



The Journal of Sustainable Development Law and Policy



ISSN: 2467-8406 (Print) 2467-8392 (Online) Journal homepage: <https://www.ajol.info/index.php/jsdlp>

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To cite this article: Barbara Eiroa Leite and Bruno Belchior (2023). New Frontiers for Decommissioning in Brazil. The Journal of Sustainable Development, Law and Policy. Vol. 14:1, 116-137. DOI: [10.4314/jsdlp.v14i1.6s](https://doi.org/10.4314/jsdlp.v14i1.6s)

To link this article: DOI: [10.4314/jsdlp.v14i1.6s](https://doi.org/10.4314/jsdlp.v14i1.6s)



Published online: May 31, 2023.

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NEW FRONTIERS FOR DECOMMISSIONING IN BRAZIL

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Citation:

Barbara Eiroa Leite and Bruno Belchior (2023). New Frontiers for Decommissioning in Brazil. *The Journal of Sustainable Development, Law and Policy*. Vol. 14:1, 117-139.

Received: 15 February, 2023

Final version received:

01 April, 2023

ISSN: 2467-8406 (Print)

2467-8392 (Online)

ABSTRACT

This article explores the challenges and opportunities for decommissioning in Brazil, presenting the relevant regulatory framework. It also highlights the importance of the sustainable development as one of the guiding principles for the Brazilian government, especially to the energy sector. In this sense, the article explores different methods of infrastructure decommissioning, including the most advanced ones, such as the reuse to create wind offshore power projects or artificial reefs. Overall, the article discusses the expectations and forecasts for decommissioning activities in Brazil, and concludes that they have the potential to become a key instrument for the country to preserve the environment.

Keywords: Decommissioning, Regulatory framework, Sustainable development, Energy sector, Environmental preservation.

1. INTRODUCTION

The world production of hydrocarbons, especially petroleum, started to increase exponentially halfway through the 20th century, remaining until this day as the main source of the world energy mix.¹ The oil and gas industry is a traditional segment in Brazil, accounting for most investments made in the country, and with the potential of making Brazil become the 5th largest crude oil exporter by 2030².

The significant oil discoveries made in the 70s in the Campos Basin have allowed the country to develop a sophisticated expertise in offshore operations, resulting in the identification of major opportunities in the Pre-salt area at the end of 2000s³. In contrast with the solid expertise developed in exploration and production activities, Brazil is still in early stages when it comes to decommissioning and abandonment, which also faces an additional challenge: the immense offshore production structures with larger and more extensive deep and ultra-deep subsea systems compared to several exploration areas in the world.

From an international perspective decommissioning activities have been addressed since 1958, when the the first regulations and guides on decommissioning emerged with the Geneva Convention, followed by the London Convention (1972) and the IMO (International Maritime Organization) Guidelines (1989). With the same purpose, there were also the Barcelona Convention

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¹ C. J. Machado and B. M. Teixeira, 'Marco regulatório brasileiro do processo de descomissionamento ambiental da indústria do Petróleo' (2012) 49 (196) *Revista de informação legislativa* 183, 183.

² Empresa de Pesquisa Energética, 'Plano Decenal de Expansão de Energia 2030' (EPE, 2021) <https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-490/PDE%202030_RevisaoPosCP_rv2.pdf> accessed 07 December 2022.

³ L. Braga and H. Pinto, 'The financial aspects of offshore decommissioning and Brazilian regulatory system in the light of the transnational legal order' (2022) 15 (6) *The Journal of World Energy Law & Business* 423, 423.

(1978), the Kuwait Protocol (1979), and the OSPAR Convention (1992)⁴.

However, it was in 1995 when discussions about environmental decommissioning and the environmental impacts associated with the abandonment of oil platforms were brought to the center stage of the international scene due to the case of the attempted sinking of the Brent Spar structure in the North Sea, under the jurisdiction of the United Kingdom. This incident drove oil producing countries, including Brazil, to turn their attention to the subject and issue more specific rules to regulate the decommissioning phase.⁵

Brent Spar was an offshore facility operated by Royal Dutch Shell until 1991, when it was abandoned. Years later (1995), Shell decided to decommission the facility by sinking it and received support from the British government. The company was strongly opposed by Greenpeace, which occupied the platform for three weeks, claiming that there were still about 5 tons of oil stored in it (a number that Greenpeace later recognized as being overestimated)⁶, as well as toxic and radioactive waste. Because of this, in addition to the boycotts of European consumers to the company's products, Shell was forced to change its plans and choose a different alternative for the platform, which was cleaned and reused in other projects⁷.

Until such incident, this vital aspect of the life cycle of a field had not been under the scrutiny of government authorities around the globe for the development of thorough internal policies for the decommissioning of petroleum facilities and structures.

After COP 21 and the signature of the Paris Agreement, environmental matter have become protagonists of the main

⁴ Victor José Bourbon, 'Legal Environmental and Economic Challenges of Decommissioning of Offshore O&G Platforms' (Master of Science in Petroleum Engineering Thesis, University of Aberdeen 2020) 16.

⁵ Machado and Teixeira (n 1) 1, 190-191.

⁶ Otávio Dias, 'Greenpeace aceita erro e se desculpa com Shell' *Folha de São Paulo* (São Paulo, 6 September 1995). <<https://www1.folha.uol.com.br/fsp/1995/9/06/mundo/5.html>> accessed 11 January 2023.

⁷ Bruna Parizotto and others, 'Aspectos Técnicos por Trás das Atividades de Descomissionamento: lições aprendidas do outro lado do atlântico'(2022) 14. *FGV Energia* 1, 51.

discussions within the global investment community, which increased their attention to companies' environmental impacts.⁸ Moreover, the 2030 Agenda of the United Nations ("UN"), concluded in August 2015, signalized towards the urgent need for a sustainable path, based on bold and transformative measures.

In line with global priorities, sustainable development became one of the guiding principles for the Brazilian government actions and policies, including with regards to environmental aspects and the energy sector. The path to sustainable development is correlated with the right to an ecologically balanced environment as a fundamental right in the Brazilian Constitution, as established by article 225, main paragraph.

In addition, the protection of the environment is one of the principles that govern the Brazilian economic order (art. 170, main paragraph, VI). The environmental protection is also one of the guidelines for the national development, as one of the four fundamental objectives of the Federative Republic of Brazil, set out in the Brazilian Constitution (art. 3, II).⁹

Thus, from a legal perspective one can say that the national framework considers the right to an ecologically balanced environment as a fundamental right under the Brazilian Constitution. Moreover, the Magna Carta also expressly requires environmental protection for both present and future generations, which constitutes a commitment to continuously build and develop the country in a manner that preserves the ecosystems and biodiversity.

As a result, starting from the premise that sustainable development is one of the guiding principle of Brazil as a nation, all government actions and policies, which includes oil and gas and energy, must

⁸ Lavinia Hollanda, 'Sustainable investment opportunities in Brazil' (2019) 22 (65) Brazil Business Brief 5, 5.

⁹ The other principles established under the Brazilian Constitution are: (i) the construction of a free, fair and solidary society (art. 3, I); (ii) the reduction of regional and social inequalities (art. 3, III); and (iii) the promotion of a society without prejudice and any form of discrimination.

take into account potential impacts on the environment and society.¹⁰

The article is divided into six sections. The first one, "Brazilian Framework for Decommissioning Activities", presents an overview of the regulatory framework for decommissioning activities in Brazil, including environmental concerns. The second one, "ANP Resolution No. 817/2020" addresses the Technical Regulation for Decommissioning of Exploration and Production Facilities. In addition, the third section, "ANP Resolution No. 854/2021", provides information about the procedures for presentation of financial guarantees to secure the decommissioning of facilities. The fourth and fifth sections, "Decommissioning Opportunities – Dismantle & Recycle" and "Decommissioning Opportunities – Reuse & Redefine", explore different methods of infrastructure decommissioning, including the most advanced ones. Finally, the last section, "Expectations and forecast", discusses the future of decommissioning activities in Brazil, including its potential to unlock investments in the country and the environmental preservation.

2. BRAZILIAN FRAMEWORK FOR DECOMMISSIONING ACTIVITIES.

As a general rule, the regulatory frameworks of host countries typically follows a hierarchy, under which domestic regulations are developed according to international conventions that the country is a signatory¹¹. Although this also happens in Brazil, so that the domestic regulation adapts to the changes in the international scenario, it is important to emphasize that international treaties that do not deal with human rights have the force of ordinary law.

Taking a closer look at the Brazilian legal framework, one will note that the Brazilian Constitution encompasses four essential environmental law principles that contribute to the consolidation of sustainable development, namely: (i) the principle of intergenerational equity; (ii) the principle of equitable access to natural resources; (iii) the precautionary principle; and (iv) the

¹⁰ Machado and Teixeira (n 1) 1, 185.

¹¹ Bourbon (4) 16.

principle of prevention, based on knowledge of known causes and impacts caused. These are the basis for the environmental licensing regulations in the country, such as decommissioning.

Decommissioning is part of the normal life cycle of a field¹² and is, thus, addressed by Brazil's concession and production sharing contracts, which establish that contractors are obliged to carry out the decommissioning activities and present abandonment guarantees to cover the estimated costs. In Brazil, the contractor or consortium are responsible for the decommissioning costs, under a joint and several liability regime before the National Agency of Petroleum, Natural Gas and Biofuels ("ANP") and the Federal Government.

The decommissioning obligations encompassed under the Brazilian concession and production sharing contracts are essentially in line with the requirements most players are already used to.¹³ However, in such contracts do not address in a detailed manner environmental concerns.

Analyzing the subject from a regulatory standpoint, the decommissioning of E&P facilities must comply with specific rules issued by different entities, such as the Brazilian Navy, the ANP and environmental entities. It is important to note that, pursuant to Law No. 9,478/97, the purpose of the ANP is to promote the regulation, contracting and inspection of the economic activities of the oil industry (article 8), and it is responsible for "enforcing good practices of conservation and rational use of oil, natural gas, its derivatives and biofuels and preservation of the environment".

In line with such purpose and motivated by the increasing importance of decommissioning as the number of mature fields grows in Brazil, ANP launched in 2015 the revision and

¹² "According to Hammerson and Antonas (2016), the decommissioning project objectives are to guarantee the safety of people, protect the environment, and uphold company values and reputation. According to these authors, asset owners have a social responsibility to return the restored area and obey the applicable regulation." Luciana Braga, "The Brazilian regulatory systems for unitization and offshore decommissioning: an analysis of the transnational legal order" (Economic Sciences thesis 2021, Grenoble Alpes University) 168.

¹³ Eduardo Pereira, "Brazilian upstream oil and gas: A practical guide to the law and regulation" (Globe Law and Business, 2016).

standardization of the applicable decommissioning legal framework. The first key product of ANP's initiative was the publication of Resolution No. 817/2020, which represented a significant milestone for the national energy industry due to its provisions aimed at establishing a consolidated and modern Technical Regulation for Decommissioning of Exploration and Production Facilities and making ANP's analysis more dynamic.

However, the guidelines encompassed in the resolution do not address the process of dismantling and recycling materials. The Brazilian Society of Naval Engineering ("SOBENA") noticed such lacune and issued a technical opinion with Basic Requirements and Procedures for Including Floating Structures Recycling Shipyards, which was presented to the Ministry of Infrastructure.¹⁴ The technical opinion was developed based on European regulations and its purpose was to contribute with the technical aspects and the necessary requirements to guarantee, to Brazilian shipyards, the certification to operate in dismantling and recycling activities. Although expectations are high, the incipient regulation for dismantling and recycling offshore structures in Brazil remains as the major obstacle to these activities.¹⁵

Later on, ANP published Resolution No. 854/2021, reinforcing its commitment to promote legal certainty and clarity on the obligations and deadlines for the presentation of abandonment guarantees, which have become a key aspect in oil and gas M&A transactions in recent years.¹⁶ Resolution No. 854/2021 also expressly stated the acceptance of other types of abandonment guarantees and their specific requirements.

3. ANP RESOLUTION No. 817/2020.

ANP Resolution No. 817/2020 was published on April 24, 2020, as the result of a public consultation that gathered over 300 contributions, and modernized the legal framework for

¹⁴ R. Carreteiro, 'Descom Week Day 1' (Sobena, 4 August 2020) <<https://www.youtube.com/watch?v=31AXd2A3JA4&t=492s>> accessed 11 February 2023.

¹⁵ Parizotto and others (n 7) 42.

¹⁶ M. Hamerson; J. C. Lamaster, *Oil and Gas M&A: A Practical Handbook* (Globe Law and Business 2014).

decommissioning in Brazil by establishing the Technical Regulation for Decommissioning of Exploration and Production Facilities.

This resolution also regulated the decommissioning in the assignment of contracts, the disposal and reversal of assets, compliance of remaining obligations in the exploration phase and relinquishment of areas in the production phase.

The diploma also establishes as mandatory the development and implementation of a social responsibility and sustainability management system that adheres to the 17 Sustainable Development Goals of the UN, the so-called 2030 Agenda. points out that the best decommissioning decision-making comes from a multicriteria analysis, where in addition to operational and economic aspects, social and environmental issues must also be considered.¹⁷

Resolution No. 817/2020 was the result of a joint effort of ANP, the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA) and the Brazilian Navy. The purpose was to include in a single instrument the provisions for decommissioning facilities, promoting legal certainty, regulatory simplification and a more efficient proceeding, even though ANP Resolution No. 817/2020 does not constitute a joint resolution per se.

Pursuant to the resolution, the contractor must explore all economically and environmentally feasible development options in order to maximize the recovery of the reservoir and avoid premature decommissioning of production facilities.

ANP Resolution No. 817/2020 provides for a detailed procedure to be followed by the contractor, including specific documents to be prepared and submitted to ANP within the applicable deadlines. Below you will find an overview of such documents and their respective submission deadlines.

¹⁷ 'Descomissionamento de Plataformas: o que é e como vai se desenvolver' (Além da Superfície, 8 July 2020) <<https://www.alemadasuperficie.org/mercado/descomissionamento-de-plataformas-de-petroleo-o-que-e-e-como-vai-se-desenvolver/>> accessed 11 January 2023.

3.1 Study to Justify Facility Decommissioning (EJD)

Document describing the area to be relinquished and considering the properties of the reservoir, wells and facilities, together with the reasons for the decision to proceed with the decommissioning of facilities.

The EJD must be submitted together with the Conceptual Facility Decommissioning Plan (item ii below) for offshore facilities. The EJD submission requirement will be waived if a solution is applied to enable production to continue and maximize the recovery factor of the reservoir. The contractor must keep the EJD updated until the end of production.

ANP may request the EJD for onshore production facilities within 60 days from receiving the Executive Facility Decommissioning Plan. Then the contractor must submit the EJD within 90 days from ANP's request.

3.2 Conceptual Facility Decommissioning Plan

Document describing the scope of the decommissioning plan, including the content provided in items 1 to 4 and 5.4 of Annex III (offshore facilities) or items 1 to 4 and 8 of Annex IV (onshore facilities) of ANP Resolution No. 817/2020. The contractor must submit to ANP the Conceptual Plan within the following deadlines:

In the exploration phase:

- (a) within 60 days after the end of the term of the contract or the communication of the termination of the contract by ANP;
- (b) together with the notification of return of the area, in the event that the contractor decides to relinquish a part or all the contracted area; or
- (c) at the time of the request for the long-term test authorization for the facilities used in the long-term test (TLD).

In the production phase:

- (a) for offshore facilities, the Conceptual Facility Decommissioning Plan must be presented within 5 years before the date scheduled for the end of production;

- (b) for onshore facilities, the Conceptual Facility Decommissioning Plan must be presented within 2 years before the date scheduled for the end of production; or
- (c) for Systems of Anticipated Production, the Conceptual Facility Decommissioning Plan must be presented when contractor is requesting authorization for anticipated production.

3.3 Executive Facility Decommissioning Plan.

Document including information, projects and studies necessary to plan and execute the decommissioning of facilities. This document must be presented to ANP (i) within 24 months counted from the term of the TLD or the SPA, under the exploration phase; (ii) in cases of offshore facilities under the production phase, within 6 months counted from the approval of the Conceptual Decommissioning Plan; or (iii) in cases of onshore facilities in the production phase, within the deadline established by ANP when approving the Conceptual Decommissioning Plan. The contractor is not allowed to implement the Executive Decommissioning Plan prior to ANP's approval.

3.4 Facility Decommissioning Report (RDI)

This is a document presented by the contractor, in which all activities performed during the decommissioning of facilities must be recorded. ANP may execute the abandonment guarantees provided for in the contracts, in the event of non-compliance with the Facility Decommissioning Plan of production facilities, verified by the analysis of the RDI or the partial reports, without prejudice to the sanctions stipulated in the applicable legislation. The RDI must be presented to ANP within 180 days counted from the implementation of the Executive Facility Decommissioning Plan.

An important point to emphasize is that, in addition to an optimistic socio-environmental and economic opportunity, according to ANP Resolution No. 817/2020, the concern with sustainable policies is a responsibility of the operator. For instance, the diploma establishes that the operator must have the

best practices regarding sustainability and social responsibility, aiming to follow the guidelines of the 17 UN Sustainable Development Goals.¹⁸

4. ANP RESOLUTION No. 854/2021

On September 29, 2021, ANP published Resolution No. 854/2021, which establishes the procedures for presentation of financial guarantees with the purpose of securing the financial resources to decommission oil and natural gas facilities

As a rule of thumb, Resolution No. 854/2021 requires the operator to present a financial guarantee or deed that ensures the decommissioning of facilities, already in place, within 180 days from the production start date of the field. The financial guarantee or deed may be presented in a way to compose the amount to be guaranteed annually, pursuant to the Progressive Allocation Model (MAP).

The total amount to be guaranteed must correspond to the estimated decommissioning cost, pursuant to the latest version of the approved Annual Work Plan (PAT). The following types of guarantees will be accepted by ANP:

4.1 Letter of credit

ANP will accept letters of credit issued by financial institutions authorized to operate in Brazil, which have a risk rating certified by a credit risk rating agency with more than a thousand certifications, with a long-term rating greater than or equal to A- of Standard & Poors, on the national scale Brazil. Letters of credit issued by international banks or financial institutions will be accepted provided that the issuer has a long-term risk rating equal to or greater than AA- from Standard & Poors on the global scale, in addition to evidencing that it has affiliates in Brazil. The letter of credits must have a coverage of at least 30 months or until the contract expires.

¹⁸ Parizotto and others (n 7) 34.

4.2 Insurance bond

Insurance bonds must (a) be issued by insurers authorized by the Brazilian Superintendence of Private Insurance (Susep) to operate in the country; (b) be issued by an insurer with a risk rating certified by a credit risk rating agency with more than a thousand certifications; and (c) have a long-term rating greater than or equal to A- from Standard & Poors, on the Brazilian national scale. Risk rating grades expressed on other scales, including the global scale, will be accepted provided they correspond to the grade expressed in the main paragraph, using the equivalence of the risk classes of the main international risk rating agencies. The insurance bonds must have a coverage of at least 30 months or until the contract expires.

4.3 Oil and natural gas pledge

ANP will accept pledge agreements for oil and natural gas produced in the national territory for fields where (a) the first oil extraction occurred at least in the 2 prior years ; (b) the production has been maintained for at least 2 years; (c) the proved developed reserves support the compromised production curve; and (d) the produced oil and natural gas are available for pledge for the guarantee period. The maximum pledged amount accepted by ANP is 50% the total annual production of oil and gas, including for contracts already in force.

4.4 Corporate guarantee

ANP Resolution No. 854/2021 lists several requirements that must be met for ANP to approve the corporate guarantee. Such requirements also vary from national companies to foreign companies in the position of guarantor. The guarantor must be a member of the same corporate group as the contractor/concessionaire, or must have been a past holder of the respective field or cluster, for which the abandonment expenses will be covered by the corporate guarantee. The guarantor must evidence that it has a risk rate certified by a credit risk rating company with over a thousand certifications in specific segments, that are different from national companies to foreign companies. ANP also sets forth a limited amount that can be guaranteed by

guarantor, based on guarantor's net worth. The 2P reserves of the field or cluster will also be taken into consideration by ANP, among other requirements and documents that must be presented to ANP.

4.5 Provisioning fund

ANP will only accept in this category the deposits made in a controlled account opened in a banking institution authorized to operate in the Brazil that has a risk rating certified by a credit risk rating agency with more than a thousand certifications, with the & Poor's triple A long-term, on the Brazil national scale.

ANP may also accept self-insurance by the contractor to guarantee the fulfillment of its decommissioning obligations by means of an extrajudicial guarantee, according to the total value of the obligation, defined in the MAP, and upon signature of an extrajudicial enforceable deed pursuant to the Brazilian Civil Procedure Code. ANP also sets forth a limited amount that can be guaranteed by the guarantor, based on its net worth

The financial guarantee or deed will be accepted at ANP's discretion, and ANP may at any time require the replacement of a type of decommissioning guarantee or deed, if a technical evaluation concludes that such guarantee or deed is inefficient and inadequate in the specific case.

However, the process of estimating the amount to be covered by the financial guarantee is not simple. First, because often the development of the field cannot be understood at the beginning of the asset's life, which still has several years of production and data collection before decommissioning activities begin. Second, because predictability of services is a necessary condition to attract qualified suppliers, services and to reduce costs, but is not feasible many years before the start of activities¹⁹.

In addition, the decommissioning costs also depend on the number and conditions of wells, the cooperation between suppliers, mobilization/demobilizations costs and the climate. All

¹⁹ Bourbon (n 4) 16.

these factor can alter the estimates but are measured near the decommissioning, enabling the estimated cost to be lower than expected during the beginning of production.²⁰

5. DECOMMISSIONING OPPORTUNITIES – DISMANTLE & RECYCLE

The current Brazilian scenario and future perspectives indicate a great potential for the development of decommissioning activities, based on a forecast of investments and considering the operating time of platforms currently active in Brazil. Another important factor to be taken into account is the relevant history of shipbuilding in Brazil.²¹

Currently in Brazil, only the Estaleiro Atlântico Sul shipyard is certified to carry out the activities of dismantling and recycling offshore structures, however other large shipyards are also studying the subject and mobilizing to receive offshore units and seeking licenses for the storage of radioactive waste of natural occurrence and treatment of Sun Coral.²² In 2019, the Director of Environment of the European Community, Peter Koller, visited four Brazilian shipyards to verify their conditions and capacity to serve the dismantling industry and showed enthusiasm regarding the qualification of the facilities, noting that, in terms of training, large Brazilian shipyards meet needs, such as, for example, the space needed for recycling after docking²³.

²⁰ Ibid. 52.

²¹ M. A. C. Guimarães and N.M. Figueiredo, 'Análise de Demanda da Construção Naval' [2019] <<https://portalidea.com.br/cursos/bsico-em-construo-naval-apostila-03.pdf>> accessed 11 January 2023.

²² Danilo Oliveira, 'Exigência de certificação para descomissionamento abre espaço para estaleiros nacionais' (Sinaval, 29 October 2020) <<http://sinaval.org.br/2020/10/exigencia-de-certificacao-para-descomissionamento-abre-espaco-para-estaleiro-s-nacionais/>> accessed 11 January 2023.

²³ Davi de Souza, 'Sobena propõe regulamentação sobre desmonte de plataformas para abrir oportunidades para estaleiros brasileiros' (Sinaval, 28 October 2020) <<http://sinaval.org.br/2020/10/sobena-propoe-regulamentacao-sobre-desmonte-de-plataformas-para-abrir-opportunidades-para-estaleiros-brasileiros/>> accessed 11 January 2023.

For decommissioning of offshore facilities, one option is to transport it to shipyards for dismantling and reuse in other projects, but there is also, as an example, the possibility of selling the entire infrastructure for reuse in another field²⁴. In the 1970s and 1980s most ships were recycled in shipyards in the United States and Europe, until the strictness of environmental laws caused these activities to move to countries such as India, Pakistan, and Bangladesh.²⁵

In these countries, the decommissioning method used was beaching, which consists of stranding the infrastructure on beaches in the South Asia region. This method is extremely polluting and is heavily criticized for generating irreversible environmental damage and jeopardizing the local communities. This methods led the European Union to issue Regulation No. 1257/2013²⁶, determining that EU-flagged vessels should only be recycled in one of the shipyards that obtain a "green stamp"²⁷ from the European Union²⁸.

Brazil is also concerned with ensuring greater safety for oil and gas infrastructure dismantling activities, which is demonstrated by the creation of a bill of law on the recycling of vessels (PL 1.584/2021)²⁹. The bill of law, authored by Federal Deputy Colonel Armando, provides for the recycling and dismantling of vessels and facilities removed from the sea, such as oil platforms, establishing guidelines for integrated management and administration of this activity, including the responsibilities of

²⁴ Parizotto and others (n 7) 19.

²⁵ M. C. França, 'Descomissionamento: Oportunidades e desafios para o mercado brasileiro' (Migalhas, 19 August 2021) <<https://www.migalhas.com.br/coluna/migalhas-maritimas/350278/descomissionamento-oportunidades-e-desafios-para-o-mercado-brasileiro>> accessed 12 January 2023.

²⁶ Regulation (EU) No. 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No. 1013/2006 and Directive 2009/16/EC (JO L 330 of 10 December 2013, p. 1-20).

²⁷ This seal is given to shipyards approved in accordance with European environmental and health standards, which become part of a list.

²⁸ França (n 25).

²⁹ Danilo Oliveira, 'Estaleiros se dizem prontos e acompanham definição de normas locais para apostar em serviços de desmantelamento' (Sinaval, 05 October 2022) <<http://sinaval.org.br/2022/10/estaleiros-se-dizem-prontos-e-acompanham-definicao-de-normas-locais-para-apostar-em-servicos-de-desmantelamento/>> accessed 12 January 2023.

recycling managers and the government and applicable economic instruments.

Since 2021, the bill of law, which is being processed in conclusive regime (processing rite according to which the bill of law is voted only by the designated commissions, without the need for deliberation by the Plenary), has already been approved by two committees, remaining the Road and Transportation Committee (“Comissão de Viação e Transportes”), and, the Constitution, Justice and Citizenship Committee (“Comissão de Constituição, Justiça e Cidadania”). Once approved by all committees, the bill of law will be sent to the Senate for deliberation and, if it achieves the necessary number of votes, it will be submitted to the President of the Republic for sanction.

Brazil also has optimistic future prospects for the dismantling and recycling of offshore structures. As of 2022, an average of 950 to 1000 floating structures will be decommissioned per year in the world (including vessels), but only 42 shipyards around the planet have certification for these activities, not meeting more than 55% of the demand (650 units). In view of this bottleneck and the capacity of Brazilian shipyards, as well as the ease of commercialization of ferrous and non-ferrous scrap (from dismantling) to steel and metallurgical companies, the expectation is that Brazil will develop rapidly in this segment³⁰.

6. DECOMMISSIONING OPPORTUNITIES – REUSE & REDEFINE

From a different perspective, Brazilian regulations (mostly in the form of ANP Resolution No. 817/202017), as well as international regulations, define that all underwater structures must be removed, but allows the structures to remain in situ on an exceptional basis. This exception applies only in case the structures as meet regulatory requirements such as not hindering navigation or causing damage to the environment, in addition to the submission of due and proper reasons for their permanence.

³⁰ Carreteiro (n 14).

Like the International Maritime Organization (“IMO”), the ANP defines that this assessment must be carried out on a case-by-case basis and, thus, allows for the conversion or redefinition of facilities.

Although decommissioning is typically implemented through the removal and recycle of facilities (with the purpose of returning the environment to its original state) there are alternatives, such as conversion to a new purpose, especially to the offshore wind energy sector³¹. This is another interesting possibility with solid perspectives is the conversion of offshore facilities into wind offshore power projects, considering studies of the international benchmark.³²

Conversion to wind offshore power projects may no longer be a distant reality for Brazil as the development multiple renewable energy sources is an increasing goal and power production in wind offshore project became a fast-growing segment and a focus of investment for Brazilian companies³³. Moreover, on January 25, 2022, the Brazilian Government issued Decree No. 10,946/2022, which was the first legislation on offshore power generation projects in the country.³⁴

Currently, with the great wind potential that the Northeast region offers, the structures resulting from decommissioning can be adapted for the construction of wind towers, an alternative that has become increasingly frequent in the world and has proven to be financially viable. Traditionally, decommissioning occurs by removing and recycling the structures, returning the environment to its natural state; however, there are alternatives, such as

³¹ Jime Braga and others, ‘Converting Offshore Oil and Gas Infrastructures into Renewable Energy Generation Plants: An Economic and Technical Analysis of the Decommissioning Delay in the Brazilian Case’ (2022) 14 Sustainability 1, 2.

³² V. M. Quissanga and others, ‘Estudo de viabilidade para a reutilização de plataformas offshore fixa como subestrutura de torres eólica’ (2020) 9(10) Research, Society and Development 1.

³³ Bruno Belchior and others, ‘Offshore Wind Power: Bill of Law’ (Brazil Energy Journal, 4 October 2022) <<https://www.tauilchequer.com.br/-/media/files/perspectives-events/publications/2022/09/pl-5762021-offshore-wind--bill-of-law.pdf>> access -ed 11 January 2023.

³⁴ Julia Braga and others, ‘Offshore power generation’ (Brazil Energy Journal, 11 April 2022) <<https://www.mayerbrown.com/-/media/files/perspectives-events/publications/2022/04/brazil-energy-journal--april--offshore-power-generation.pdf>> accessed 11 January 2023.

conversion to a new purpose, especially to the offshore wind energy sector.

Brazil also has possibility of installing measuring towers on offshore structures in the process of decreasing production or decommissioning, such as oil and gas platforms, which effectively reduces costs and eliminates some of the difficulties of installing a tower " from scratch", as well as avoiding scrapping the old installation.³⁵ Petrobras has been looking into this possibility and effectively installed an anemometric tower in Rio Grande do Norte, as part of the company's campaign to improve the assessment of opportunities to implement wind offshore power projects³⁶.

Also worthy of mention is the creation of artificial reefs, widely implemented in the Gulf of Mexico, and which may constitute an interesting decommissioning alternative for our country. Brazil has great possibilities for the adoption of this type of program for the reuse of offshore structures, since (i) a considerable part of its platforms are fixed³⁷, which results in a complex dismantling procedure; and (ii) fixed platforms are the ideal type of platform for rigs-to-reef projects³⁸.

To summarize, the Brazilian regulatory framework is not strict about the disposal of platforms, making the creation of artificial reefs feasible in Brazilian waters if approved by regulators which should analyze if this option is cost-effective, the environment is less negatively affected and in which regions platforms can be allocated³⁹. In this sense, the rigs-to-reef programs (e.g. the creation of the world's largest artificial reef, in 1999, in Louisiana) have great applicability in the Brazilian territory and constitute an

³⁵ Empresa de Pesquisa Energética, 'Roadmap Eólica Offshore Brasil' (EPE, 30 April 2020) <<https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/roadmap-eolica-offshore-brasil>> accessed 11 January 2023.

³⁶ Daniel Faro, 'Principais Ações da Petrobras em Eólica Offshore no Brasil' (Petrobras, 2019) <https://www.viex-americas.com/wp-content/uploads/2019/08/15_08_Daniel-Faro_Petrobr%C3%A1s.pdf> accessed 23 January 2023.

³⁷ 'Infográfico Tipos de Plataformas' (Petrobras) <<https://petrobras.com.br/infograficos/tipos-de-plataformas/desktop/index.html>> accessed 23 January 2022.

³⁸ C. F. Martins, 'O Descomissionamento de Estruturas de Produção Offshore no Brasil' (Environmental Engineering Thesis, Federal University of Espírito Santo 2015) 38.

³⁹ Bourbon (4) 49.

interesting alternative for the removal of equipment, since, in this way, marine life is preserved⁴⁰. In addition, post-decommissioning monitoring is a task that must be carried out to verify the recovery of the area and observe the real impacts of oil and gas activity on the seabed, so that measures can be proposed to mitigate any potential environmental damage.

Another use in Brazil of the concept of redefining decommissioned platforms was developed by an architect from Ceará, Geraldo Magela Moraes. The idea, still in the design and feasibility study phase, is to adapt and redefine a platform, through a Public Private Partnership (PPP) between a diving company, a hospitality company and the Government of Ceará, to be the Environmental Monitoring of the Pedra da Risca do Meio Marine State Park, the only marine conservation unit in the state of Ceará.

Besides serving as a monitoring base, the platform would also hold a hotel, an area for diving courses and tourism, and a base to support the research of the Institute of Marine Sciences of the Federal University of Ceará (Instituto de Ciências do Mar da Universidade Federal do Ceará - "UFC"), and the Oceanography course.

The project was interrupted due to the impacts of the Covid-19 pandemic on the hotel sector, but the government of Ceará and the UFC still intend to make it real⁴¹. Another concept of resignification in Brazil comes from the state of Sergipe, where a group of professionals from various specialties is studying the creation of a tourist attraction in the city of Aracaju, Parque dos Peixes, which will consist of an artificial archipelago 2 km away from the shore of Praia de Atalaia, and a cable car to facilitate access to the facilities. The enterprise will be developed through a PPP to help in the growth of tourism in the city and state. The

⁴⁰ Edmar de Almeida and others, 'Regulação do Descomissionamento e seus Impactos para a Competitividade do Upstream no Brasil' (2017) IBP. p. 19.

⁴¹ Parizotto and others (n 7) 66.

idea is to have public areas for visitation, shops, restaurants, a Tamar project⁴² installation, water park and a resort.

In this regard, besides being a new tourist attraction and contributing to the socio-environmental development of the region, it will also contribute to the development of the country's naval industry, with the supply of new structures and the adaptation of topsides. However, this project is still in its initial stage, in which the relevant legislation and resolutions for its implementation are being studied⁴³.

7. EXPECTATIONS AND FORECAST.

The discussions about decommissioning and the associated impacts are still in early stages in Brazil, the enactment of the recent regulations, the active discussions and contributions presented evidence both the concern and commitment of the regulatory entities and companies.

Following the sustainable development guidelines provided under the Brazilian legal framework, the ANP, by means of Resolution No. 817/2020, established as mandatory the development and implementation of a social responsibility and sustainability management system adhering to the 17 Objectives of the UN, this measure shows the commitment of the regulatory agency and the country to develop a socially and environmentally responsible decommissioning industry.

The annual investment in offshore decommissioning worldwide is expected to increase 4 times by 2040, amounting to 210 billion⁴⁴. In Brazil, it is expected that the updated legal

⁴² The TAMAR Project is a Brazilian project that works for the preservation of sea turtles in danger of extinction. It is a private non-profit organization based in Praia do Forte, in the city Mata de São João, State of Bahia.

⁴³ Parizotto and others (n 7) 67.

⁴⁴ IHS Markit, 'Decommissioning of Aging Offshore Oil and Gas Facilities Increasing Significantly, with Annual Spending Rising to \$13 Billion by 2040, IHS Markit Says' <https://news.ihsmarkit.com/prviewer/release_only/slug/energy-power-media-decommissioning-aging-offshore-oil-and-gas-facilities-increasing> accessed 11 January 2023.

framework will be subject to further improvements with the expected investment of BRL 50,66 billion from 2022 until 2026, pursuant to ANP's Dynamic Decommissioning Panel. Although decommissioning has not yet had a significantly positive socioeconomic impact for the Brazilian population, this scenario may change in the upcoming years.⁴⁵

SOBENA also forecasts that in 5 years counting from 2021, the development of decommissioning activities may attract over BRL 30 billion in investments related to the contracting of services for abandonment of wells, removal of equipment and recovery of areas (without taking into account other investments in onshore areas)⁴⁶.

In addition to the investments, it must also be noted that ANP's recent resolutions also make the entire analysis of decommissioning plans and guarantees more dynamic. For instance, the Decommissioning Facility Plans submitted by contractors to ANP are mandatorily made available to the public, making the procedure all the more transparent. According to the ANP's Dynamic Decommissioning Panel, in December 2022, a total of 98 Facility Decommissioning Programs (PDIs) were submitted, of which 78 have already been approved by the regulatory agency, with Petrobras being the operator of most fields.

In view of the lack of experience with decommissioning activities, Brazil will still need to address challenges regarding the coordination between government entities and the definition of competences of the Brazilian Navy, Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) and ANP in the analysis of the Decommissioning Programs. This

⁴⁵ Fernanda Delgado and others, 'Decommissioning of oil and gas production systems in Brazil' (2019) 22 (65) *Brazil Business Brief*. 1, 10.

⁴⁶ Danilo Oliveira, 'Cartilha para desativação' (Portos e Navios, May/June 2020) <<https://www.ibp.org.br/personalizado/uploads/2020/07/revista-portos-e-navios-cartilha-para-desativacao-01062020.pdf>> accessed 23 January 2023. 28, 31.

process becomes even more complex because most fields are located in deep waters.⁴⁷

Notwithstanding the above, the recent regulations and the prospects of new diplomas addressing more sustainable alternatives for decommissioning activities have opened the door for a new market in the country, which has its own technical challenges as any new frontier, as well as the potential to unlock investments in the country.

In this sense, there are several benefits from decommissioning programs that are of particular interest to regulatory authorities. Onshore decommissioning, for example, would contribute to the creation of new jobs in the scrapping, recycling, and discarding stages. On the other hand, decommissioning activities implemented offshore may positively impact fishing and diving in the areas near the artificial reefs.

In order to better defined and then establish suitable guidelines, it is of the utmost importance that there are thorough discussions between the Brazilian regulator and multiple parties (e.g. E&P companies, services providers engaged in decommissioning activities, environmental authorities and Brazilian citizen). This exchange may enable the regulator to understand the expectations and goals of the industry players and society, towards environmental impacts, job creation and transparency in relation to the decommissioning process.⁴⁸

If implemented correctly, decommissioning activities have the potential of becoming a key instrument for Brazil to be one step closer in the direction of a preserved environmental. In this sense, to follow the path of sustainable development, it is of the utmost importance that the decommissioning regulation and implementation of activities involve the definition of criteria, procedures, rules and standards for maintaining environmental

⁴⁷ Bruna Parizotto and others, 'Aspectos Socioeconômicos por trás das Atividades de Descomissionamento: lições aprendidas do outro lado do atlântico' (2022) 13. FGV Energia 1, 8.

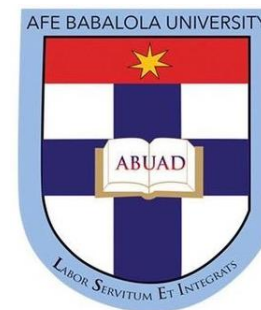
⁴⁸ Bourbon (4) 55.

quality for present and future generations⁴⁹. The national progress can be aligned with actions towards the development of social, economic and environmental aspects.

⁴⁹ Machado and Teixeira (n 1) 1, 192.



The Journal of Sustainable Development Law and Policy



ISSN: 2467-8406 (Print) 2467-8392 (Online) Journal homepage: <https://www.ajol.info/index.php/jsdlp>

New Frontiers for Decommissioning in Brazil

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To cite this article: Barbara Eiroa Leite and Bruno Belchior (2023). New Frontiers for Decommissioning in Brazil. The Journal of Sustainable Development, Law and Policy. Vol. 14:1, 117-139. DOI: [10.4314/jsdlp.v14i1.6s](https://doi.org/10.4314/jsdlp.v14i1.6s)

To link this article: DOI: [10.4314/jsdlp.v14i1.6s](https://doi.org/10.4314/jsdlp.v14i1.6s)



Published online: May 31, 2023.

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