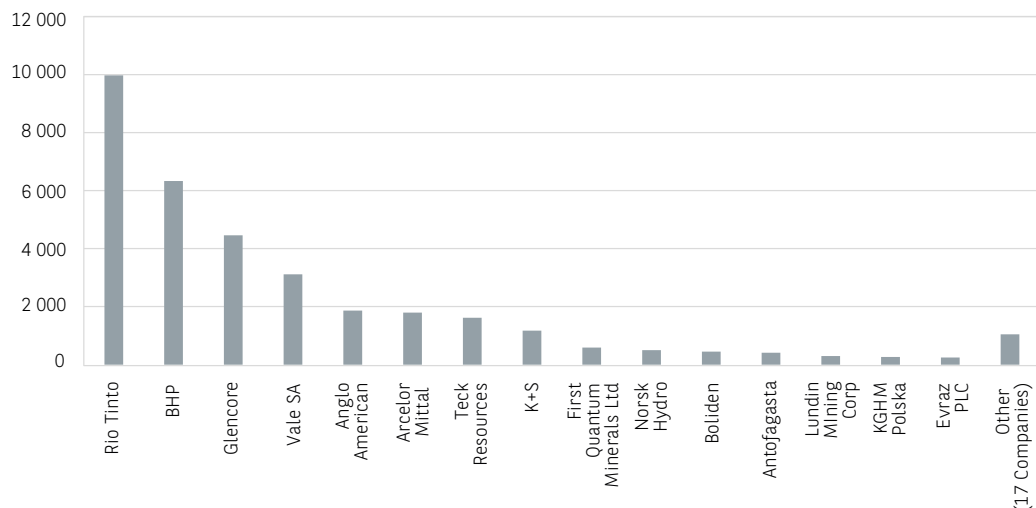
**Fig. 5 Oil and Gas Decommissioning Liabilities - (USD 'm)**

Source: BNP Paribas Asset Management. Annual Report Review. 2014-2019

Removing EDF as an outlier (\$61bn), we see that 56% of total nuclear decommissioning liabilities stem from the top 10 nuclear companies. Across the study, the Nuclear and Power sectors account for \$190bn of decommissioning liabilities with over \$3.2bn of payments made in 2018 alone. Combined Market Capitalisation of analysed mining companies totalled \$223bn paying \$2.3bn of decommissioning payments in 2019. Nuclear, Power and Mining regulations set out the need for ongoing environmental maintenance ahead of decommissioning. In many cases the annual maintenance requirements cost companies millions of dollars each year. A key example within mining of these ongoing decommissioning and environmental costs is the environmental damage caused by acid mine drainage (AMD) to the water table and biosphere. These issues (and associated costs) will continue to be a key feature for companies and countries that continue to extract coal and metals. Rio Tinto (\$319m), Vale (\$259m), Glencore (\$211), BHP (\$178m) and Arcelor Mittal (\$114m) made over \$1bn in Decommissioning / environmental rehabilitation payments in 2019 alone.

**Fig. 6 Nuclear & Power Decommissioning Liabilities - (USD 'm)**

Source: BNP Paribas Asset Management. Annual Report Review. 2014-2019

**Fig. 7 Mining Decommissioning Liabilities - (USD 'm)**

Source: BNP Paribas Asset Management. Annual Report Review. 2014-2019

## AN OPPORTUNITY TO MEET REQUIREMENTS – PRE-FUNDING

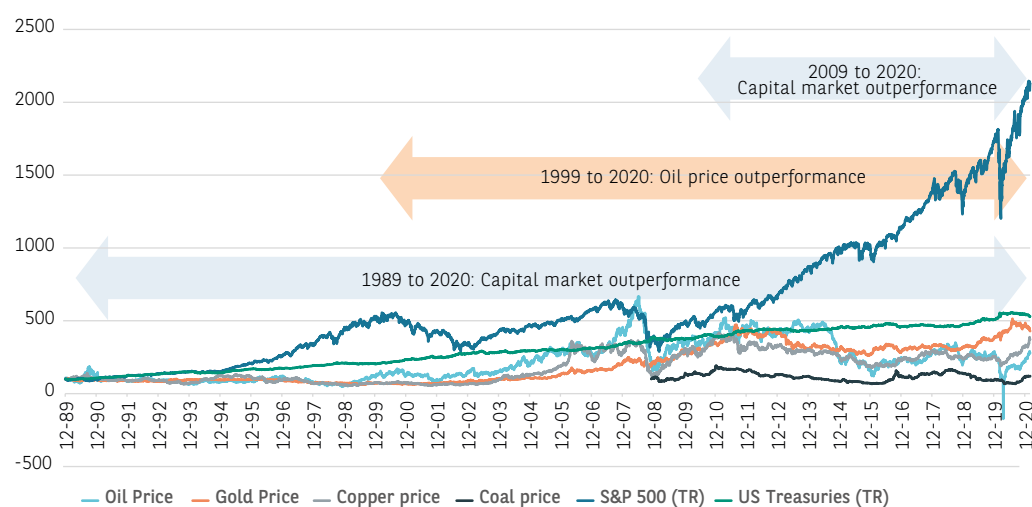
Meeting decommissioning obligations is a time-pressured issue predominantly for traditional energy providers. Capitalise Many offshore oil platforms (from the Gulf of Mexico to the North Sea), coal and lignite mines across Europe, Asia, South America and Africa, and traditional power and nuclear plants, have performed well beyond their expected useful asset life and are now due for retirement. However, there are only a small number of effectively funded decommissioned projects falling within company budgets, scope and timeframe – mostly in the nuclear sector. In practice, many companies hold significant unfunded liabilities that ultimately affect their long-term business viability and their capacity to generate return.

Costs and technologies are continuously evolving alongside environmental, socio-political, and safety expectations. As mentioned above, the estimation of quantities and timing of future cash flows can be subject to significant uncertainty. The recent fall in commodity prices in 2020 illustrates why companies cannot solely place faith in their expected operating cash flows to cover ongoing investment needs and decommissioning costs. The momentum and seemingly irreversible global commitment to renewable energy continues. The paradigm shift towards Renewables reduces the ability of traditional O&G, energy and mining companies to generate appropriate levels of cash from the sale of energy or commodities. The faster fossil fuel energy becomes irrelevant, the earlier and more expensive the decommissioning of operating assets will become.



In this context, we recommend to complement operational cash flows with income generated through financial investments in market securities. Figure 8 highlights the O&G sector as an example of how oil prices have performed vs equities and bonds. It shows that although oil prices have seen periods of over-performance compared to liquid equities and bonds, generally, these periods are often shorter than 10 years and end in a sharp downward adjustment.

**Fig.8 Oil Price vs S&P 500 and US Treasuries since 1989**



Source: BNP Paribas Asset Management 2020

Prefunding is a solution to be utilised across a variety of sectors and under a variety of conditions. It is never too early to focus on a pre-funding solution, especially whilst the decommissioning bill remains manageable.



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