For professional investors - Marketing communication - March 2021

PRE-FUNDING OIL AND GAS DECOMMISSIONING LIABILITIES

BNP PARIBAS
ASSET MANAGEMENT

The asset manager for a changing world

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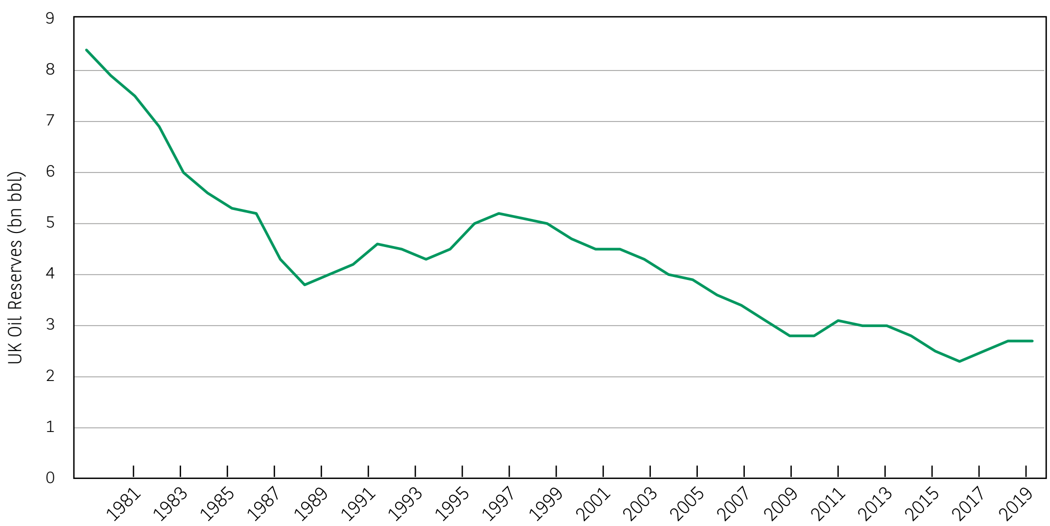
1. UK OIL AND GAS DECOMMISSIONING IN CONTEXT

Coupled with the UK's commitment to climate change, oil and gas production facilities continue to mature within the UK Continental Shelf (UKCS) bringing into sharp focus the need for decommissioning of redundant facilities in the medium term. BNP Paribas Asset Management (BNPP AM) remains committed to helping oil and gas companies navigate the challenges that this may bring, providing innovative pre-funded solutions that can help improve efficiencies across the value chain

Production from the UK's oil and gas sector has been on a long-term declining trend since the mid-1970s, reflecting the maturity of the UKCS, although new discoveries and the application of enhanced oil recovery techniques have maintained production levels in recent years. The UK's (discovered and undiscovered) petroleum reserves are in the range of 10-20 billion barrels of oil equivalent (BOE) which could potentially sustain production for another 20 years, compared with a total of 45.3bn as of 2019 according to the UK Oil and Gas Authority.

UK OIL RESERVES (billion barrels)



Source: BP Statistical Review of World Energy 2020.

The UK's climate change commitments under the 2015 Paris Agreement are to reduce greenhouse gas emissions to 80% of 1990 levels by 2050. Recently the government has taken this one step further by revealing an ambition for a 'net zero' economy by 2050. The resultant energy transition required to achieve this will likely have profound future implications on the extent of development (of UKCS contingent assets) to the application of new technologies across the energy sector and the wider economy.

Electricity market reform, including the provision of contracts for difference (CFD) for low-carbon electricity, a carbon price floor and emissions performance standards (EPS) have led to a boom in renewable investment within the power generation sector. Low-carbon energy accounted for over 50% of electricity production in 2017 according to the IEA. By 2030 wind and solar are expected to exceed 50% of production as the UK develops a decarbonisation blueprint for other OECD nations. This success set the UK government on the path to decarbonise transport, buildings, farming and industry leading to inevitable implications for fossil fuel demand. The power sector is therefore well on its way to decarbonisation although it is likely that natural gas will remain a significant component of the system (unless a stronger case can be built for nuclear development), be that from UKCS assets or from overseas imports.

Mature basin production declines have been reversed in recent years through the identification of new assets and the extension of reservoir life cycles by applying mature oilfield technologies. Nevertheless there is significant legacy infrastructure that in the medium and long-term will inevitably need to be decommissioned, with a growing list of projects identified for consideration.

With more than 250 fixed installations, 250 subsea production systems, 3,000 pipelines and approximately 5,000 wellheads the focus on decommissioning these assets has become more acute. According to the UK Oil and Gas Authority (OGA) current estimates put the cost of these decommissioning activities at more than £50bn, although it is recognised that as a relatively immature industry activity it is likely that cost efficiencies could be achieved and that this figure may be lower over time.

With regulatory uncertainty (or at least its interpretation), commodity price volatility, wage inflation and variability in the costs associated with decommissioning, challenges remain when considering holistic and integrated planning for such activities. However what remains consistent, is the OGA's commitment to making the UK a world leader in decommissioning and achieving cost reductions across the value chain.

Whilst decommissioning overall within the UKCS is currently a small part of total expenditure, it is BNPP AM’s contention that a funded investment solution can form part of the operational efficiencies across the decommissioning value chain that the industry has committed to embrace. Future discounting liabilities utilising robust investment portfolios can help meet the costs of decommissioning whilst lessening their impact on company balance sheets, credit ratings, reputational risk and the UK tax payer.

Traditionally oil and gas companies have either used free cash flow to meet ongoing decommissioning liabilities, made technical provision for future costs or utilised treasury functions to construct low-risk fixed income portfolios. In the instances where treasury departments have pre-funded investment portfolios (in traditional listed investments) these may no longer be adequate to provide predictable, long-term investment returns due to falling asset yields. Consequently utilising private markets (e.g. infrastructure debt) to construct cash flow matching portfolios to replicate the investment strategies undertaken by insurance companies can offer enhanced returns.

Oil and gas companies should also consider the efficiency of the implementation option used (e.g. balance sheet treasury management versus captive insurance or trust based solutions) that may allow liabilities to be taken off balance sheet and managed by specialist asset management teams.

2. THE UK REGULATORY REGIME FOR DECOMMISSIONING

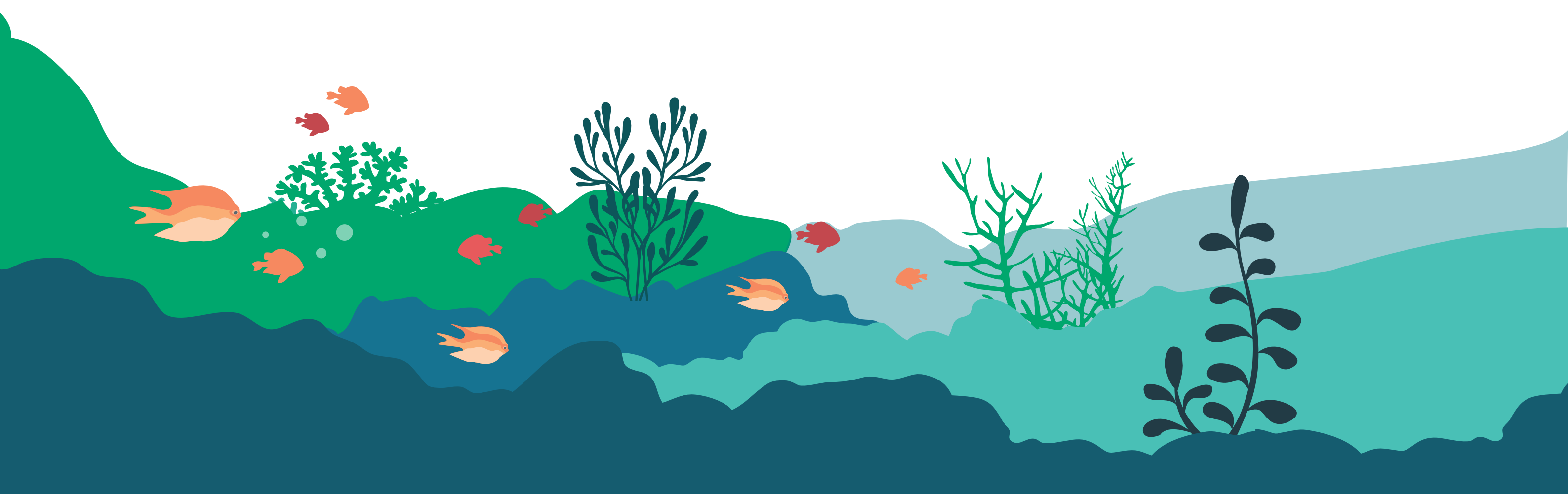
The decommissioning of offshore oil and gas facilities (structures and pipelines) is governed in the UK by the Petroleum Act 1998 (with subsequent amendments). Coupled with this, the UK's international obligations are also detailed in the Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR Convention) within the OSPAR Decision 98/3.

The responsibility for adhering to the Petroleum Act and the UK's international obligations rests with the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED), which sits within the Department for Energy and Industrial Strategy. Key principles that shape its domestic obligations include:

- A precautionary principle that translates into a clear sea bed.
- A polluter pays principle that sees those companies that benefit from exploration & production activities in the UKCS meet the cost of decommissioning.
- Protecting the UK tax payer in the event of a company default.
- Maximise economic recovery from the UKCS as a part of the UK's energy security policy.

Additionally Decision 98/3 requires that the topsides of all installations are returned to shore and that all steel installations with a jacket weight of less than 10,000 tonnes are removed for re-use, recycling or disposal. Given the complexities associated with larger steel jackets and concrete installations, derogation provisions do exist for those installed prior to 9 February 1999. Provision also exists for OSPAR to have the opportunity of reviewing these derogations periodically in light of new environmental evidence, experience or technical developments.

Oil and Gas UK (OGUK), the trade association for the offshore industry, within its 'Decommissioning Insight 2018' report highlights an aspiration for the UK's reputation for operational excellence to be extended to decommissioning activities within the UKCS, the largest such market, in the next decade. Nervertheless, due in part to re-investment in later-life fields by specialist mature-field operators, near-term annual decommissioning costs have decreased (also due to efficiency gains) with a lot of this work pushed into the future.



3. DECOMMISSIONING AND REPUTATIONAL RISK

As public opinion to the environment and climate change issues have become increasingly polarised, there is growing evidence to suggest that failure to address decommissioning could have a material impact on reputational risk.

The UK government itself is facing increased scrutiny from the European Commission regarding its plans for decommissioning and in particular derogations it is considering issuing that would see the concrete bases beneath Shell's Brent structures (and one jacket) left in the North Sea. Whilst undoubtedly technologically challenging, there are growing fears that such a decision would set a precedent for the decommissioning of future structures.


UK facing EU outrage over 'timebomb' of North Sea oil rigs

Germany leads complaint against plan to leave polluted remains of Shell rigs in place

The British government is facing growing outrage from the European commission and five EU member states over its plans to leave some decommissioned oil rigs in the North Sea, with one senior German official describing the UK's proposal as a "grotesque idea" that amounts to a "ticking timebomb".

Source: The Guardian 3 September 2019.

The European Commission maintains that it is not clear that Shell's[1] plans meet OSPAR Decision 98/3's intent with respect to a properly executed scientific, evidence-based assessment. With legislation equivocal on the best environmental option in such instances and with Non-Governmental Organisations (NGO's) divided on the best future course of action, it is clear that uncertainty exists regarding the interpretation of the UK's commitment to decommissioning.

As a consequence, we have seen in recent months a marked increase in interest from journalists from the specialised Oil & Gas / Commodity / Utility publications, but also from the generalist press and established financial media companies.

The types of questions that are often raised relate to the following topics:

- What is decommissioning and how is it implemented?
- Where are oil company exposed to decommissioning and environmental liabilities beyond the North Sea?
- How long do decommissioning projects last?
- How much do they cost?
- Who is responsible in last resort (i.e. the state / taxpayers)?
- What are the best environmental practises?
- How do oil and gas companies account for these liabilities?
- How are these liabilities funded?

We believe that effective communication in this domain is crucial for any major oil producer.

1 Review of the Shell/Exxon Brent Decommissioning Derogation Assessment and of the corresponding proposal by UK Business, Energy and Industrial Strategy (BEIS) - Scientia et Sagacitas Ltd., May 2019.

4. BNPP AM'S FUNDED DECOMMISSIONING STRATEGY

In line with the 2015 Paris Agreement the BNP Paribas Group has focused on promoting a low-carbon future (e.g. through the increased financing of renewables) and guiding clients in the energy transition, reducing their own environmental footprint and promoting best environmental practises. As of today BNP Paribas global activities have led to €180bn (as at end 2019) in financing towards energy transition and the UN's Sustainable Development Goals. In this context, the preservation of environmental diversity and integrity in the UKCS through sustainable decommissioning of redundant oil and gas assets forms a crucial component of this overall strategy.

BNPP AM mirrors this Group commitment through its Global Sustainability strategy, intended to promote the energy transition, environmental sustainability and inclusive economic growth. As with pension funds facing known future liabilities it is possible to model oil decommissioning cash-flows (for individual operators) and design investment portfolios to help meet or exceed these liabilities over time. Generating excess returns over these liabilities enables future liabilities to be discounted over time through a bespoke, pre-funded investment solution and to meet any potential cost over-runs.

THE PENSION FUND ANALOGY

Risk	Strategic Implications	Mitigating factors of pre-funding
SIMILAR CASH FLOW PROFILE	• Capital investment • Cash / return generation • Close / retirement	✓
SIMILAR RISKS	• Funding shortfall • Early closure risks • Funding requirements • M&A	✓
SIMILAR FUNDING OPTIONS	• "Pay as you go" • "Pay as you go" with reserve • Fully funded • Transferred to insurance company or captive	✓
SIMILAR BEHAVIOUR?	• Regulation • Reputation • Protection	✓

Source BNP Paribas Asset Management, October 2019

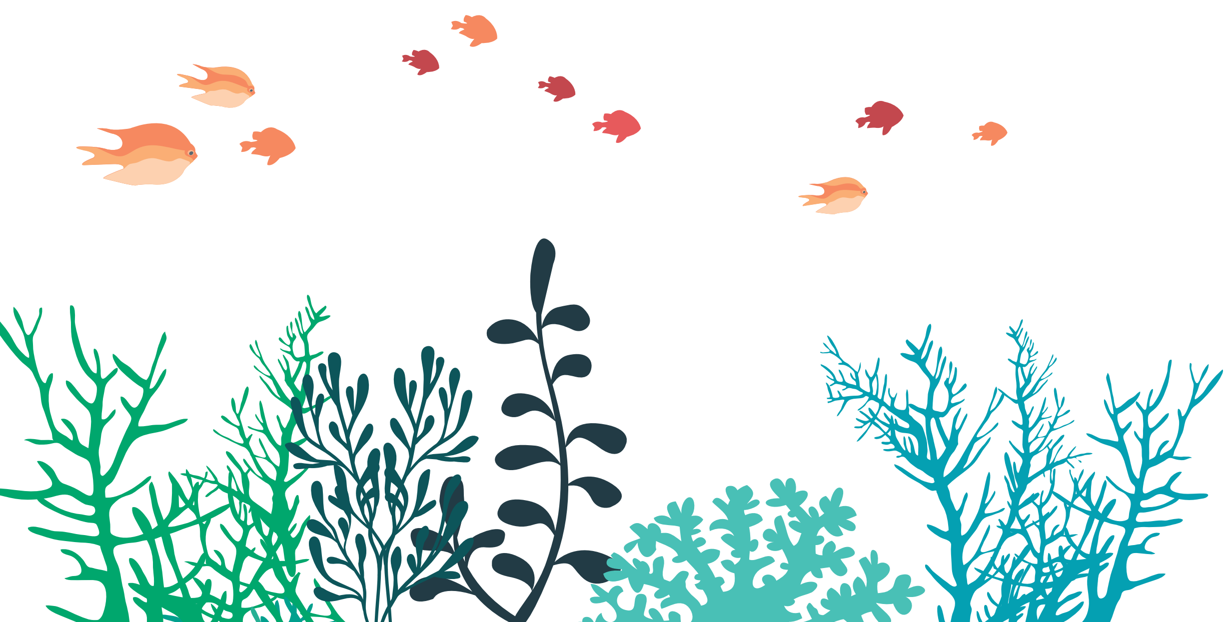
The rise of liability driven investment (LDI) has reflected the need of institutional investors to lower the volatility associated with pension funding levels. Recognising that funding levels represent the interaction between assets and liabilities, trustees have sought investments, linked to inflation, interest rates and duration that behave in the same way, leading to a rise in partially funded liability hedges (e.g. swaps), backed by cash and gilts (or government bonds in other countries), with the balance invested in growth assets.

Cashflow driven investing (CDI), also used by pension funds, involves using additional sources of credit in order to better match these known liabilities and enhance returns by harvesting the illiquidity premia associated with private markets. At present, for example, many pension schemes, being cashflow negative, are forced sellers of liquid assets in order to meet their increasing income requirements.

At BNPP AM, we believe a cashflow driven decommissioning (CDD) portfolio composed in part of private credit and real assets provides investors with a better match of liabilities as well as other tangible benefits that liquid strategies do not offer. For example, in a late credit-cycle era of financial repression a blend of LDI (i.e. gilts / investment grade bonds and interest rate swaps) and illiquid credit assets can provide better risk adjusted returns, whilst providing greater cashflow matching characteristics. This is a traditional approach for mature pension funds.

The incremental benefits of a private credit approach to CDD can be summarised as follows:

- Potential additional returns above gilts and investment grade credit.
- Cashflows backed by high quality collateral income streams that provide inflation linkage.
- Long-term cash flows.
- Highly covenanted, stable income streams.
- Limited market exposure.
- Lower default rates.
- Low volatility.
- Reduced re-investment risk versus typical treasury based approaches that utilise short term deposits.

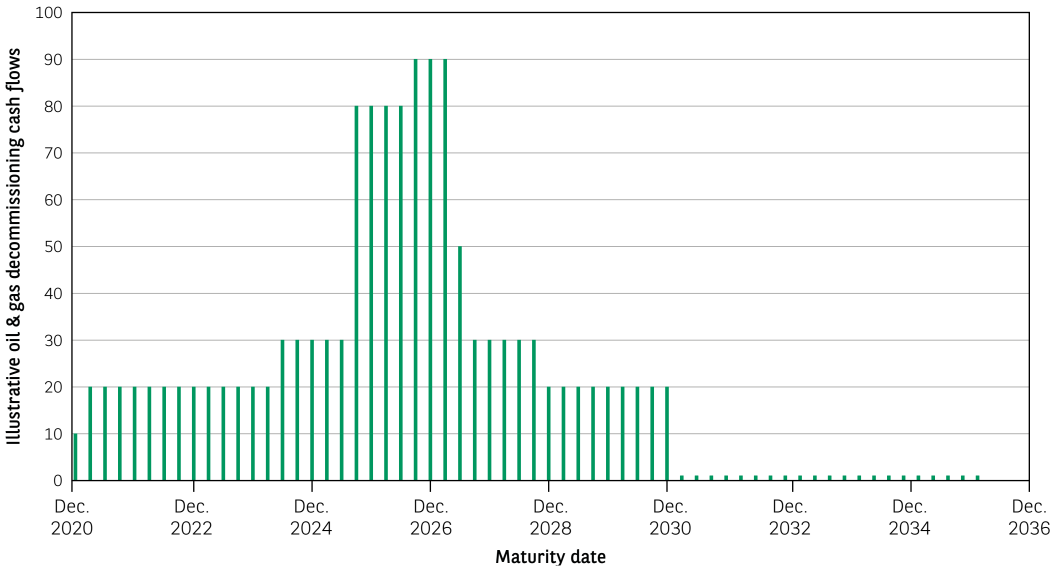


5. INVESTMENT STRATEGY FOR THE FUNDING OF DECOMMISSIONING LIABILITIES

Oil and gas companies, like pension funds, have known long-dated liabilities associated with their decommissioning activities. Consider a hypothetical case where an oil and gas company has a liability of £2,000m within the UKCS (and potentially additional liabilities in overseas projects). This hypothetical case assumes that UKCS activities for this company will cease within the next 20-years (with overseas liabilities potentially continuing to impact their balance sheet beyond that date).

As with actuarial assumptions applied to modelling LDI portfolios for pension funds (such as longevity, interest rates, inflation etc.) in forecasting the costs associated with decommissioning activities a number of variables need to be assumed namely that:

- As an immature industry, technological innovation may lead to lower decommissioning costs in the future.
- Regulatory risk may impact the rate, speed and cost of decommissioning.
- Wage inflation may lead to increased costs.
- UKCS oil and gas field life is extended (either through further discoveries or new technologies).
- New assets/acreage may also be added during the campaign.



Source BNP Paribas Asset Management, October 2019

This is for illustrative purposes only and should not be used as a basis for making any specific investment, business or commercial decisions.

Despite these many unknowns, oil and gas companies can model their expected cash flows over time and pre-fund investment portfolios to match these liabilities. As with pension investment portfolios, assumptions can be constantly monitored and adjusted to inform the 'flight-path' allowing active matching portfolios to be adjusted to increase the probability of achieving the desired outcome through time.

As pension funds and insurance companies increasingly utilising private credit to match their liabilities, the recommendation would be for oil and gas CFOs to pre-fund CDD investment portfolios of liquid and illiquid assets in order to match, to a large extent, future decommissioning liabilities and limit the need for annualised balance sheet contributions.

BENEFITS OF PRE-FUNDING OIL AND GAS DECOMMISSIONING LIABILITIES THROUGH CDD

The recommended approach using private credit is exposed to the traditional risks affecting illiquid assets and does drain funds from the company's cash flow. However, in addition to matching future decommissioning and remediation liabilities and avoiding cash flow draw-downs, a pre-funding strategy offers a number of additional interesting benefits to oil and gas companies.

It improves the efficiency of matching liabilities through investment returns

- Commodity prices are dissociated from remediation provisioning. Meeting decommissioning liabilities with cash generated from the sale of oil can at times be problematic.
- Remediation liabilities can also constrain long-term investment as they can create conflicting demands on cash flow.

It can help mitigate expense volatility

- Expense volatility exposes oil and gas companies to potential over-runs.
- These can be mitigated through excess returns from the investment portfolio.

It can reduce the pressure on the balance sheet, the cost of capital and credit-ratings

- Remediation obligations create a long-term debt that affect the financial standing of an operator.
- With an increased focus from analysts on ESG characteristics a pre-funded decommissioning solution can have a materially positive impact on ratings.

It can help protect the return on capital employed

- Remediation and decommissioning costs can negatively impact an oil and gas company's long-term return on capital.
- Long-term funding can mitigate this by relying on market returns.

It offers more exit optionality

- Corporate strategic decisions or financial pressure may require the divestment of an asset.
- In this context, operating life and remediation obligations may form a material item in the terms of sale.
- The pool of potential buyers can also be (in part) impacted by the ability to meet future remediation expenses.

It opens up more choices of funding and operational vehicles

- Best governance and practices may not involve leaving the remediation assets and liabilities on balance sheet but potentially transferring them to a separate entity (for example, a trust or a captive insurance company).

KEY STRATEGIC DECISIONS AND DRIVERS

In summary, an optimal investment strategy for a decommissioning fund needs to consider a number of parameters, taking into account specific drivers.

	Liabilities	Assets	Structure
DECISIONS	• Consistency between the offshore oil decommissioning project duration and the fund maturity • Taking into account all costs (not just planned offshore oil decommissioning) • Provide estimates of over-runs	• Affordability and security of fund contributions • Potential funding gaps (normal operations) • Risk of early decommissioning	• Fund management company or trust structure
DRIVERS	• Expected future decommissioning costs • Inflation considerations • Discount rate methodology	• Contributions • Investment principles • Return objectives • Risk tolerance • Liquidity budget	• Independent verification, regular monitoring and dynamic risk management

6. BNPP AM'S APPROACH TO PRIVATE MARKETS

The universe of private credit assets available to institutional investors has expanded rapidly over the past decade. More stringent capital requirements on banks has seen the disintermediation of traditional financing models by asset managers and institutional investors across a broad range of asset classes such as:

- Infrastructure debt
- Commercial real estate debt
- Mid-market loans
- Asset backed securities
- Mortgage backed securities
- Social housing
- Ground rents

In creating a portfolio of income generating assets, diversification is of critical importance. Often idiosyncratic in nature, the underlying asset classes diversify well against each other and traditional liquid components of institutional portfolios, minimising tail risks.

BNPP AM's Oil & Gas Decommissioning investment strategy leverages the specialist investment teams that comprise the Private Debt and Real Assets (PDRA) investment group of over 50 investment professionals, in addition to privileged access to the origination capabilities of the wider BNP Paribas Group. With origination teams focused on corporate lending, infrastructure debt and real estate across the globe, BNPP AM's investment teams have privileged access to this pipeline. In addition, BNPP AM is able to structure loans with the bank to suit client portfolios e.g. converting typically short-dated, floating rate commercial real estate debt to long-dated fixed rate tranches.

BNPP AM's approach to Oil & Gas Decommissioning relies on specialist investment teams accessing the underlying asset classes, namely global loans, SME lending, US mid-market lending, structured finance, infrastructure debt and commercial real estate debt. Each team offers a long-term track record in the technical under-writing of private credit with established networks of project sponsors offering sustainable origination, supplemented by proprietary BNP Paribas Group origination partners.

BNP Paribas Group has been financing the real economy for 150 years with market leading positions in real estate and infrastructure financing. For both the Group and BNPP AM, our goal is to provide quality investment solutions for our clients, building strong, lasting relationships based on confidence and trust. Within private markets and real assets this confidence and trust helps support origination as our specialist investment teams have a reputation for rigour, scale and execution.

Whilst private markets can be illiquid we believe active portfolio management significantly mitigates the associated risks. Across asset classes, a focus on diversification and strict credit risk assessment offers institutional investors access to high quality assets and co-investment opportunities that aim to deliver long-term performance.

7. WHY BNP PARIBAS ASSET MANAGEMENT FOR OIL & GAS DECOMISSIONING?

1.

ACCESS TO SPECIALIST PRIVATE CREDIT AND REAL ASSETS TEAMS

BNPP AM's Cashflow Driven Decommissoning (CDD) capability offers institutional investors access to a broad range of private credit and real assets capabilities encompassing infrastructure debt, commercial real estate debt, loans, SME lending and structured securities. Leveraging over **50 investment professionals** located in the UK, Europe and the US.

2.

BESPOKE DYNAMIC IMPLEMENTATION

BNPP AM is able to create bespoke solutions for institutional clients. This can include segregated multi-asset private credit mandates. The design, dynamic implementation, management, governance and reporting is overseen by a **dedicated team of 130 multi-asset**, quantitative and solutions (MAQS) investment professionals. In the context of CDD MAQS are responsible for modelling and matching future liabilities, allocating assets over time on a relative value basis.

3.

SUPPORTED BY AN A-RATED BANK INFRASTRUCTURE

BNPP AM's CDD approach is supported by the infrastructure and resources afforded to the company by our parent BNP Paribas, including solutions in capital markets, securities services, advisory, finance and treasury. This allows the underlying teams to leverage proprietary origination, structuring and distribution capabilities from the wider BNP Paribas Group including **62 Commercial Real Estate Debt and Infrastructure Debt professionals**.

4.

CO-INVESTMENT CREATES AN ALIGNMENT OF INTEREST

In many instances BNP Paribas Group will retain a proportion of the underlying loans within their balance sheet creating a clear and transparent **alignment of interest** between third-party investors and the Group.

5.

SYNTHETIC PRIVATE CREDIT REPLICATION

BNPP AM is able to leverage the capabilities of the BNP Paribas Group to offer institutional clients **synthetic 'liquid' replication** of illiquid private credit. This offers a spread to liquid investment grade corporate bonds whilst allowing for the patient deployment of underlying capital and efficient liquidity management.

6.

DECOMMISSIONING CREDENTIALS

BNPP AM has been involved in providing **asset management services to decommissioning funds** since the early 2000s, in various asset portfolios both in Europe and Asia. These services cover long-term investment strategies and asset allocation modelling, as well as implementation and on-going monitoring and governance.

7.

IMPACT INVESTING WITH ESG EMBEDDED WITHIN THE CREDIT PROCESS

BNP Paribas Group has been financing the real economy for **150 years** with market leading positions in real estate and infrastructure financing. The bank's UK growth plan is predicated on expanding its UK client base and increasing **sustainable lending** e.g. to UK housing associations. From SME lending to infrastructure debt BNPP AM's CDD strategy offers investors a stake in the real economy investing in a range of asset classes that play a vital role in promoting economic growth. In addition to social impact ESG is also embedded across the underlying asset classes providing further coherence and consistency with our **Group-wide sustainability policies.**

BNP PARIBAS ASSET MANAGEMENT

BNP Paribas Asset Management is the investment management arm of BNP Paribas, one of the world's major financial institutions.

- Managing **EUR 483 billion[1] in assets**.
- A comprehensive range of active, passive and quantitative investment solutions covering a broad spectrum of asset classes and regions
- With nearly **500[2] investment professionals** and around **500[2] client servicing specialists**, serving individual, corporate and institutional investors in **722 countries** around the world.
- More than **3000 employees**[3] in more than **30 countries**
- A **major player in sustainable** and responsible investing **since 2002**
- We manage, as of 31 December 2018, **EUR 222 billion** in assets that integrate ESG analysis
- Backed by BNP Paribas Group, **one of the best rated banks in the world (A+)**[4]

Sources: BNP Paribas Asset Management as at 31 December 2020

Since 2002, BNP Paribas Asset Management has been a major player in sustainable and responsible investing.

1 Source: Managing and advising EUR 618 billion as of 31 December 2020

2 Source: BNP Paribas Asset Management, as of 31 December 2020

3 Joint Ventures included

4 Standard & Poor's, 23 April 2020

EUR 483 billion[1]
in assets

500
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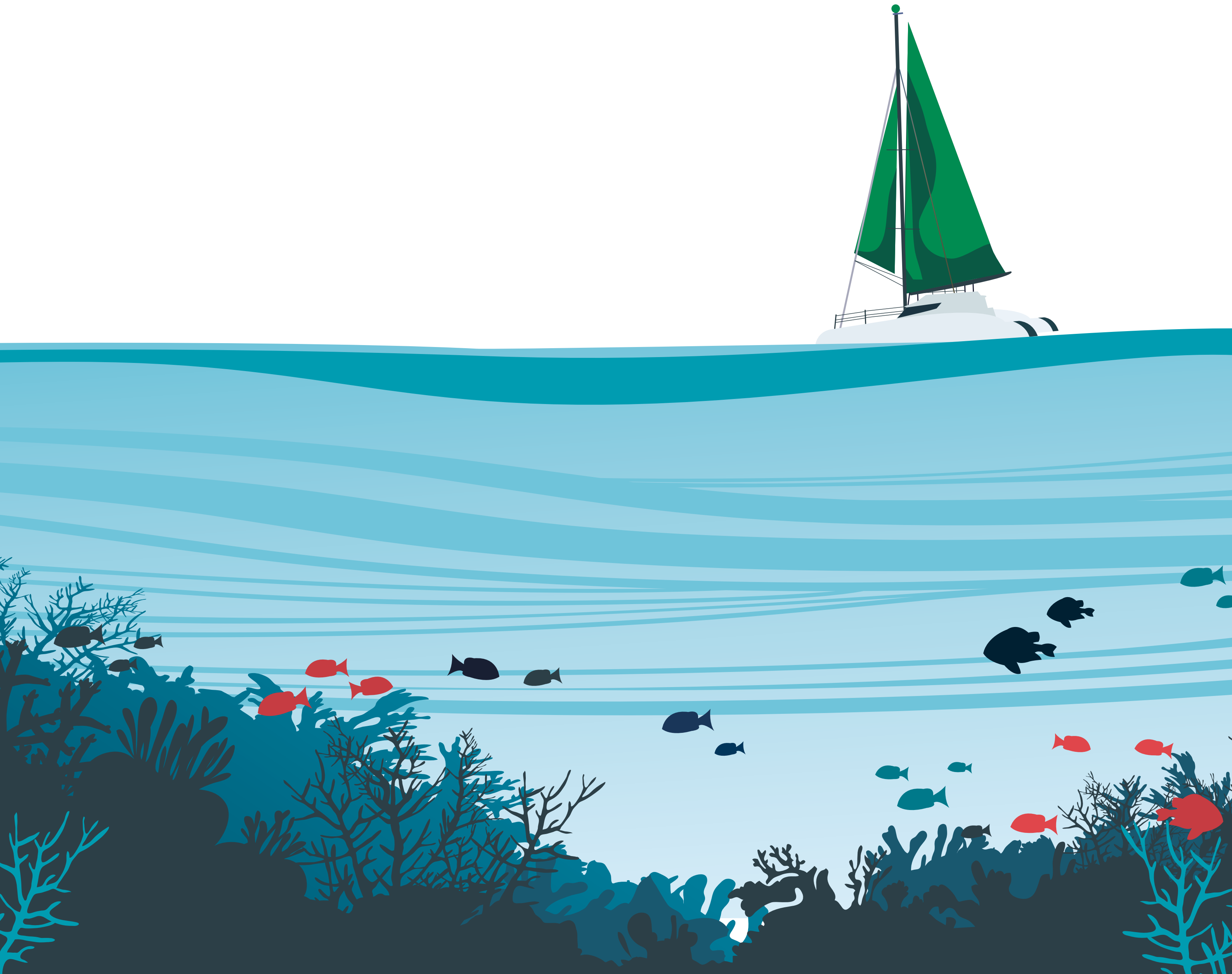

INVESTORS’ corner

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ASSET MANAGEMENT

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