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Addressing Residual Liability and Insolvency in Disused Oil and Gas Infrastructure Left in Place: The Cases of Brazil, Nigeria, and Trinidad and Tobago

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This article analyses the decommissioning framework for oil and gas infrastructures in Brazil, Nigeria, and Trinidad and Tobago. It examines whether the existing provisions in each country are able to guarantee that the government and, by extension taxpayers, do not bear the costs of decommissioning and, the consequences of insolvency on residual liabilities. An additional motivation for this examination is the ongoing Coronavirus Disease 2019 (COVID-19), a pandemic with significant adverse impacts on the oil and gas industry. A likely consequence of the economic devastation from this is the insolvency of any party with decommissioning obligations.

The article argues that the provisions of the Brazil petroleum legislation on the reversion of abandoned installations to the government could imply that taxpayers have to bear the residual liabilities without any compensation from the concerned concessionaires or contractors. It also argues that the provisions of the Petroleum Law to the effect that 'the reversion of facilities does not entail any expense whatsoever for the Brazilian government 'does not certainly translate to pecuniary compensation to the latter for assuming the future residual liabilities from abandoned installations. The Nigerian and the Trinidad &Tobago Decommissioning Framework also suffer the latter risk of the government bearing the residual liabilities for such disused installations. In Nigeria, the framework is silent on who bears the residual liabilities for disused installations. However, it is argued that the provisions of the Production Sharing Contracts on the transfer of ownership to the Nigerian government implies that they would have to bear eventual liabilities for such disused installations. Even in cases where the licensee or contractor may bear the burden of residual liabilities, the problem of future insolvency and cessation of such companies may entail that taxpayers bear the burden of residual liabilities. The article concludes with key recommendations on how to address the identified gaps using lessons from best practices such as United Kingdom, Norway and United States of America. One of such proposals is on the allocation of liability where there is a transfer of interest. Another is for joint and several or at least secondary liability of responsible parties even after decommissioning activities are over; a recommended provision to this effect is also provided. The third recommendation is on how time-constrained residual liability can be used alongside lump sum payments to limit the State's financial exposure for decommissioning costs.

Keywords: Decommissioning, Abandonment, Residual Liabilities

1. INTRODUCTION

The origin of residual liability is decommissioning, which is the last stage of oil and gas operations.[1] Decommissioning is a 'set of activities to be undertaken to manage and dispose of installations and platforms and eliminate the environmental footprint, once a producing field … reaches the end of its economic life'.[2] Given the latter, the primary objective of

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[1] As an example, 'Decommissioning means all work required for the abandonment of joint property in accordance with good oil field practice and applicable legal obligations, including, where required, plugging of wells, abandonment, disposal, demolition, removal and/or cleanup of facilities, and any necessary site remediation and restoration'. Association of International Petroleum Negotiators (AIPN) Model Joint Operating Agreement (JOA) 2012, Definitions.

[2] World Bank Multi -Stakeholder Initiative: 'Towards Sustainable Decommissioning and Closure of Oil Fields and Mines, A Toolkit to Ass -ist Government Agencies' (March 2010) <http://documents.world ba -nk. org/curated/en/417371468149083097/Towards-sustainabledeco- -mmissioning-andclosure-of-oil-fields-and-mines-a-toolkit-to-assist government-agencies> accessed 31st August 2020. See also Juliet Komugisa and Ngozi Chinwa Ole, 'Ugandan Legal Framework on Deco-

decommissioning is the restoration of a site to its original condition before oil related activities,[3] through the removal of infrastructure used during operations, in accordance with existing standards.[4] However, total removal is not always possible. There are instances whereby the most efficient and practical option is to leave the disused infrastructure partly or fully in place.[5] It is crucial that obligations (such as accidents, maintenance, insurance, environmental impacts[6] etc.) arising from the infrastructure left in place are clearly defined. These obligations are referred to as residual liabilities.[7]

This article seeks to address some of the issues that accompany residual liability, such as whether the decommissioning framework in Brazil, Nigeria, Trinidad & Tobago (hereafter T & T) are adequate to the extent that will guarantee that taxpayers do not bear the cost of decommissioning and the consequences of insolvency on residual liabilities. It analyses and gives recommendations on the position in the mentioned jurisdictions. A common thread between these countries is that they are relevant to oil and gas producers approaching decommissioning activities. This article's analysis is crucial in understanding how these countries can be better prepared to deal with the issues arising in the present economic climate and beyond. Some of the key issues addressed pertain to the allocation of liability post decommissioning, an evaluation of the international

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mmissioning Fund: Is There an Achilles Heel, and Can Lessons from the UK Help?' (2018) 16(2) Oil, Gas and Energy Law Intelligence 3.

3 Michael Davar and Ben Holland, 'Decommissioning Disputes' in Marc Hammerson and Nicholas Antonas (eds), Oil and Gas Decommissioning: Law, Policy and Comparative Practice (2nd edn, Globe Law and Business 2016) 177.

4 Flávia Kaczelnik Altit and Mark Osa Igiehon, 'Decommissioning of up -stream oil and gas facilities 'in Geoffrey Picton-Tuberville (ed), Oil and Gas: A Practical Handbook (Globe Law and Business 2009) 257-258.

5 Ngozi Chinwa Ole and Haman Philip Faga, 'Assessing the Impact of the Brent Spar Incident on the Decommissioning Regime in the North-East Atlantic' (2017) 3(2) Hasanuddin Law Review 141.

6 Tim Martin, 'Decommissioning of International Petroleum Facilities Evolving Standards & Key Issues' (2016) 1, 10 <http://timmartin.ca/ wp-content/uploads/2016/02/Decommissioning-of-Int-Petroleum-Facilities-Martin2004.pdf> accessed 06 August 2020.

7 Pooja Chatterjee, 'What are the Main Risks Facing a Host State when Designing a Regime for Offshore Decommissioning?' (28 January 20 - 11) 1, 4 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=19158-02 accessed 4th August 2020.

framework, as well as the financial exposure of States where there are gaps in the relevant petroleum legislation as it relates to residual liabilities. A pertinent question is who is liable for the disused oil and gas infrastructure left in place. Recommendations will be put forward on these issues using guidance from international best practice in the United Kingdom (UK), United States of America (United States) and Norway, as these are mature oil and gas provinces with robust decommissioning regimes.[8]

The article is divided into three sections. Section 1 provides a brief introduction to decommissioning and obligations arising thereunder. Section 2 is on residual liabilities and is sub-divided into five parts. The first part looks at the nature of residual liabilities; the second explores key international and regional conventions relevant to the issue; the third part considers international best practices on decommissioning and residual liabilities; the fourth part explores current decommissioning practices in the three selected States; the last discussion in this section evaluates how current practices within each States can be affected by the insolvency of any party with decommissioning obligations. Section 3 provides key recommendations on how States should allocate residual liabilities, such that there is always a 'responsible party.' Following this is the concluding section.

2. RESIDUAL LIABILITY

This section addresses the nature of a residual liability. It considers the responsible parties, the extent of the obligations and the implications thereof.

2.1 The Nature of Residual Liability

Residual liability is essentially about who is responsible for bearing any or all associated obligations for infrastructure left in place post-decommissioning. Ayoade defines this as 'accidental obligations occasioned after the decommissioning

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[8] PricewaterhouseCoopers LLP (PwC), 'A Sea Change- the future of The North Sea Oil & Gas '(2016) <https://www.pwc.com/gx/en/industries/assets/pwc-a-sea-change.pdf> accessed 12 November 2020.

and disposal of installations or pipelines."[9] In most jurisdictions, it is usually the case that residual liability lies with the owners, in the form of licensees/contractors, and not the State (although this might not always be the case, especially if the duration of the contract ends and the host government kept the area for another action or potential use). This approach ensures the State and its taxpayers, are not bearing any liabilities post decommissioning. Consequently, the State has a vested interest in ensuring that appropriate measures are put in place in the decommissioning framework to ensure that a responsible party's insolvency does not translate to taxpayers bearing the cost of any future liability from such residues. The adverse economic impacts of the ongoing COVID-19 crisis on licensees cannot be ignored as there is a heightened risk of insolvency.

There are two competing interests where residual liabilities are concerned. The first is the interest of the State and the second, the interest of the licensees/contractors.[10] The licensees would generally not want to bear residual liability in perpetuity since the disused infrastructure is not yielding any financial benefit.[11] Conversely, the State typically would not want to be saddled with the liability of private actors. The approach to balancing the competing interests differs between States. For example, in the UK, the owner of an installation/pipeline, or the entities covered on section 29 (which is fairly extensive and broad), retains residual liability in perpetuity.[12] In contrast, the Norwegian position allows the

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[9] Morakinyo Adedayo Ayoade, Disused Offshore Installations and Pipelines: Towards Sustainable Decommissioning (Kluwer Law International, The Hague, 2002) 121.

[10] Ngozi Chinwa Ole and others, 'Decommissioning Oil and Gas Installations: The Challenge of Residual Liability' in Eduardo G Peirera and others (eds) The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry (Wolters Kluwer 2020) 151, 155.

[11] A. G. Kemp and L. Stephen, 'Economic and Physical Aspects of Deco -mmissioning Offshore Structures 'in D J Gorman and J Nelson (eds), Decommissioning Offshore Structures (Springer 1998) 79, 114; John Paterson, 'Decommissioning of Offshore Oil and Gas Installations 'in Greg Gordon, John Paterson, Emre Usenmez (eds) Oil and Gas Law: Current Practice and Emerging Trends (Dundee University Press 2nd edition 2011) 310.

[12] BEIS, Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines (2011) 17:2, 17.5. Decommissioning of

State to take over residual liabilities in exchange for a lump sum by the licensees. Prior to an examination of the positions in these States, the next section assesses the international framework and standards on residual liability. This discussion is useful in setting the standards for the three selected states (Brazil, Nigeria and T & T).

2.2 International Framework for Residual Liability

The United Nations Convention on the Continental Shelf 1958 ('Geneva Convention') is the first major international effort pertaining to the removal of offshore installations. The key Article is 5(5) which provides that '…Any installations which are abandoned or disused must be entirely removed'.[13] The latter provision 'quickly fell into desuetude owing to the impracticability of total removal' in all circumstances.[14] The Convention has been superseded by the United Nations Convention on the Law of the Sea 1982 (UNCLOS). UNCLOS is the main international law on decommissioning.[15] UNCLOS allows the partial removal of offshore installations, as opposed to total removal, provided generally accepted international standards are considered.[16]

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offshore oil and gas installations in the United Kingdom Continental Shelf is provided for in the Petroleum Act of 1998 (as amended by the Energy Act 2008) (United Kingdom). Additionally, Section 39 of the Petroleum Act empowers the Secretary of State to make regulations on decommissioning. Pursuant to the latter provisions, the DECC Guidance Notes on Decommissioning 2013 was made. See also Patricia Park, International Law and the Environment (CRC Press 2013) 212.

[13] The Geneva Convention on the Continental Shelf 1958, Article 5(5).

[14] Ngozi Chinwa Ole and Haman Philip Faga, Assessing the Impact of the Brent Spar Incident on the Decommissioning Regime in the North-East Atlantic (2017) 3(2) Hansunaddin Law Review 142

[15] Alan Boyle and David Freestone, International Law and Sustainable Development: Past Achievements and the Future 290 (Oxford University Press 2001).

[16] Article 60 (3) of the United Nations Convention on the Law of the Sea 1982 provides that:
'Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, considering any generally accepted international standards established in this regard by the competent international organization. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed'.

These standards are the International Maritime Organisation (IMO) Guidelines, (this is the second framework) which, although non-binding, are generally accepted international standards referred to in UNCLOS.[17] Consequently, this permission for partial removal leads to circumstances where liabilities arise over disused infrastructure. Despite this, UNCLOS contains no provisions on residual liability. One might argue that this omission was intentional, with a view to allowing each State the discretion to legislate on it in its best interests. The IMO Guidelines require the total removal of disused installations by the Coastal States. However, there is scope to deviate from total removal provided circumstances in line with the IMO Guidelines can be shown to apply.[18] The exception from total removal does not apply in all cases.[19] In considering the impact of partial removal and, the associated residual liability, the IMO Guidelines provide that:

> The coastal State should ensure that legal title to installations and structures which have not been entirely removed from the sea-bed is unambiguous and that responsibility for maintenance and the financial ability to assume liability for future damages are clearly established.[20]

This recommendation does not indicate how States should allocate residual liability, it simply points to States securing such allocation of liability in their own legislation or

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[17] David Testa, **'**Dealing with Decommissioning Costs of Offshore Oil and Gas Field Installations: An Appraisal of Existing Regimes **'**(2014) 12(1) Oil, Gas & Energy Law Intelligence (OGEL) 1,7; EBN, 'Netherlands masterplan for decommissioning and re-use' (2016) <https://www. ebn.nl/wp content/uploads/2016/12/EBN-Master plan-for-decommissi oning.pdf> accessed 16th September 2020.

[18] These are listed in Articles 1.1, 3.1, 3.1.3, 3.2, 3.6, 3.11 of the IMO Guidelines.

[19] Guideline 3.7 makes clear that 'Installations or structures which no longer serve the primary purpose for which they were originally designed or installed and are located in approaches to or in straits used for international navigation or routes used for international navigation through archipelagic waters, in customary deep-draught sea lanes, or in, or immediately adjacent to, routing systems, which have been adopted by the Organization should be entirely removed and should not be subject to any exceptions.'

[20] The IMO Guidelines, Article 3.11

regulations. Therefore, it is up to the relevant States to regulate such a critical matter.

Additionally, there are a variety of regional conventions on decommissioning. Those directly relevant to the North Sea are the 1972 Oslo Convention; the 1991 OSCOM guidelines, and, the 1992 OSPAR Convention.[21] In West Africa, the regional Convention to which Nigeria is a party, is the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention 1984).[22] Although the Convention has no specific reference to the decommissioning of offshore installations, Article 6 and 8 do impose a general obligation on Contracting Parties to prevent and control the pollution of the sea bed.[23] Another relevant convention is the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention). The aim of the Convention is 'to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter'.[24]

Overall, the key international frameworks above have very little to say on residual liability. In fact, the most accomplished reference, albeit indirect, is the IMO Guidelines

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[21] The Convention for the Protection of the Marine Environment of the North-East Atlantic 1992 (hereafter OSPAR). From its title, this is a regional convention that affects the UK North Sea. OSPAR Decision 98/3 <https://www.ospar.org/work-areas/oic/installations> accessed 10 June 2020.

[22] 'In 2008, the Contracting Parties agreed to amend the title of the Abidjan Convention and the Protocol to: "Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region and Protocol concerning Cooperation in Combating Pollution in Cases of Emergency.' International Waters Governance, 'Abidjan Convention' <http://www.internationalwaters-governance.com/apps/search?q=abidjan+convention> accessed 03 Ju-ly 2020.

[23] ibid, Tim Martin, 'Decommissioning of International Petroleum Facilities Evolving Standards & Key Issues '(2016) 1, 7 <http://timmartin.ca/wp-content/uploads/2016/02/Decommissioning-of-Int-Petroleum-Facilities-Martin2004.pdf> accessed 06 June 2020.

[24] International Maritime Organization, 'Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972' <http://www.imo.org/en/OurWork/Environment/LCLP/Pages/default.aspx> accessed 18 July 2020.

Article 3.11. This is as far as it goes. Consequently, States looking to international frameworks for guidance on how to approach residual liability will be disappointed. The first hurdle is for States to become a signatory to the relevant frameworks so as to have a common international standard. The second hurdle is how to allocate residual liability in view of the limited guidance. Nonetheless, Article 3.11 of the IMO Guidelines offer a starting point for States: liability must be appropriately assigned from the start, in order to avoid disputes and challenges on costs

2.3 International Best Practices on Decommissioning and Residual Liabilities

The regulation of decommissioning and residual liabilities in the UK, Norway and United States are considered best practices because these countries have mature oil and gas basins with decommissioning experience, as well as a robust legislative framework on decommissioning.[25] The UK and Norway are party to the UNCLOS and OSPAR Conventions.[26] The UK, Norway and United States experience with the regulation of residual liabilities will be considered in order to extrapolate the benchmark for analysing the practices in Trinidad and Tobago, Nigeria, and Brazil.

Oil and gas rights in the UK are granted through a licence. The Petroleum Act 1998 is the relevant legislation concerning this.[27] It is not uncommon for large or complex licenses to be exploited by multiple parties in the form of a joint operating

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[25] Ann Scarborough Bull and Milton S. Love, 'Worldwide Oil and Gas Platform Decommissioning: A Review of Practices and Reefing Options' (2019) 168 Ocean and Coastal Management 274, 275. See also John Paterson, 'Health, Safety and Environmental Regulation on the United Kingdom Continental Shelf in the Aftermath of the Macondo Disaster' (2015-2016) 4 LSU J. Energy L. & Resources 271.

[26] The USA is party to UNCLOS, but it has not ratified it (as at the time of writing). United Nations Treaty Collection, 'United Nations Convention on the Law of the Sea' <https://treaties.un.org/pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&clang=_en> accessed 16 August 2020.

[27] Efe Azaino, 'International Decommissioning Obligations: Are There Lessons Nigeria can Acquire from the UK's Legal and Regulatory Framework?' (2013) 16 CEPML Annual Review 117.

agreement (hereafter JOA).[28] Commercially, decommissioning costs are like any other costs in the JOA, such that each party is typically liable according to its participating interest.[29] However, decommissioning liability vis-à-vis third parties operates under the concept of joint and several liabilities.[30] Under this, any person issued with a section 29 notice under Part IV of the Petroleum Act 1998 to prepare a decommissioning programme could potentially be liable for the entire costs. Parties seek to mitigate this through the provision of security whereby each party contributes towards its share of the estimated costs of decommissioning. An innovation from this is the Decommissioning Security Agreement (hereafter DSA), the aim of which is to ensure that guaranteed funds will be available to cover the costs of decommissioning.[31] The provision of security seeks to ensure that before decommissioning, each licensee has contributed security to cover its share of the estimated costs. Therefore, even if a party becomes insolvent at any time before decommissioning, the remaining parties can draw on its security towards costs.[32]

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[28] Christopher Duval and others, International Petroleum Exploration and Exploitation Agreements: Legal, Economic and Policy Aspects (2nd edn., Barrows Company 2009) 285.

[29] As an example, The AIPN Model JOA 2012, Exhibit E Decommissioning Procedures: Section 4.1 on Trust Fund Cash Calls provides that, '[u]nless unanimously approved otherwise, each Party shall bear the Decommissioning Costs proportionally to its respective Participating Interest'. (emphasis added).

[30] The concept of joint and several liability is made clear in UK Decommissioning guidance notes. See Department of Energy and Climate Change (DECC), 'Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998' (March 2011) 1, 117 <https://www.gov.uk/government/uploads/ system/uploads/attachment_data/file/69754/Guidance_Notes_v6_07.01.2013.pdf> accessed 16th August 2020.

[31] Department of Energy and Climate Change, 'Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998' (March 2011) 1, 117 <https://www.gov.uk/-government/uploads/system/uploads/attachment_data/file/69754/Guidance_Notes_v6_07.01.2013.pdf> accessed 20 March 2017; Scott C Styles, 'Joint Operating Agreements' in Gordon G and others (eds), Oil and Gas Law- Current Practice and Emerging Trends (2nd edn, Dundee University Press 2011) 407.

[32] The DSA protects the security of an insolvent party in a trust until the time to expend decommissioning costs — such funds would not be

Part IV of the Petroleum Act 1998, and the Guidance Notes, provide that the responsible parties for the decommissioning of disused offshore oil and gas installations shall be such parties as those upon whom a section 29 notice can be served.[33] This includes existing licensees, historical licensees, managers of the installation, parties receiving a beneficial interest from the exploration and exploitation of hydrocarbons at the installation and parent companies.[34] Nevertheless, despite this wide range, section 29 notice would typically be issued to the operator of the installation and parties having a beneficial interest (financial or otherwise) in the installation or pipeline.[35] The Petroleum Act does not refer

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available to general creditors of the insolvent party. This protection was included in section 38A of the Petroleum Act 1998, as amended by the Energy Act 2008. <https://www.publications.parliament.uk/pa/ld 200708/ldbills/086/08086.61-67.html> accessed 16 July 2020.

[33] Section 30 of Part IV of the UK Petroleum Act 1998 gives the Secreta-ry of State power to issue the section 29 notice to a wide net of perso-ns- The section 29 notice may be served to a number of people listed under section 30 (1) of the UK Petroleum Act 1998 as:
'(a) the person having the management of the installation or of its main structure.
(b) a person to whom subsection (5) applies in relation to the insta-llation [subsection (5) refers to a person who has the right to exploit or explore mineral resources in any area].
(c) a person outside paragraphs (a) and (b) who is a party to a joint operating agreement or similar agreement relating to rights by virtue of which a person is within paragraph (b).
(d) a person outside paragraphs (a) to (c) who owns any interest in the installation otherwise than as security for a loan;
(e) a company which is outside paragraphs (a) to (d) but is associated with a company within any of those paragraphs.' <http://www.legis-lation.gov.uk/ukpga/1998/17/part/IV> accessed 04 June 2020.

[34] ibid.

[35] Judith Aldersey-Williams, 'Decommissioning security' in Marc Ham-merson and Nicholas Antonas (ed), Oil and Gas Decommissioning: Law, Policy and Comparative Practice (2nd edition, Globe Law and Business 2016) 88. The Department of Energy and Climate Change (DECC) Guidance Notes on Decommissioning Offshore Oil and Gas Installation and Pipelines under the Petroleum Act 1998, version 6 (March 2011) 1, 15 at para 3.23, indicate that beneficial interest means an interest arising from the exploration or exploitation of mineral resources or from recovery of gas from the field for which the installation was either built or maintained. An example of a beneficial interest is a production bonus, this would be received by licensees and joint venturers. <https://www.gov.uk/government uploads/system/uploads/

to residual liability. Yet, according to the Guidance notes of the Department of Energy and Climate Change (hereafter DECC),[36] owners of installation or a section 29 notice holder, at the time of decommissioning, will bear any accompanying residual liability in perpetuity.[37]

The notion of residual liability in perpetuity is a curious one. It will not always be the case that the companies of the licensees remain perpetually in operation, nor that, such owners will remain solvent. Therefore, there may be a gap in the ownership of a structure over a prolonged period, with the State having to bear residual liability. Admittedly, the application of joint and several liability mitigates the State's risk where one or more owners is no longer in operation or becomes insolvent. In such a case, the remaining owners are responsible for residual liability.

Similarly, in Norway, under the Petroleum Act 'If there are more than one party liable according to the first or second paragraph, they shall be jointly and severally liable for financial obligations, unless otherwise decided by the Ministry'.[38] A party assigning its participating interest in the licence will remain secondarily liable to the remaining licensees for the cost of decommissioning if the assignee does not cover the full costs of its share of decommissioning.[39] Petroleum activities in Norway are regulated principally by Act 29 November 1996 No. 72 relating to petroleum activities

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attachment_data/file/69754/Guidance_Notes_v6_07.01.2013.pdf> accessed 08 August 2020.

[36] The DECC was replaced by the Department of Business Energy and Industrial Strategy (BEIS) in July 2016.

[37] Department of Energy and Climate Change (DECC)*, 'Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998' (March 2011) 1, 72 <https://-www.gov.uk/government/uploads/system/uploads/attachment_data/file/69754/Guidance_Notes_v6_07.01.2013.pdf>; Richard Stark, 'Can liability really be perpetual?' <https://www.oedigital.com/news/471730-can-liability-really-be-perpetual> accessed 17 September 2020.

[38] Norwegian Petroleum Directoriate, Act 29 November 1996 No. 72 relating to petroleum activities <https://www.npd.no/en/regulations/acts/act-29-november-1996-no2.-72-relating-to-petroleum-activities/#Section-5-4> Section 5-4 accessed 11 August 2020. See also Erlend B Bakken, Merete Kristensen and Karl Erik Navestad, 'Norway' in Marc Hammerson and Nicholas Antonas (eds), Oil and Gas Decommissioning: Law, Policy and Comparative Practice (2nd edn, Globe Law and Business 2016) 405.

[39] ibid Section 5-3

(Norway Petroleum Act).[40] The law provides that licensees and owners of disused infrastructure have responsibility for the residual liabilities arising from disused oil and gas infrastructures.[41] Similar to the UK practice, the Norway position gives a wide range of options on who will be responsible for residual liabilities that may arise from disused installations. Thus, it thins out the possibilities of taxpayers bearing the liabilities that may arise from such residue. Despite, the common position on joint and several liability between the UK and Norway, the position of the latter on residual liability is more flexible than the former. The Norway Petroleum Act allows for the State to take over such liabilities in return for a lump sum payment. Section 5-4 provides:

> In the event of decisions for abandonment, it may be agreed between the licensees and the owners on one side and the State on the other side that future maintenance, responsibility and liability shall be taken over by the State based on an agreed financial compensation.

The Norwegian approach is commendable for taking the burden of perpetual liabilities off the shoulders of companies while still ensuring, to a practicable extent, that taxpayers do not bear eventual liability for it. The view taken by the Norwegian Oil Industry is that the lump sum is overly burdensome on the industry, particularly in the light of the fact that the calculation of residual liabilities is imprecise and unpredictable.[42] However, these concerns must be balanced against the State's duty to ensure it is not underestimating the potential costs. Admittedly, there will be instances where the actual residual liability is significantly lower than the lump sum. Yet, there will also be cases where the actual costs exceed the lump sum. The State takes the burden and the benefit of either outcome. Similarly, the licensees and owners also take the burden of paying an onerous lump sum, together with the benefit of making a clean break from future liabilities.

Although the United States is fairly unique with private ownership of subsoil rights, it does not differ on offshore areas

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[40] ibid Section 5-4.

[41] ibid.

[42] Morakinyo Adedayo Ayoade, Disused Offshore Installations and Pipelines: Towards Sustainable Decommissioning (n 9) 125.

as the said ownership is vested on the relevant regional government or federal government.[43] The laws that govern decommissioning and residual liabilities in the United States are the Outer Continental Shelf Act (OCSLA) 1969, 30 CFR 250, Subpart Q Decommissioning Activities 2012 and the National Artificial Reefs Plan, 2007.[44] The OCSLA 1969 provides for complete removal as the primary option of decommissioning.[45] The leaseholders are jointly and severally responsible and liable for decommissioning obligations (including in an assignment).[46] However, the United States offers another approach to deal with such matter which is called rig-to-reefs program.[47] The main idea behind such a program is to repurpose the infrastructure from an oil and gas platform into an artificial reef.[48] Certain measures and requirements should be met in order to qualify for the national rig-to-reefs (including safety of navigation as well as a variety of environmental protections).[49] The leaseholders might have to contribute financially towards such process to convert the platform into the artificial program. Once the process is completed, the liability for the residues would be the responsibility of the State. Although such approach is not widely used outside the United States, it provides an efficient and sustainable approach to deal with such complex and costly decommissioning processes.[50]

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[43] Ibiere Jumbo and Ngozi Chinwa Ole, 'A Critical Analysis of the Nigerian Offshore Oil Risk Governance Regime (Post Macondo)' (2019) 3 (3) African Journal of International Energy and Environmental Law 2.

[44] Ngozi Chinwa Ole and others, 'Decommissioning Oil and Gas Installations: The Challenge of Residual Liability' in Eduardo G Peirera and others (eds) The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry (Wolters Kluwer 2020) 161.

[45] Outer Continental Shelf Act (OCSLA) 1969, 30 CFR 250 (US) S 250. 1703. See also Mark J. Kaiser and Allan G. Pulsipher, 'Rigs-to-Reef Programmes in the Gulf of Mexico' (2005) 36 Ocean Development & International Law 119, 12.

[46] ibid.

[47] Keith Hall, "The United States of America" in Eduardo G. Pereira, Alexandra Wawryk, Catherine Banet, Heike Trischmann, Keith Hall, Regulation of Decommissioning, Abandonment and Re-Use Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (Kluwer 2020).

[48] ibid.

[49] ibid.

[50] ibid.

The common theme that runs through the practices in the UK, Norway, and the United States is the extra measures taken to ensure that responsibility for residual liabilities is not borne by taxpayers. This is either by expanding the scope of liabilities beyond the current license or leaseholders or by providing for the transfer of ownership of the residues to the State for value. While these practices are not perfect, they set a fairly good standard on how to ensure as far as practicable that the responsibilities for residual liabilities are catered for. Having considered the positions in the UK, Norway, and the United States, the next section assesses the practices of the three selected countries on residual liabilities.

2.4 Brazilian, Nigerian, Trinidad and Tobago practices on residual liability

Brazil, Nigeria and T & T are asset basins with offshore platforms and subsea equipment reaching end of life. Despite this, these countries have limited decommissioning experience. This section examines the current position on residual liabilities in these countries, evaluating any legislative gaps and providing recommendations for improvement. All three States have ratified UNCLO

3.4.1 Brazil[51]

Brazil ranks at the top ten countries with the largest oil and natural gas reserves in the world.[52] Oil was first discovered in 1930, in the State of Bahia,[53] northeast of Brazil, with most of its current reserves located in offshore fields.[54] Petrobras - a mixed capital company controlled by the Brazilian Government - had the monopoly over the exploration and production activities in Brazil until the Constitutional

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[51] For further information see Gabriela Roque and others, 'Brazil' in Eduardo G. Pereira, Alexandra Wawryk, Catherine Banet, Heike Trischmann, Keith Hall, Regulation of Decommissioning, Abandonment and Re-Use Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (Kluwer 2020).

[52] Aline Souza Magalhaes and others, 'Blessing or Curse: Impact of the Brazilian Pre-Salt Oil Exploration' (2014) 15 Economia 343.

[53] <https://thebrazilbusiness.com/article/oil-industry-in-brazil> accessed 19 July 2020.

[54] Petrobas, 'Oil and Gas Exploration and Production' <https://petrobras.com.br/en/our-activities/performance-areas/oil-and-gas-exploration-and-production/> accessed 19 July 2020.

amendment # 9/1995. Article 177 of the Brazilian Constitution grants the Federal Government the possibility of contracting with private parties over the exploitation of the relevant natural resources under the conditions to be detailed by further legislation. This gave way to the enactment of Federal Law No. 9.478/1997 (the Petroleum Law), which regulates Article 177 of the Brazilian Constitution and created the Brazilian oil and gas regulator, the National Agency of Oil, Natural Gas and Biofuels (hereinafter referred to as ANP).[55] The Petroleum Law of 1997 is the principal law that governed the petroleum industry in Brazil.[56] Under the Petroleum Law, the concession regime was the only form of granting petroleum and natural gas rights. In 1998, the so-called ANP Round Zero ratified, by means of concession contracts, Petrobras' rights over the producing fields and granted a three years period to continue exploration, appraisal and development of areas where either commercial discoveries or exploration investments were made.[57]

However, the Pre-Salt Law No. 12.351/2010 and, the Transfer of Rights Law No. 12.351/2010 were enacted in 2010.[58] The former provides that the exploration and production of reserves located in the pre-salt and strategic areas would be subject to the PSA regime.[59] The latter 12.276/2010 established a mechanism whereby the Brazilian Government directly transferred (without any auction) to Petrobras - the right to produce up to 5 billion barrels of oil and natural gas in a specified prolific area of the pre-salt

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[55] Alex Garcia de Almeida and Jan Erik Vinnem, 'Major Accident Prevention illustrated by Hydrocarbon Leak Case Studies: A Comparison between Brazilian and Norwegian Offshore Functional Petroleum Safe -ty Regulatory Approaches' (2020) 121 Safety Science 652, 653.

[56] The Petroleum Law No.9. 478 1997.

[57] Brazilian Government, 'Brazil Round 1; Principal Terms of Concession Agreements' (1998) <http://rodadas.anp.gov.br/arquivos/Round1/prnttech.pdf> accessed 4th September 2020.

[58] Gabriele Roque and others, 'Brazil' in The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (Kluwer Law 2020) 278.

[59] Deloitte, <https://www2.deloitte.com/br/en/pages/energy-and-resources/upstream-guide/articles/framework.html> accessed 18 August 2020.

province.[60] In exchange, the Brazilian Government increased its participation in the Petrobras' stock capital through the acquisition of debt bonds issued for this purpose by Petrobras.[61] Over the last few years, it was discovered that these areas held far more than the 5 billion barrels in recoverable reserves. Such surplus volumes were offered through the PSA regime in a bid round held in November 2019. Although this bid round resulted in a record of approximately USD 11.6 billion (70 billion Brazilian Reais) in upfront payments of signature bonuses, only the areas of Búzios and Itapu were awarded (with the minimum profit oil share to the Brazilian Government) out of four offered areas. Brazil is a party to UNCLOS, the London Convention of 1972, as well as being a signatory to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989.[62] The country is relatively new to decommissioning, with it becoming a more prominent issue as fields reach maturity. Currently, there are 158 production units installed throughout the coast, of which 42% of these have been in operation for over 25 years and are fast approaching decommissioning.[63] Thus far, the ANP has approved 20 decommissioning projects.[64] Petrobras is especially in a delicate position regarding decommissioning, considering the lifecycle of its mature fields as it previously owned all of the country's production units during the monopoly period, as detailed above.

There are different regulations about this matter, such as ANP Resolutions 43/2007, 41/2015 and 46/2016. The general rule is that all liabilities under the Brazilian granting

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60 Eduardo G Pereira and others, 'The Brazilian Pre-Salt Case: Governmental Interference and Challenges for Potential Joint Ventures' (2017) 35(4) Journal of Energy and Natural Resources 454-456.

61 ibid.

62 Kari Lipschutz, 'Brazil's Maritime Claim: A Threat to UNCLOS?' (2011) 6(1) Yale Journal of International Affairs 2.

63 Gabriele Roque and others, 'Brazil' in The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (Kluwer Law 2020) 278.

64 Offshore Mag, 'Pending regulation expected to have important ramifications for decommissioning oil and gas structures offshore Brazil' (2019) < https://www.offshore-mag.com/regional-reports/article/16763986/pending-regulation-expected-to-have-important-ramifications-for-decommissioning-oil-and-gas-structures-offshore-brazil> accessed 5th September 2020.

instruments, the Petroleum Law and Pre-Salt Law is that the concessionaire(s) or contractor(s) will bear the costs of decommissioning under a joint and several liability basis.

The most recent regulatory update on decommissioning operations are currently regulated by the ANP Resolution # 817/2020.[65] This Resolution contains no express provision on residual liability, which is unsurprising, given that the sector is relatively new to decommissioning. However, on general decommissioning obligations, both the Petroleum Law and the Pre-Salt Law provide that, at the end of the concession contract or production sharing agreement, 'the concessionaire(s) and contractor(s) shall remove the equipment and goods, which are not subject to the reversion to Federal Government, and will be obliged to repair or indemnify damages arising out of its activities, as well as to carry out any environment recovery demanded by the relevant authorities'.[66] The implication of the latter provision is that any disused installations remaining after decommissioning would have reverted back to the Federal Government. A natural incidence of such reversion is that the residual liabilities arising from such disused installations would be borne by the Brazilian government. This stands in contrast to the analysed best practices regimes and their own basic principle where the residual liabilities for disused facilities are clearly defined to be borne principally by the concessionaires/contractors and, secondarily by the State for value pecuniary compensation.

The Petroleum Law 1997 provides that:

> The return of areas, as well as the reversion of facilities, will not imply any expenses whatsoever for the Federal Government or for the ANP, nor do

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[65] This resolution unifies the ANP Resolutions 27 and 28 of 2006 and Resolution 25 of 2014. The resolution also provides for the return of deactivated areas to the ANP, as well as covering the sale and reversal of assets. This was published on 27 April 2020. <http://www.in.gov.br/web/dou/-/resolucao-n-817-de-24-de-abril-de-2020-254001378> accessed 12 June 2020; Clyde & Co, 'Legal Update: New Regulation from the Brazilian National Petroleum Agency (ANP) on Decommissioning' (14 May 2020) <https://www.clydeco.com/blog/ energy/article/legal-update-new-regulation-from-the-brazilian-national-petroleum-agency-an> accessed 12 June 2020.

[66] The Petroleum Law N. 9.478/1997, Article 28, Part 2 and The Pre-Salt Law N. 12.351/2010, Article 32, Part 2.

> they entitle the concessionaire to any indemnity for services, wells, buildings and returned goods, which must become a property of the Federal Government, and will be administered by the ANP, as per item VI of art 43.[67]

A liberal interpretation of this provision may entail the regulator requiring the Concessionaire or Contractor to pay a lump sum to the Federal Government for any perceived future residual liabilities that may arise from the disused installations. Resolution ANP #785/2019 provides that assignors remain jointly and severally liable with assignees for decommissioning obligations and costs.[68] Such resolution further adds that the joint and several liabilities is only applicable to obligations that were either constituted prior to the assignment or after the assignment but related to activities performed before the assignment. The mentioned provisions may imply that liability for such lump sum will be jointly and severally between concessionaires and previous owners i.e. assignors.

However, a more daring interpretation may limit the definition of expenses in the stated provision to exclude residual liabilities. The implication is that the State might be liable for the decommissioning obligations of the returned area without any compensation. By extension, it would also bear the residual liabilities for any of such disused oil and gas installations not completely removed. The use of 'any expenses whatsoever' does lend to the more robust interpretation.

In addition, the wording of the mentioned resolution is not completely clear, this asks the question - should the extent of the obligations as between assignors and assignees only apply to infrastructure that was already in place as at the time of the assignment? There is a reasonable argument that the assignor should only be jointly and several liable with the assignee for facilities and equipment that were in place at the assignment date and consequently a part of the assignment. On the other hand, it could also be argued that all facilities and equipment pre and post assignment are connected to the area subject to the assignment and therefore joint and several liability for decommissioning ought to apply. The Brazilian

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[67] The Petroleum Law N. 9.478/1997, Article 28, Part 1. (emphasis added).

[68] ANP Resolution 785/2019, Art. 8.

oil & gas regulator (i.e. ANP) has yet to give its view on such scenarios, but from a risk mitigation point of view, it would favour the latter approach where joint and several liability extends post assignment. Such that, in the event that the assignee is unable to perform decommissioning obligations, the assignor can be clawed back to fulfil such obligations. Ultimately, the decision would be down to the facts of each case. Guidance from the ANP on these areas would be welcome— albeit that may not come until it is necessitated by a relevant future occurrence.

Overall, Brazil's decommissioning framework is on a good start and evolved over the years (including with further regulations and contractual obligations). However, as discussed above, there are gaps, which should be filled in order to minimize the possibilities of taxpayers shouldering the residual liabilities for such disused oil and gas installations.

2.4.2 Nigeria[69]

Nigeria is the largest oil producer and has the largest natural

gas reserves in Africa.[70] It remains one of the world economies heavily reliant on revenue from the petroleum sector,[71] with its non–oil revenue contributing only 9.50% towards its GDP.[72] The first discovery of oil in Nigeria dates back to 1956 in Oloibiri (a remote village) in the Niger Delta.[73] Nigeria has

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[69] Taiwo Afonja and others, 'Nigeria' in Eduardo G. Pereira, Alexandra Wawryk, Catherine Banet, Heike Trischmann, Keith Hall, Regulation of Decommissioning, Abandonment and Re-Use Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (Kluwer 2020).

[70] US Energy Information Administration (eia), 'Country Analysis Executive Summary: Nigeria' (25 June 2020) https://www.eia.gov/international/analysis/country/NGA> accessed 19 August 2020.

[71] Rosamund Hutt, 'Which economies are most reliant on oil? '(World Economic Forum, 10 May 2016) <https://www.weforum.org/agenda/2016/05/which-economies-are-most-reliant-on-oil/> accessed 19 August 2020; Ruth Olurounbi, 'Nigeria's dependence on oil revenue underlined by coronavirus' (7 February 2020) <www.theafricareport.com/23079/nigeria-dependen-ce-on-oil-revenue-underlined-by-coronavirus/> accessed 19 August 2020.

[72] US Energy Information Administration (eia), 'Country Analysis Executive Summary: Nigeria' (25 June 2020) https://www.eia.gov/international/analysis/country/NGA> accessed 19 August 2020.

[73] Nigerian National Petroleum Corporation, 'History of the Nigerian Petroleum Industry' <https://nnpcgroup.com/NNPC-Business/Busin

over 175 installations with increasing prospects for more installations given newer discoveries.[74] Decommissioning of offshore installations has not commenced in Nigeria.[75]

The 1969 Petroleum Act is the primary legislation governing decommissioning, with the production sharing contract (hereafter PSC) being a common method of granting petroleum rights.[76] The Petroleum Act does not have a specific provision on decommissioning. However, section 9 grants powers to the petroleum Minister to make regulations pertaining to the prevention of pollution in the waters and the environment.[77] Although, a variety of legislation includes provisions that are relevant for decommissioning,[78] the most important legal instrument in the decommissioning of offshore installations in Nigeria is the Environmental Guidelines and Standards for the Petroleum Industry 1991(hereafter EGASPIN). Nigeria has ratified UNCLOS, the London Convention 1972 and the Abidjan Convention 1984.[79] The 2002 revision of EGASPIN is based on IMO

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ess-Information/Pages/Industry-History.aspx> accessed 19 August 2020.

74 Efe U Azaino, 'International Decommissioning Obligations: Are there Lessons Nigeria can acquire from the UK's Legal and Regulatory Framework? '(2013) 16 CEPML Annual Review 1, 4.

75 Taiwo Afonja and others, 'Nigeria' in The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (n 70) 524.

76 Ngozi Chinwa Ole, 'The Financial Securities for Decommissioning of Offshore Installations in Nigeria: A Review of The Legal and Contractual Regime' (2017) 15(1) Oil, Gas and Energy Law Intelligence 10-12.

77 Dickson Ebikabowei Omukoro, 'Decommissioning of Offshore Energy Installations: What Lessons Can Nigeria Learn from the United Kingdom? (2018) 16(2) Oil, Gas and Energy Law Intelligence 1,7. The Petroleum Act is fairly old; the new bill is yet to be approved.

78 Examples include Gas Pipelines Regulations 1995 (OGP Regulations) made pursuant to the Oil Pipelines Act, the Harmful Waste Act, and the Environmental Impact Assessment Act 1992. For a discussion, see Taiwo Afonja and others, 'Nigeria' in The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Indus-try: From Obligation to Opportunities (Kluwer Law 2020) 530-532.

79 Ngozi Chinwa Ole and Dickson Omukoro, 'Decommissioning of Off -shore Oil and Gas Installations in Nigeria: An Analysis of Current and Emerging Governance Practice 'in Ogwezzy Michael C and other -s (eds), Laws on Oil and Gas Law Exploration in Nigeria: Essays in Honour of Austin Avuru (Princeton Publishers 2020) 509.

guidelines.[80] It has further been revised in 2018 Part VIII-H.[81] Section 2 of EGASPIN provides specific guidelines for decommissioning offshore facilities, as well as in inland and nearshore areas.[82] It provides that from January 2nd, 2003, no oil and gas installations should be placed in Nigerian marine areas unless its design was such as to allow for complete removal.[83] Thus, for installations that will fall into the mentioned category, the issue of residual liabilities might not arise given that complete removal should be the natural option. On the other hand, for installations that were placed before January 2nd, 2003, it recommends complete removal to the extent that they are 'in less than 100 meters (depth) of water and weighing less than 4000 tonnes in air'.[84] For every other installation that do not fit in the latter category, the State can acquire such installations after the expiration of the license or PSCs.[85] The legal framework for decommissioning is silent on who would bear the residual liabilities for such abandoned disused installations.

From a contractual point, exploration and production contracts also include decommissioning obligations.[86] At the initial point of the oil industry, the federal government had compulsorily acquired up to 55% of the equity interests in oil and gas companies in Nigeria by means of joint venture agreements.[87] The state oil company, Nigerian National Petroleum Corporation (NNPC) was saddled with the

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[80] Dickson Ebikabowei Omukoro, 'Decommissioning of Offshore Energy Installations: What Lessons Can Nigeria Learn from the United Kingdom? (2018) 16(2) Oil, Gas and Energy Law Intelligence 1,7

[81] Damilola Olawuyi and Zibima Tubodenyefa, 'Review of the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria' (2018) <www.iucn.org/sites/dev/files/content/documents/20 19/ review _of_the_environmental_guidelines_and_standards_for_the_petroleum _industry_in_nigeria.pdf> accessed 15th September 2020.

[82] Taiwo Afonja and others, 'Nigeria' in The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Indus-try: From Obligation to Opportunities (Kluwer Law 2020) 530.

[83] Environmental Guidelines and Standards for the Petroleum Industry of Nigeria 2002, Art 2.1.

[84] ibid.

[85] Ngozi Chinwa Ole, 'The Financial Securities for Decommissioning of Offshore Installations in Nigeria: A Review of The Legal and Contractual Regime' (2017) 15(1) Oil, Gas and Energy Law Intelligence 12.

[86] ibid.

[87] World Bank, The Management of Oil and Gas in Federal States (Wor -ld Bank 2010) 3.

responsibility of managing the government equity interests in such oil and gas industries.[88] However, the NNPC was quite often defaulting in fulfilling its own financial obligations under the joint ventures, such as cash calls.[89] Thus, there was a natural migration to PSCs, which takes away the financial burden of oil exploration and production from the government.[90]

The PSC is now the dominant form through which the State grants petroleum rights.[91] There is a 1993, 2000, and 2005 Model PSC. The oldest Model PSC does not unsurprisingly include decommissioning obligations. However, both 2002 and 2005 versions of the Model PSC incorporate decommissioning obligations. The Contractor is responsible for decommissioning and, is required to provide decommissioning security— to ensure there are funds available to cover the costs of decommissioning.[92] This security could be in the form of a bank guarantee, letter of credit, or in the form of establishing a decommissioning fund, which would be held in an escrow account.[93] On the issue of assignment of interests, the assignor only remains liable for its decommissioning obligations that accrued before the transfer, whilst the assignee's liability for decommissioning only applies to obligations that accrue from the transfer and not obligations preceding it.[94]

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88 The Nigerian National Petroleum Corporation Act 1977, s 5(1). This is now the Nigerian National Petroleum Corporation Act, Laws of the Federation 2004.

89 A A Akinrele, 'The Nigerian National Petroleum Company at a Crossroads: an Analysis of the Challenges of Funding, Commercialization and Autonomy' (2003)1(3) OGEL 3.

90 Ngozi Chinwa Ole, 'The Financial Securities for Decommissioning of Offshore Installations in Nigeria: A Review of The Legal and Contra--ctual Regime' (2017) 15(1) Oil, Gas and Energy Law Intelligence 2-4.

91 Simon Warikiyei Amaduobogha, 'The Legal Regime for Petroleum Ac -tivities in Nigeria' in Tina Hunter (eds), Regulation of the Upstream in Petroleum Sector: A Comparative Study of Licensing and Conce-ssion Systems (Cambridge University Law Press 2015) 185.

92 Ayoade Morakinyo Adedayo, 'Environmental Risk and Decommi-ssioning of offshore oil platforms in Nigeria' 1 Journal on Environmental Law (2011) 1, 16.

93 Clause 12.7, Nigeria Model PSC 2000 and 2005.

94 Taiwo Afonja and others, 'Nigeria' in The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (Kluwer Law 2020) 534.

However, the PSC is silent on residual liabilities, but it is implied that the government through NNPC will bear liabilities arising from such abandoned installations. None of the 1993, 2000, or 2005 Model PSCs provide for who has the responsibility for future liabilities that may arise from abandoned oil and gas installations. The Model PSCs provide that the ownership of abandoned oil and gas installations shall be vested on NNPC.[95] The implication is that NNPC will remain the owner of such residue and as such, will be liable for any future liabilities arising from it.[96] As such, it can be sued for any future liabilities that will arise from such abandoned installations.[97]

The issue of limited existence may affect the possibility of NNPC assuming the responsibilities for any liabilities arising from such disused installations. The point has been made that corporate bodies do not have perpetual existence. As such, abandoned disused installations may outlive them. The NNPC is a corporate body having the capacity to sue and be sued.[98] Thus, it is imminent that it will not be available forever to assume the responsibilities for such residues. For instance, before 1977, the Nigerian National Oil Corporation (NNOC) was the state oil company.[99] NNOC was dissolved by the NNPC Act of 1977.[100] Thus, NNPC will one day cease to exist while such abandoned oil and gas installations will still be there. The fact that NNPC is owned by the government may mean that they will ultimately assume responsibilities for such residues when the former ceases to exist.

All in all, the decommissioning framework in Nigeria needs improvement, although some credit must be given for its evolution over the years especially the complete removal rule. A major issue is the absence of clarity on who would bear in perpetuity the residual liabilities of such disused

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95 Nigeria Model PSC 2000 and 2005, 12.4-12.5.

96 Tim Martin, 'Decommissioning of International Petroleum Facilities: Evolving Standards and Key Issues' (2003)5 OGEL 10.

97 The Nigerian National Petroleum Corporation Act, Laws of the Federation 2004, s.1 (1).

98 ibid.

99 Etikerentse Godfrey, Nigerian Petroleum Law (Dredew Publishers La -gos, 2004)13-24.

100 Toyin Folala and Matthew Heaton, A History of Nigeria (Cambridge University Press 2008)185.

installations. Thus, there is the risk that it will ultimately be borne by the government.

2.4.3 Trinidad and Tobago[101]

Trinidad and Tobago (T & T) is the largest oil and gas producer in the Caribbean.[102] Its first discovery of oil was in 1867[103] - from there it has come a long way in its exploration and production activities. At the time of writing, its cumulative production totalled over 3 billion barrels of oil.[104] The energy sector plays a significant role in the long-term economic growth of the country, with around 34.9% of the country's GDP coming from this sector.[105] As with Nigeria, the decommissioning of offshore facilities has not commenced in T & T.[106]

Oil and gas activities are governed principally by the Petroleum Act 1969 and the Petroleum Regulations.[107] The government regulates the grant of upstream concessions through PSCs; E&P Public Petroleum Rights Licences; E&P Private Petroleum Rights Licences; and Exploration

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[101] For further information: Alicia Elias-Roberts, 'Trinidad and Tobago and Guyana' in Eduardo G. Pereira, Alexandra Wawryk, Catherine Banet, Heike Trischmann, Keith Hall, Regulation of Decommi-ssioning, Abandonment and Re-Use Initiatives in the Oil and Gas In-dustry: From Obligation to Opportunities (Kluwer 2020).

[102] Preeya Mohan and others, 'Extractive Industries as a Platform for the Creation of Knowledge Intensive industries: Trinidad and Tobago's Oil and Gas Service Providers' (2016) <https://www.researchgate.net /publication/333644442_Extractive_Industries_as_a_Platform_for_the_ Creation_of_Knowledge_Intensive_industries_Trinidad_and_Tobago %27s_Oil_and_Gas_Service_Providers> accessed 12th September 2020.

[103] MOEEI, A Draft Energy Policy for Trinidad and Tobago: A Green Paper(1998).

[104] Ministry of Energy and Energy Industries, 'Oil and Gas industry' <https://www.energy.gov.tt/our-business/oil-and-gas-industry/> aces-sed 19 July 2020.

[105] ibid.

[106] Alicia Elias-Roberts, 'Trinidad and Tobago and Guyana' in The Regu-lation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (n 106) 370.

[107] The Oil and Gas Law Review, 'Trinidad and Tobago' (Edition 7, Octo-ber 2019) <https://thelawreviews .co.uk /edition/the-oil-and-gas-law-review-edition-7/1210124/trinidad-and-tobago> accessed 07 June 2020.

Licences.[108] The position of the Act is that at the expiration of licenses, the licensee shall deliver to the Minister of Energy and Energy Industries all assets used in production '…in good order, repair and condition, and fit for further utilisation (fair wear and tear excepted)…'.[109] However, the Act is silent on who will bear the residual liabilities for such abandoned installations whose ownership has already been transferred to the government. The incidence of 'ownership of such disused installations' implies that the government, by extension taxpayers would shoulder responsibility for the residual liabilities arising from such abandoned disused installations. It is essential that these provisions are reviewed, with the State either deciding to bear residual liability in exchange for a lump sum by licensees (Norwegian position), or that the burden of residual liability is allocated to the licensees who should have some form of financial guarantee in the event of its non-existence.

Section 6(3) of the Petroleum Act provides that the Minister shall have the power to enter into petroleum operations upon such terms and conditions as the government will approve. Over time, the latter provisions have given rise to some model PSCs. The first Model PSC in 1974 did not provide for decommissioning. However, the Model PSC 2012 includes decommissioning provisions, one of which is that the Contractor must carry out a decommissioning programme to the satisfaction of the Minister for installations and pipelines.[110] The Contractor is expected to set up a fund accessible to the Minister, which will cover the costs of decommissioning and environmental pollution.

Concerning installations abandoned, the 2012 PSC provides that the ownership shall pass to the Minister except in cases where the latter notifies the Contractor that 'he does not accept the particular asset'.[111] It further adds that 'where the ownership of any assets passes to the Minister, from the date of such transfer *Contractor shall have no further rights in and shall be released from all responsibility and liability for*

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[108] Alicia Elias-Roberts, 'Trinidad and Tobago and Guyana' in The Regulation of Decommissioning, Abandonment and Reuse Initiatives in the Oil and Gas Industry: From Obligation to Opportunities (n 106) 373.

[109] The Petroleum Act 1969, Art. 16(a).

[110] Model Production Sharing Contract Trinidad and Tobago (2012), Article 37.1 on Abandonment Programme, Budget and Escrow Account.

[111] ibid, Article 24.1.

the asset unless it can be proven that liability arises from a defect that existed at the date of the passing of such ownership'.[112] Given that residual liabilities arise after decommissioning, it would appear that the Contractor will be excused from it. Thus, the government would have to bear eventual liability for such residues.

The Model PSC is silent on what will happen if the Minister refuses the ownership of such disused installations as provided for.[113] It can be implied that the ownership of the installations will remain with the contractor who will be responsible for any residual liabilities arising from such disused installations. It has already been pointed out that in comparison to the State, companies have very limited existence. In the event that the companies (contractor) cease to exist or becomes insolvent, the government may have to shoulder the residual liabilities of such disused installations.

The 2012 Model PSC provides that 'no assignment shall in any way absolve the assignor from the obligations undertaken by it under the contract except to the extent that such obligations are in fact performed by the assignee'.[114] The same is contained in the Petroleum Regulations, Regulation 29(3).[115] Therefore, the assignor can be required to carry out decommissioning obligations should its assignee fail to or be unable to. In reality, at the time of the transfer, the assignee may well be in a position to discharge its decommissioning obligations, but the reverse may be the case at the actual time of decommissioning. The oil and gas industry is particularly volatile and given to extreme changes; as such, an oil and gas major may end up insolvent within twenty years. This is the same position in the UK where the Secretary of State through the BEIS can call back a former licensee to complete decommissioning obligations under section 29. In a bid to mitigate the financial risks of decommissioning, parties to the licensee and or JOA often enter into field-wide DSAs.

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[112] ibid.

[113] ibid, Article 24.1.

[114] Model Production Sharing Contract Trinidad and Tobago (2012), Article 31(3).

[115] 'The assignment or transfer of a licensee shall not in any way absolve the assignor or transferor from the obligations undertaken by him under this licence except to the extent to which such obligations are in fact performed by the assignee or transferee.'

With respect to residual liabilities, the assignor may still be held responsible for the residues of disused installations. The point has been made that the 2012 Model PSC provides that no assignment shall absolve the assignor from obligations undertaken by it under the PSC unless such obligations have been performed by the assignee. As reiterated, the contractor may be responsible for the residual liabilities arising from such disused installations in instances where the Minister refuses to take ownership. The position on assignment may mean that the assignor of the facilities may bear the liabilities for such residues. The mentioned will be the case if the assignee is insolvent or has ceased to exist. If the latter is the case, there is a reduced probability that both assignee and assignor would be insolvent at the same time. Regardless, it is not expressly stated even though it may be implied. Again, the provision on assignment is not a panacea to residual liability falling back on the State in the event of the inevitable cessation or insolvency of the contractor companies or assignee.

Based on the discussion above, it is clear that T&T's decommissioning framework takes account of some of key issues involving decommissioning activities. It includes an abandonment programme as well as the setting up of a decommissioning fund. However, the provisions relating to residual liabilities are defective in several perspectives. The government and by extension taxpayers would have to shoulder the residual liabilities of disused installations emanating from the activities of private entities who are licensees and contractors. Even in cases where such contractors may be responsible for residual liabilities, they would come a time where such liability would shift to the government in event of the cessation of affected companies. Going forward, T & T can enhance its decommissioning framework by clarifying the residual liability issue and the re-use of abandoned infrastructure should be considered in its framework.

2.4.4 How can insolvency affect such a procedure?

The volatility of crude oil prices combined with ongoing COVID-19 pandemic is likely to lead to insolvency on the part of some oil and gas companies as we have seen (between January- June 2020) with the cases of Sable Permian

Resources,[116] Templar Energy,[117] Chesapeake Energy,[118] Yuma Energy,[119] Lilis Energy Inc and much more, according to a recent report by Haynes and Boone.[120] Prior to the onset of the pandemic, the oil price averaged around $60 per barrel in November 2019.[121] The unexpected and destabilising impact of the pandemic saw the oil price fall into negative dollar values per barrel in April 2020.[122] The current normal for oil prices are an average of $20 to $40 per barrel.[123] It is fair to say that COVID-19 might change the oil market for an indefinite time. The crisis will have varying, but no doubt severe financial impacts on oil and gas companies globally. Although the market is showing signs of improvement, only time will tell the extent of the economic devastation on oil and gas companies. Consequently, long before insolvencies begin, States need to evaluate their legislative and regulatory framework on decommissioning and the allocation of residual liability.

This raises the question; how can insolvency affect the relevant procedures pertaining to residual liability? In the UK,

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[116] Reuters, 'Resources Bankruptcy' <https://www.reuters.com/article/sable-permian-resources-bankruptcy/n sable-permian- resources-files-for-bankruptcy-idUSL4N2E31TQ> accessed 15 August 2020.

[117] Templars, 'Energy: Bankruptcy leaves Bank Lenders Deep Under-water <https://www. wsj.com/articles/templar-energy-bankruptcy-lea-ves-bank-lenders-deep-underwater-11591049193> accessed 15 August 2020.

[118] Haynesboone, 'Haynes and Boone, LLP Oil Patch Bankruptcy Monitor' (30 June 30, 2020) <https://www.haynesboone.com//media/Files/Energy_Bankruptcy_Reports/Oil_Patch_Bankruptcy_Monitor>accessed 15 August 2020.

[119] ibid.

[120] ibid.

[121] Statistics, 'Weekly Crude Oil Prices' <www.statista.com/statistics/326017/weekly-crude-oil-prices/> accessed 12 June 2020.

[122] See Guardian, 'Oil Prices Sink to 20 Year Low as UN Sounds Alarm onto COVID 19 Relief Fund' <https://www.theguardian.com/world/2020/apr/20/oil-prices-sink-to-20-year-low-as-un-sounds-alarm-on-to-covid-19-relief-fund> accessed 17th September 2020; Bruegel, 'COVID-19- is causing the Collapse of Oil Markets when will they recover' <https://www.bruegel.org/2020/04/covid-19-is-causing-the-collapse-of-oil-markets-when-will-they-recover/> accessed 17 September 2020.

[123] Irina Slav, 'How COVID-19 Will Change Oil Markets Forever' (28 April 2020) <https://oilpric e.com/Energy/Energy-General/How-COVID-19-Will-Change-Oil-Markets-Forever.html>accessed 13 Sep-tember 2020.

liability for costs will pass to the other joint venturers if one party becomes insolvent (including historical license holders). The same principle will apply post decommissioning. In Norway, any insolvency on the part of the licensees and owners is not relevant for the purposes of residual liability where the State has residual liability (in exchange for a lump sum). However, in both the UK and Norway, any remaining solvent owners/licensees might be responsible for covering the shortfall of the insolvent party as it pertains to residual liability. If there are no solvent owners, the responsibility will fall to the State even though the UK system allows a far more reaching historical liability.

In Brazil, the assignor is only privately absolved before the assignee (not before the governmental authorities or third parties) from decommissioning liabilities if the assignee agrees with it in the farm-out agreement (FOA) or share and purchase agreement (SPA). The joint and several liability on decommissioning obligations and costs before the governmental authorities will remain regardless of the existence of any provisions in the private contract for the sale of the assignor participating interest in a certain asset exempting the assignor for such liabilities and costs. Therefore, any insolvency on the part of the assignee would simply claw back the assignor, provided it is still solvent. As previously discussed, guidance from the government or regulator is needed as to the extent of the assignor's liability for decommissioning. Nigeria demarcates the extent of liabilities between assignee and assignor from the date of transfer; as such, an assignee insolvency will not necessarily impact the assignor, unless it pertains to decommissioning obligations that accrued before the transfer. This may prove more difficult to distinguish in practice.

An attempt by the State to fully insulate itself from residual liabilities for decommissioning may not always be practical, given that it is the only entity in the transaction that has a sufficient degree of permanence. Therefore, it may be more realistic to limit licensees/contractors' residual liability to a period of time and then charge a lump sum or actual cost as occurs.

3. CONCLUSION

States should be cognisant of the fact that there is no risk-free alternative where residual liabilities are concerned, but the considerations raised invite States to re-examine their financial exposure and consequently that of taxpayers. The ability of each State to respond to the issues identified will have a significant effect at the time of decommissioning or long after decommissioning activities.

In examining the decommissioning framework of the selected States and the implications for residual liability, this paper identified the allocation of responsibility between the State and the contractors/licensees. It evaluated whether such allocation could saddle the State with the costs for residual liabilities arising over disused infrastructure. Also, the discussion considered the position of the State where there was an assignment of interest and the assignee is unable to fulfil its obligations for decommissioning, as well as residual liabilities. For instance, the article identified that the position in Brazil is unclear on whether the obligations of the assignor only apply to installations in place as at the time of assignment. It was however suggested that from a risk mitigation perspective for the State, the preferred approach is for the assignor's decommissioning obligation to apply pre and post assignment so that it remains jointly liable with the assignee. Similarly, in Nigeria, the assignor is only liable for obligations arising up until the time of assignment. This exposes the State to financial risk where the assignee is unable to fulfil its decommissioning obligations.

The recommendations proffered address the weaknesses identified in the relevant provisions of each State. One of such proposals is the use of provisions which make responsible parties liable for residual liability in perpetuity. The application of residual liability in perpetuity has its appeal. However, in reality, there is a probability that the responsible parties are insolvent before or indeed post decommissioning. Therefore, it may be more practical to have residual liability apply for a specific period (let´s say 40 years as suggested in the recommendation section) and then any resulting residual liability is borne by the State—who remains permanent—in exchange for a lump sum or on the basis of the actual costs plus interest. Another recommendation is on the use of financial assurances.

Lastly, all three States should also consider the re-use, repurposing and recycle of infrastructure in their decommissioning regulation, as there are environmental and financial benefits to this.

4. KEY RECOMMENDATIONS FOR ENSURING RESPONSIBILITY FOR RESIDUAL LIABILITIES

Decommissioning is a challenging period as there is no more oil and gas to be produced. However, the relevant stakeholders face a significant amount of work, costs and risks to complete the required decommissioning project. This is why it is essential to put in place enough collaterals and guarantees in order to secure enough funds to cover the relevant costs to implement the said decommissioning.

In any case, if any infrastructure is partially or totally left in situ (to the extent it is allowed and consistent with the applicable laws), then the residual liability becomes a key concern for the stakeholders. Who is going to be liable for such infrastructure, and what kind of guarantees are put in place to secure the environment and taxpayers? A number of recommendations are proposed, in view of the weaknesses identified in the decommissioning framework of the three selected States and using guidance from international best practices.

One way through which the UK and Norway mitigate financial risks for residual liability is through the application of joint and several liability of licensees/joint venturers.[124] Although in Norway, this issue is not relevant where the contractors make a lump sum payment to the State, in return for a clean break from residual liabilities. The benefit of joint liability is that in the event of an insolvency, the solvent responsible parties would be required to cover the costs of residual liabilities.

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[124] See Department of Energy and Climate Change (DECC), 'Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998' (March 2011) 1, 117 <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69754/Guidance_Notes_v6_07.01.2013.pdf> accessed 16th August 2020. Norwegian Petroleum Directoriate, Act 29 November 1996 No. 72 relating to petroleum activities <https://www.npd.no/en/regulations/acts/act-29-november-1996-no2.-72-relating-to-petroleum-activities/#Section-5-4> Section 5-4 accessed 11 Au-gust 2020.

In the case of Brazil, Nigeria and T & T, where there is no legislation that clearly stipulates how residual liability applies, the burden for costs should be addressed so that it does not fall on the State, through its taxpayers. However, where the licensees/contractors have residual liability, the key is to have relevant decommissioning provisions which make clear that joint and several liability applies even after abandonment. The writers suggest a provision along the following lines:

> The responsible parties for decommissioning are such parties as have had the rights to explore and produce from the licence/contract area. For the avoidance of doubt, these are the licensees or contractors. Where the contract or licence area has been exploited through a joint venture, the responsible parties include all joint venture parties. In the event that there has been a transfer of interest, the assignor will remain a responsible party where its assignee is unable to fulfil its obligation for decommissioning. Decommissioning liability applies for actual decommissioning activities and any associated liabilities and costs that arise at the end and post decommissioning — decommissioning liability applies in perpetuity.

Industry will be keen to kick against liability in perpetuity. Also, there is an argument that 'perpetual liability' is unrealistic since many corporations are unlikely to exist forever. The State has more permanence than companies. Therefore, a middle ground may be to include a provision which states that 'Decommissioning liability applies for actual decommissioning activities and includes any associated liabilities and costs that arise for up to a certain period (e.g. 40 years) from the date that decommissioning was completed.' Who then is the responsible party after the said period (i.e. 40 year)? One solution is for the provision to mandate that any decommissioning liabilities that arise after this period will be borne by the State in exchange for a lump sum paid by the responsible parties. Another solution is for the State to bear the liabilities after this period, subject to payment by the responsible parties to include agreed interest, for the costs of bearing these liabilities (as at when they arise). Ultimately, the applicable option depends on each State and the challenges before it. As a last attempt to avoid bearing residual liability,

States may also consider whether parent companies of insolvent responsible parties should bear their decommissioning liability.

Further, on the issue of areas and facilities returned to the government, in T & T, the Model PSC 2012 provides that '…Minister shall assume all responsibility for the facilities and their abandonment and hold Contractor harmless against any liability with respect thereto accruing after the date of such transfer to Minister (emphasis added). This is clear that the Contractor is free from decommissioning obligations in relation to such transfer since decommissioning liability accrues after the transfer. However, the Brazilian position is not so clear since Article 28, Part 1 of the Petroleum Law N. 9.478/1997 stipulates that the return of areas '…will not imply any expenses whatsoever for the Federal Government or for the ANP…' (emphasis added) It was earlier argued that a robust interpretation of this provision would mean that the Contractor has decommissioning and residual liability for such returned area. The regulator would likely favour this interpretation so as to avoid liability— time will tell how this will be decided.

Another recommendation is the use of financial assurances for residual liabilities. In view of the economic impacts of COVID-19, insolvency has become an ever-present reality in the oil and gas industry, at least for the foreseeable future. Consequently, states should consider (as well as tighten any existing financial assurances the use of financial assurances in their decommissioning and residual liabilities frameworks. A financial assurance is an instrument that guarantees the availability of sufficient funds to cover the costs of closure works (such as environmental cleanup) where the responsible party (for example, contractor) is unable to perform its financial obligations.[125] This is typically thought

[125] For a discussion see James Boyd, 'Financial Responsibility for Environmental Obligations: Are Bonding and Assurance Rules Fulfilling Their Promise?' (August 2001) Resources for the Future Discussion Paper 01–42 <https://media.rff.org/documents/RFF-DP-01-42.pdf> accessed 14 November 2020; Damilola Olawuyi, Extractives Industry Law in Africa (Springer 2018) 1-25; The World Bank Group, 'Guidance Note for the Implementation of Financial Surety for Mine Closure' (2008) <http://siteresources.worldbank.org/ INTOGMC /Resources/financial_surety_mine.pdf> accessed 14 November 20.

of as security.[126] A financial assurance can assume various forms including letter of credit or guarantee from a bank, insurer or corporate body and, a decommissioning fund. For example, the forms of decommissioning security in the UK include, '[c]ash, irrevocable standby Letters of Credit (LoCs) issued by a Prime Bank, or on demand (performance) bonds from Prime Banks or issued by an Insurer regulated under the Financial Services and Markets Act 2000…'[127] It is useful to note that the Nigerian Model 2002 and 2005 PSCs include decommissioning security, such as form of letters of credit or bank guarantees.[128] T&T's Model PSC 2012 also includes a provision for a decommissioning fund.[129] Brazilian concession and PSCs model forms also provides for similar guarantees and such requirements evolved over the past years.[130] On that note, financial assurance may be provided not just for the cost of decommissioning, but to cover any future liabilities arising from such residues.

Despite the benefits, these forms of financial assurances are also limited in several respects as detailed below. In the case of a letter of credit or guarantee from a corporate body, there is the inherent risk that the corporate body guarantor would go bankrupt or may not be credit worthy at the time of decommissioning or residual liabilities.[131] As Ayoade rightly opines 'future events may erode the creditworthiness of even

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[126] Sosi Biricik, 'The Importance Of Decommissioning Security'2 <https://www.lw.com/thoughtLeadership/iimportance-of-decommiss-ioning- > accessed the 16th November 2020.

[127] Department of Energy and Climate Change, 'Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998' (March 2011) 1, 118 <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69754/Guidance_Notes_v6_07.01.2013.pdf> accessed 13 July

[128] Clause 12.7, Nigeria Model PSC 2000 and 2005.

[129] Model Production Sharing Contract Trinidad and Tobago (2012), Article 37.1 on Abandonment Programme, Budget and Escrow Account.

[130] Alex Garcia de Almeida and Jan Erik Vinnem, 'Major Accident Prevention illustrated by Hydrocarbon Leak Case Studies: A Comparison between Brazilian and Norwegian Offshore Functional Petroleum Safety Regulatory Approaches' (2020) 121 Safety Science 652, 653.

[131] Ngozi Chinwa Ole, 'The Financial Securities for Decommissioning of Offshore Installations in Nigeria: A Review of The Legal and Contractual Regime' (2017) 15(1) Oil, Gas and Energy Law Intelligence 14-15.

oil giants'.[132] The latter argument is applicable to banks and insurance companies because they may be unable to afford the needed funds for decommissioning and residual liabilities.[133] Additionally, corporate bodies, banks and insurance companies have limited existence in comparison to the perpetuity of residual liabilities. Even in the UK where the innovative DSA is used to mitigate the risks of decommissioning, the DSA is only able to guarantee that there will be funds to cover the estimated costs of decommissioning. In reality, the actual costs may be far beyond the estimated costs. Therefore, States are encouraged to use financial assurances as one (not the sole) mains of mitigating their financial exposure for decommissioning and residual liabilities. The other considerations put forward by the paper further assist in limiting the State's financial risk in this regard.

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[132] Morankinyo Adedayo Ayoade, Disused Offshore Installations and Pipelines: Towards Sustainable Decommissioning (2002) Kluwer Law International, The Hague 25

[133] Mark Saunders and Nabarno Nathanson, 'Abandonment Agreements 'in Martyn R David(ed); Upstream Oil and Gas Agreements: With Precedents (Sweet and Maxwell 2012) 235.