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THE OIL INDUSTRY IN A BURNING WORLD: HOW CAN UNITILIZATION SHAPE THE OIL INDUSTRY TO MITIGATE CLIMATE CHANGE?

A INDÚSTRIA PETROLÍFERA EM UM MUNDO EM CHAMAS: COMO PODE A UNITIZAÇÃO MOLDAR A INDÚSTRIA PETROLÍFERA PARA MITIGAR AS ALTERAÇÕES CLIMÁTICAS?

LA INDUSTRIA PETROLERA EN LLAMAS: ¿CÓMO PUEDE LA UNITARIZACIÓN MOLDEAR LA INDUSTRIA PETROLERA PARA MITIGAR EL CAMBIO CLIMÁTICO?

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Resumo
A transição para uma sociedade sustentável exige novos compromissos e ações mais efetivas por parte da comunidade internacional e de seus atores, países e empresas. O agravamento dos impactos das mudanças climáticas reforça a necessidade de ações de mitigação e adaptação para em todas atividades humanas para a promoção da justiça. Neste contexto, a produção energética ocupa uma posição central, pois trata-se de um grande contribuinte para a mudança climática por meio da emissão de gases de efeito estufa. Sem embargo, há uma ausência de regras internacionais compulsórias, uma lacuna de governança global climática e de políticas inovadoras. Antes, porém, de uma transição completa para uma economia verde, faz-se necessária a adoção de medidas de curto prazo. Práticas que promovam a eficiência energética, tal qual a unitização, apresentam-se como essa solução. Por mais que esteja prevista em diversas jurisdições, não é devidamente implementada e não abrange propriamente as reservas internacionais de petróleo e gás. Considerando os compromissos climáticos internacionais, os costumes e práticas, bem como o desenvolvimento do tema ambiental, há de concluir-se pela obrigatoriedade da adoção da unitização. Dentro do ciclo do petróleo e do gás, a prática reduz a perda energética e o lixo no processo de extração e transporte do material. A obrigação dos Estados de fato não termina no dever de cooperação. Procedimentos e regras comuns devem acompanhar a exploração conjunta de reservas transfronteiriças.

Palavras-chave
Unitização. Direito Internacional. Mudanças Climáticas. Gás e Petróleo.

Abstract
Countries and companies likewise ought to take ever more bolder actions due to the aggravation of climate change impacts. Taking this into consideration, the international community and its actors have been seeking commitments to renew climate actions and fulfill the transition to a sustainable society. The need to take actions to mitigate and to adapt to climate change impacts, and hence promoting justice, encompasses all human activities. As such, energy production takes a special place in the green transition. It massively contributes to human-driven climate change through high GHG emissions. Nevertheless, it still lacks international binding rules, comprehensive governance and innovative policies. Indeed, before full-fledge transition, international climate bodies recognize the urgency of short-term solutions. Thus, practices that enhance energy efficiency become much needed climate actions. Unititzation presents itself as a widespread practice in national jurisdictions. However, it is not properly implemented in many countries and does not encompass international oil fields. Considering the commitments undertaken, the costumes and rules in regard to climate, one must reach the conclusion that

unitization has become mandatory practice in oil extraction, production and transportation in order to reduce waste and improve energy efficiency. States' duties do not end in cooperation, common procedures and rules must accompany the development of joint oil and gas reserves.

Keywords

Unitization. International Law.Climate Change. Gas and Oil.

Resumen

Los Estados y las corporaciones deben tomar medidas climáticas más duras a causa de la aceleración de los cambios climáticos. Por ello la comunidad internacional ha buscado nuevos compromisos para que la sociedad se vuelva sostenible. La adopción de medidas de mitigación y adaptación a los impactos del cambio climático son necesarias para promover la justicia. De hecho, el reto de la transición verde exige una mirada a la producción de energia porque es una actividad que contribuye con las emisiones de los gases de efecto invernadero. Sin embargo no hay reglas internacionales vinculantes, gobernanza climática y tampoco políticas inventivas. Aunque la transición completa sea el objetivo final, acciones inmediatas son esenciales. De la producción energética, mejorar la eficiencia es una importante acción inmediata. La unitarización es una práctica de comprobada eficiencia y es prevista en muchas jurisdicciones nacionales. No obstante, no está implementada en muchas de ellas y tampoco incluye reservas internacionales. Considerando los compromisos internacionales climáticos, uno concluye que la unitarización debe ser una práctica obligatoria en la exploración del gás y petróleo. Los deberes de los Estados no termina en el deber de cooperación, así que es necesario implementar procedimientos y reglas comunes para reducir la perdida y mejorar la eficiencia.

Palabras clave

Unitarización. Derecho Internacional. Cambio Climático. Gas y Petróleo.

1. Introduction

The article aims to link unitization of oil and gas fields – especially transnational – with international human rights obligations. This is going to be attained by unravelling energy efficiency issues under the urgency demanded by climate change impacts. Therefore, it amends both climate change law and human rights in order to assess the energy sector through oil exploration.

It goes beyond exploring the theoretical subject, proposing alternatives and combining different discussions such as the obligations and responsibilities of each actor in the Transnational Legal Order (TLO); the international recognition of nature's personhood; the nature of UN's climate regime set of rules and framework; global governance over public goods and resources; participation of new actors in international law; conflict of law's role in assessing climate change and human rights. It explores alternatives and solutions that the undergoing epistemological turn in international law may offer to mitigate and adapt to the impacts of human-driven climate change. It will also try to address practical manifestations of this change.

The paper will focus on the energy chain, namely through the oil production, to enshrine the intertwinement of different international regimes and climate change. Current fossil fuel production has the involvement of government authorities, private and public companies, foreign countries and multiples legal orders. (Stranadko, 2022) They do not necessarily have common legal or political interests, which neither coincide with the environmental and local population interests. Moreover, the case reveals the gaps of the international climate regime.

On the one hand, States are not bound by any specific rules regarding the exploitation of transboundary reservoirs. At most, they are under the vague duty to cooperation and obligations such as to not generate harm to other countries. On the other, there is also no international obligation or standard on how States should handle their domestic reservoirs and companies. All in all, a framework capable of delivering climate justice is absent in the exploration of offshore oil fields and the international arena does not deliver any means to cooperation.

The impacts of climate change represent a harm to the overall enjoyment of human rights, which is being increasingly recognized by international forum. Considering the aggravation of climate change impacts, there is an urge to fill in the gaps of the international climate regime in all instances. Consequently, the fulfilment of human rights demands the implementation of climate actions to mitigate and adapt to these impacts.

The recent requests for advisory opinions before international courts and tribunals under different regimes are a symptom of the international community's concerns in regard to climate change impacts and the obligations arising from the wide variety of international compromises and treaties.

Thence the importance of the present paper. Not only does it discuss current challenges of community interest but it also seeks to propose an alternative to States and other interested actors to implement climate actions and deliver justice and human rights.

First, the paper will position the climate emergency in the international human rights regime establishing the nexus between climate actions and human rights obligations. This allows

a critical analysis of the energy production cycle – one of the most relevant production cycles in relation to GHG emissions – in order to implement climate actions and thus deliver and protect human rights.

After conceptualizing and justifying the need to address climate justice in the energy sector, specifically in offshore oil exploration, it will show current practices that could fill in the gaps of the international climate regime and conclude with alternatives to further enhance the climate actions. Ultimately, the proposal will ensure that the exploitation of oil fields fits the commitments under the Sustainable Development Goals (SDGs) and enters the scope of a transitioning global economy.

All in all, the article discusses the current state of offshore oil production and perspectives for the promotion of human rights in the sector by addressing climate change and implementing climate actions. Unitization comes into play as a possible alternative ensuring energy efficiency in the exploitation of oil fields. Then, it will discuss practical application of such measures and possible solutions to challenges and shortcomings – with the application of other nature solutions such as the recognition of legal personality.

2. Climate Change and Human Rights

Before assessing human rights obligations in the offshore oil production, it is necessary to establish the nexus between climate change and human rights. The climate emergency increasingly occupies different disciplines of law and it will likewise be a central matter in energy law. However, international climate regime still lacks efficacy with clear binding rules and uniform network of rules and sources, whilst human rights regime has seen substantial advancement in these aspects.

Human rights promoted the re-examination of old-established doctrines, analysing the emergence of different actors in law-making and law-enforcement and the formulation of new rules in different legal levels. As issues increasingly trampled national borders, States found themselves in a web of novel norms and a more complex and intertwined international regime, some requiring positive obligations. Hence, creative solutions had to be thought in order to comply with human rights obligations.

Indeed, human rights emergence has pushed forward many transformations of the international law throughout history. Specially, the post-war world has been marked by the rise of human rights to prominence in the international arena, status further consolidated after the end of the Cold War. The international fora once exclusively preoccupied with international peace and security gave space to other sort of issues and a broader agenda encompassing human rights. Now, its issues became a corollary to international peace.

New set of rules over situations concerning multiple States and sometimes the international society as a whole have been forged seeking to protect community interests – where human rights takes a central role in the thorough human development. These interests comprise the most basic values of the international community and pursue shared goals to the benefit of all States and humankind.

For its part, the human rights regime revealed the inadequacy of traditional public international law to deal with these cross-boundaries issues and to promote fundamental values of the international community. The so-called community interests demand collective action and establish obligations in order to protect certain rights and tackle issues that States alone would not be capable of. (Bodansky, 1999)

Similarly, human rights perpetuate into environmental and climate regime. Indeed, international environmental law has always dealt with multilateral interests. It highlighted the need of technical cooperation and common action between States since it usually was transboundary in nature.[1]

However, the aggravation of the climate emergency has induced the international community to recognize climate actions as a matter of public interest that demands collective action. Most importantly, the seriousness of climate change impacts shed light over its relation to the objectives of international peace and the emerging human rights centred international order. (Abbott, 2014)

Indeed, the menace of climate change to humankind was greatly discussed during the last decades of the past century with increasing impacts on various recognized human rights. The pace in which environmental disasters – such as drought, floods, extreme temperatures and plagues – worsen imposes harder challenges to human development. Thus, the association between climate change impacts and the regular enjoyment of human rights has finally started to be internationally acknowledged. Not only the root causes of climate change but also its consequences impact directly and indirectly the enjoyment of an assorted number of human rights.

Likewise, actions to mitigate and adapt to climate change – climate actions – have repercussions on other issues. Thus, justice demands a comprehensive approach able to consider these intricacies. Indeed, as a result of the multitude of causes and consequences, solutions to climate change must encompass a wide scope of issues ranging from social and economic aspects to environmental ones. Only this way it is possible to efficiently tackle the current challenges to international community with equity.

On the one hand, actions to mitigate and to adapt to the impacts of human-driven climate change are due in order to protect human rights and the well-being of individuals. On the other hand, climate actions must consider a wide scope of objectives in order to deliver climate justice and promote human rights. Current international challenges to human development such as poverty, income inequality, health issues, energetic, water and food security share common grounds with climate change.

A recent movement has been proposing a comprehensive approach to climate change and human rights under the label of climate justice. Climate justice activists question whether the inefficiency of current solutions is related to the maintenance of the structures and actors

[1] Climate Change Law has the specific purpose of tackling the aggravation of climate change and its effects whilst Environmental Law has a broader scope regulating all sort of issues that might arise in relation to the environment.

responsible for the problems. In this way, justice will only be attained by addressing all the root causes as well as the consequences of climate change with the human rights perspective.

The current climate change regime, which has been through extensive development over the decades, still lacks the same framework as other human rights regimes. It still relies on unilateral commitments, voluntary norms and a decentralized web of international regimes even though climate change specially deals with different legal orders and actors from various levels. This weak framework is clearly not capable of delivering climate justice.

The UN's SDGs are based upon the interrelationship that gives rise to the concept of climate justice. A long list of commitments and goals are established under this agenda throughout various areas. Considering that none of the issues can be solved independently, the UN's initiative includes 16 goals, each with specific commitments and fulfillment measurements. The goals range from reducing poverty, attaining food and water security, protecting natural biomes, energy efficiency and climate actions.

Hence new approaches to the climate crisis – such as state intervention, public policies, regulation of economic activity, cooperation with civil society and non-state actors (NSAs) – must be envisioned in order to meet these ambitious goals. The failure to meet with the commitments under climate change regime uttered States to advance bolder climate actions and measures and to promote transformative actions to consolidate the transition to a sustainable economy. (Abbott, 2014)

Voluntary measures have demonstrated slow or unsatisfactory results and thus mandatory rules and more proactive stances are starting to be tested. For example, the European Union has recently enacted a regulation to forbid all products from selected commodities associated with deforestation and forest degradation in its supply chain from entering the European market. Moreover, it established mandatory due diligence procedures to all traders.

The European Parliament prompted such regulation in view of the climate commitments undertaken by Member States. It seeks to redistribute the burdens of climate action with economic private actors by demanding a thorough tracking of the supply-chain to secure deforestation-free products[2] . Reducing demand-driven deforestation is an important action to reduce GHG emissions. Indeed, climate justice must also guide private actors to meet the commitments established by the Paris Agreement since they play an increasingly more relevant role in the global governance of climate change.

States and international actors are increasingly aware of the need to address private actors and economic activity. Certainly, climate justice demands overcoming the private-public separation as well as the recognition of a new global law with transnational features. International law should furnish State and NSAs governance that enables cooperation in order to overcome common challenges.

In order to fulfill their commitments, States must undertake actions to mitigate its contribution to climate change and to promote adaptation to the impacts. Climate change regime

[2] For more information on the legislation, see: http://data.europa.eu/eli/reg/2023/1115/oj

has become truly transnational, involving private actors as well, but it still has a weak governance and it lacks comprehensive linkages between its many institutions. (Abbott, 2014)

Since the aggravation of the impacts of climate change has been associated with the violation of human rights, climate action – reducing contribution to climate change – turns into a mean to avoid further violations and thus uphold human rights and its enjoyment. Then, the climate regime should envisage more comprehensive framework and enforcing rules similarly to other human rights regimes.

In conclusion, the issue discussed in this paper highlights the intricate reality of climate justice encompassing climate actions that take into consideration the mutual relation between climate commitments and human rights. The reduction of GHG emissions is an obligation of the States in curtailing its contribution to climate change through mitigation actions. So, reducing GHG emissions under climate justice requires innovative solutions to effectively deliver the climate commitments and promote human rights.

3. Climate Justice and Energy

It is necessary to address the relation of the aforementioned climate justice and climate actions therein with the international energy regime. The exploitation of offshore oil fields is part of an economic chain with high contribution to GHG emissions: the energy production. Thus, the energy becomes central when it comes to discussing the promotion of human rights through the mitigation of climate change. (de Graaf & Squintani, 2021)

Moreover, various causes associated with the aggravation of climate change notwithstanding, the economic activity comprised mostly by private actors – many of which truly international actors – accounts for a major part of the GHG emissions. The current extraction and production methods, as well as the patterns of consumption, increases GHG emissions yearly, accelerating climate change and intensifying its impacts.

Indeed, the goal of reducing GHG emissions places the energy sector in the spotlight of climate justice focusing actions to mitigate the impacts of climate change. Namely, the oil industry is considered one of the main causes to GHG emissions throughout its production cycle. Rudolf Dolzer remarks:

> Among the factors promoting convergence of international energy co-operation, policies to address climate change will be considered of growing importance. Given that climate change affects all States, that the energy sector is in significant part emitting greenhouse gases, and that the greenhouse gas effect operates independent of the territorial origin of gas, international concerted action seems to be the most rational and effective strategy to combat climate change. However, the lack of a broad global consensus on the goals and means of a climate convention has blocked negotiations of a global approach to environmentally based energy policies. (Dolzer, 2015, p.432)

Additionally, it is historically associated with environmental disasters and socioeconomic issues that, as established before, have mutual relation with climate change and human rights in climate justice.

Climate justice resonates in five forms of justice also present in the energy sector. It encompasses all stages of the energy life cycle and different instances of the social and economic spheres. The five forms of justice are the distributive, procedural, restorative, of recognition and the cosmopolitan (Heffron, 2022). All of which bring core values that must guide the implementation of good governance within the energy sector and the application of human rights alongside the creation of sustainable patterns of production and consumption. The author Raphael Heffron diligently explained the need for a holistic perspective of energy justice and the application of human rights:

> When energy justice is fully applied in practice it will be very complimentary and consistent with society's aim to achieve its environmental and climate change goals (…) This is because energy justice can prevent the damage that happens to the environment and the carbon dioxide emissions. At its simplest energy justice is about the application of human rights across the energy life-cycle, which is the from extraction to production to operation (and supply) to consumption to waste management (inc. decommissioning). (Heffron, 2022, p.2)

The concept brought forward by Raphael demands incorporating human rights and justice as a whole to energy issues, ultimately aiming a fair, equitable and inclusive energy transition. Since it combines such goals with the climate commitments and a future sustainable energy sector, energy justice consolidates the purpose of climate justice applied to the respective area of economic activity.

It also envisages law as the allocation of rights, obligations and duties between different actors. Between the legal relations, it establishes the application and hierarchy. Consequently, energy justice could be well-suited for climate justice's demand of a renewed law based on effective rules, transformative action and comprehensive framework. Then, law would be able to fulfill climate commitments and promote human rights in the energy cycle likewise.

Many States envisage becoming carbon neutral by the middle of the century. Several climate commitments pursue carbon neutrality as a main goal in order to mitigate climate change. In the long term, these international commitments acknowledge the need to fully transition into sustainable and carbon neutral activities. For this purpose, all areas of human activity must reduce its contribution to GHG emissions. Likewise the energy sector must be orientated towards decarbonization since it is the greatest cause for emissions.

However, while civil society struggle with energy enterprises to end fossil fuels, the urgency and imminence of severe impacts as well as the costs, consequences and the period of implementation of long-term solutions demand that other actions must be taken in order to alleviate the impacts. Therefore, States and civil society should also consider short-term measures. (Abbott, 2014)

In fact, immediate end to fossil fuel is unfeasible in the short-term and would likely amount to unintended collateral damages jeopardizing energy justice. A full-fledged immediate transition is nearly impossible for the majority of the countries. Imposing it upon the deeply unequal international community would be ineffective and have unfair results. The transition must deal with

the root causes of human-driven climate change and GHG emissions by comprehensively reforming current socio-economic framework.

Most of the Global South still rely on fossil-fuel to promote human development and outright banning it would limit the capacity to implement human rights. On a same note, transition to clean energy requires time to be properly implemented since an assorted number of impacts can emerge. Indeed, most of the countries do not own the means to implement effective mitigation and adaptation actions.

Once more, the interrelationship between climate action and human rights becomes clear. Energy justice is not satisfied by plainly demanding the end of fossil-fuel production in the short-term because it could provoke unintended damages to local communities; curb human development in low-income regions; preclude access to energy and electricity; deepen global inequalities in energy production; limit capacity to implement other mitigation and adaptation actions maintaining climate vulnerability; do not consider States' different capacities; and so on.

Taking this into account, the United Nations (UN) recognises efficient resource management, mainly energy production, as a necessary short-term climate action. (Dernbach, 2016) The IPCC has recently listed greater resource efficiency as a short-term solution to the climate emergency in its Sixth Assessment Synthesis Report. Indeed:

> Mitigation options often have synergies with other aspects of sustainable development, but some options can also have trade-offs. There are potential synergies between sustainable development and, for instance, energy efficiency and renewable energy. (IPCC, 2016)

Therefore, besides the long-term actions envisaging the transition to carbon neutral energy production, one must consider increasing the efficiency of current energy production (Pierce, 2009). New initiatives and technologies may provide for less emissions and reduced impacts of energy production. The short-term actions could buy time for the implementation of an equitable and inclusive transition. It also has the potential to set up a right direction from which climate justice can be built upon. Most importantly, it could fulfil other human rights and energy justice goals in order to establish a thorough sustainable development.

On the other hand, energy production encompasses natural resources under many sovereignties, the respective public authorities and private companies, and it has direct and indirect effects on local communities, nature and humankind as a whole. As a consequence, promoting energy justice will also rely on a new approach to international law disregarding the public-private division in order to facilitate cooperation and collective actions with all actors and instances of the globalized international life. (Heffron, 2022)

The climate emergency is a prominent example prompting the advancement and acceleration of the transnational legal order phenomenon (Halliday & Shaffer, 2015). State sovereignty as such undergoes significant conceptual and practical changes highlighting the interdependence and mutual relations between different set of actors and jurisdictions in horizontal, vertical and diagonal relations. (Chayes & Chayes, 1995

Particularly, the production and transportation of energy constitutes one of the main causes of inefficiencies of the sector (Dolzer, 2015). Taking this into consideration, one can expect that climate justice is only possible with immediate action to improve efficiency in the extraction, production and transit steps of energy life cycle. Again, the holistic approach offered by energy justice enables the implementation of thorough and comprehensive actions.

Finally, it is possible to reach the conclusion that human rights obligations extends to energy production and transportation through climate and energy justice. These obligations also demand short-term solutions to its inefficiency which is deemed as a considerable contributor to GHG emissions but also responsible for various social-economic impacts.

Specially, oil extraction and transportation plays a central role in this economic activity that greatly contributes to human-driven climate change and thus severely thwarts the implementation of human rights. Thus, significant results may be obtained by simply adjusting the energy production chain to current climate change concerns.

> Therefore, it becomes important for the task to be accomplished in the most efficient and effective manner possible while minimizing adverse environmental impacts. This should be a concern to all environmental groups, even those with the mission of ultimately shutting down the oil and gas industry. In the meantime, significant environmental benefits can be obtained by simply advocating for a more demanding regulatory program of preventing waste and protecting correlative rights. Such a program is possible by pursuing regulatory and development policies that treat correlative rights as the foundational property principle instead of the rule of capture. (Pierce, 2009, p.774)

This necessary movement will only come in time if pushed through by forces outside from the industry and its regulators. (Pierce, 2009) In spite of the long-term objective of sustainable development, climate action demands the reduction of waste and maximization of current oil and gas extraction recovery with lessened impacts.

4. Unitization

Oil and gas has a long history in the energy production. Since the end of the 19th century, it has leaded the way of energetic and economic development. However, the centurylong history has not translated into a comprehensive international framework suitable to current international community's demands. (Roggenkamp, 2021) Much of international cooperation still relies on voluntary and corporate standards. Moreover, States fail to take enough climate actions even though their national jurisdiction remains prominent in current international order. So, energy justice is lagging behind in spite of the aggravation of climate change.

In order to meet the commitments and to incorporate private actors, unitization may present itself as promising mitigation measure under this context. (Asmus & Weaver, 2006) The legal technique ensures short-term solutions to increase efficiency in the energy life cycle. It also offers instruments to promote human rights in the sector. Therefore, it must be considered by the international legal order as a necessary climate action.

Unitization was first thought as a mean to avoid the fallout of the rule of capture. Soon domestic unitization under a single authority became compulsory throughout the country followed by most of the world. Countries and companies alike were keen in promoting unitization before climate concerns since it improved economic results because of reduced costs resulting from waste and inefficiencies generated by the rule of capture. (Worthington, 2020)

Worthington defines unitization as the process through which reservoir boundaries become seamless:

> The underpinning rationale is that the divided interests of coventurers in the subject petroleum accumulation(s) become indivisible. Thus, a contract area boundary or international border becomes virtual (…) Cross-border unitization is not required by international law although cooperation is encouraged (Worthington, 2020, p.65)

It became clear that unitization promoted efficient utilization of oil and gas deposits by joining different parties under a single authority. (Benvenisti, 2002) Moreover, it is well established that unitization promotes equity and production efficiency, minimizing environmental risks and collateral damages. It realizes energy efficiency through the reduction of waste, increased recovery and shared governance over the reservoirs. Thus, the benefits of unitization offer a short-term climate action fit for the aforementioned commitments under the international climate regime.

> Notwithstanding some contractual concerns re-unitization in jurisdictions that allow private ownership of subsurface natural resources, the benefits of unitization have long been widely understood, especially in jurisdictions that legislate for State ownership of subsurface resources. These benefits include: • reduction in wasteful exploitation of a petroleum accumulation arising from competitive drilling and partitioned development; • increased recovery of petroleum through seamless operations; • Pareto-optimization in respect of Unit ownership; and • increased net revenues for the host jurisdiction (Wortington, 2020, p.77)

The benefits notwithstanding, Worthington notes that international law is yet to establish rules on unitization and its procedures.

On one hand, the International Court of Justice (ICJ) has concluded that bordering states overlapping natural resources must be resolved by the parties, noting that joint exploration presents as the best solution. However, the Permanent Court of Arbitration (PCA) recalled this decision to conclude by the sole existence of a duty to cooperate despite the recognition of the joint exploration as the solution.

> In respect of petroleum arrangements and a maritime boundary between the Parties in the Red Sea, the Tribunal recalls the conclusion of the International Court of Justice in its Judgment in the North Sea Continental Shelf cases, that delimitation of States' areas of continental shelf may lead to "an overlapping of the areas appertaining to them. The Court considers that such a situation must be accepted as a given fact and resolved either by an agreed, or failing that by an equal division of the overlapping areas, or by agreements for joint exploitation, the latter solution appearing particularly appropriate when it is a question of preserving the unity of a deposit." Judge Jessup in his separate opinion in that case referred to a seminal article by William T. Onorato and cited examples of such cooperation; and in the last thirty years there has grown up a significant body of

> cooperative State practice in the exploitation of resources that straddle maritime boundaries. (…) However, it is of the view that, having regard to the maritime boundary established by this Award, the Parties are bound to inform one another and to consult one another on any oil and gas and other mineral resources that may be discovered that straddle the single maritime boundary between them or that lie its immediate vicinity. Moreover, the historical connection between the peoples concerned, and the friendly relations of the Parties that have been restored since the Tribunal's rendering of its Award on Sovereignty, together with the body of State practice in the exploitation of resources that straddle maritime boundaries, import that Eritrea and Yemen should give every consideration to the shared or joint or unitised exploitation of any such resources. (United Nations, 1999, pp.355-356)

On the other hand, even though mandatory unitization has been spreading throughout oil's transnational legal order as a pattern for national oil production, the process still lacks uniformity and has some implementation issues. National unitization rules may rely on a different normative sources that do not necessarily harmonize and States are struggling to assure compliance with unitization standards. (Worthington, 2020)

Existing conservation laws sprouted in the context of the rule of capture oblivious to environmental concerns. (Pierce, 2009) However, the international climate regime has considerably developed in recent years, both through international negotiations – such as the Paris Agreement – and through international and national adjudication.

Nowadays, the international community acknowledges fundamental values and principles related to climate change in the most diverse documents. Examples of the expansion of international climate law in other international regimes can be found in trade, security, human rights and sea. (Heffron, 2021)

Indeed, international judicial institutions have pushed forward critical developments in regard to the World Trade Organization (WTO) and United Nations Convention on the Law of the Sea (UNCLOS) (Braga et al., 2023). The WTO dispute-settlement Appellate Body has been accepting the environmental exceptions to trade under Article XX of the General Agreement on Tariffs and Trade (GATT).

Similarly, UNCLOS also provides for environmental protection in Part XII of the treaty and the International Tribunal on the Law of the Sea (ITLOS) has been called upon to clarify States' obligations to prevent, reduce and control pollution of the marine environment and to protect and preserve it.[3]

The Inter-American Court of Human Rights (IACHR) was the first international judicial organ to relate climate change issues with Human Rights. In 2017, the Court considered the duty of the State to take actions to protect and prevent climate change impacts.[4] Now, the Court finds itself before another advisory opinion request on climate change.[5]

Finally, the principal international judicial body will also be addressing States' obligation in respect of climate change under general international law. The ICJ, used to bilateral disputes

[3] The tribunal gave an advisory opinion on 21 May 2024, case no. 21. Available at: https://www.itlos.org/fileadmin/itlos/documents/cases/31/Advisory_Opinion/C31_Adv_Op_21.05.2024 _orig.pdf;

[4] Decision avaible at: https://www.corteidh.or.cr/sitios/libros/todos/docs/infografia-por.pdf;

[5] Request for an Advisory Opinion available at: https://www.corteidh.or.cr/docs/opiniones/soc_1_2023_pt.pdf;

and peace matters, now faces a case of community interest which has attracted the participation of many international organizations and broad public attention.[6]

Climate change penetrates most of international regimes – if not all –, and the energy sector is no exception. Most of the energy production chain – extraction, waste management and transportation in particular – is subject to transformative actions envisaging energy and climate justice. (Heffron, 2021)

Indeed, the ICTs have an unparalleled opportunity to consolidate recent developments into International Law and to advance the international climate change regime in order to promote climate justice. It could give rise to new duties and obligations to take climate actions.

In addition to the jurisdictional action, political compromises are changing the international legal landscape. The already mentioned Paris Agreement, 2030 Agenda and corresponding SDGs renew international commitments and obligations towards sustainable development with mitigation and adaptation to climate change actions.

Thus, one must reconsider the inexistence of an international rule on oil unitization. The international regimes under change are shining light over principles and costumes on climate change (Braga et al., 2023). Moreover, International Courts and Tribunals (ICTs) must revisit the ICJ and the PCA's precedents on the matter of States' obligation in oil and gas exploitation.

The development of unitization in domestic jurisdictions throughout history points to a customary State practice on mandatory unitization (Worthington, 2020). It should also be considered the obligation to cross-boundary unitization (Braga et al., 2023). The vague duties to cooperate and to prevent harm under International Law, which by itself does not give rise to any specific obligation, have to be adapted to this development of the international climate regime.

Indeed, the widespread practice of unitization in local orders must draw new contours to these duties, ensuring their normativity. The domestic jurisdictions have displayed the unabated contribution to energy efficiency. It also promotes more sustainability in the extraction of oil and waste management:

> It is beyond dispute that so-called 'unitization' – namely, the formation of a single authority to exploit such deposits – is a prerequisite for efficient utilization. Such a single authority will be able to exploit the underground pressures to propel captured deposits to the surface to benefit all riparians. Absent a joint development agreement among the co-owning states, only a fraction of the deposit can be exploited. Does this suggest that states sharing such resources have a duty under international law to form such joint regimes? If one follows the doctrine on customary law, the answer will be negative. Indeed, a recent examination of state practice typically concluded with the following observation: '[The] survey of bilateral state practice indicates, as a preliminary conclusion, that a rule of customary international law requiring cooperation specifically with a view toward joint development or transboundary unitization of a common hydrocarbon deposit has not yet crystallized.' Although such a conclusion may be a fair description of an existing situation, it cannot be shared by judges or arbitrators who have the power and duty to modify the law in the face of market failures. They cannot let pass the opportunity to transform the existing equilibrium of the interstate game into a new and selfenforcing equilibrium of cooperation. A hint in that direction was recently given in the second phase

[6] See Obligations of States in respect of Climate Change. Request for Advisory Opinion from 12 April 2023 available at: https://www.icj-cij.org/sites/default/files/case-related/187/187-20230412-app-01-00- en.pdf;

> of the Arbitral Award in the Eritrea–Yemen Arbitration. In the process of delimiting the maritime boundary between the two states, the tribunal considered the possibility that petroleum deposits would be found to straddle the boundary. Although it admitted that so far no general customary law has been developed to require unitization, it carefully tailored a specific norm pertaining only to the two litigants. It found that the parties are bound to inform one another and to consult one another on any oil and gas and other mineral resources that may be discovered that straddle the single maritime boundary between them or that lie in their immediate vicinity. Moreover, the historical connections between the peoples concerned, and the friendly relations of the Parties that have been restored since the Tribunal's rendering of its Award on Sovereignty, together with the body of State practice in the exploitation of resources that straddle maritime boundaries, import that Eritrea and Yemen should give every consideration to the shared or joint or unitised exploitation of any such resources. (…) Recourse to science, of course, is not a panacea. As mentioned in chapter 5, science cannot eliminate uncertainties concerning the potential risks of managing shared resources, Thus, science does not relieve decision-makers from their discretion in the adoption of policies. International adjudicators are less capable in making such choices for the litigants and thus tend to let the states negotiate these choices directly. Adjudicators can only require the litigants to negotiate the establishments of joint management institutions, as the most efficient way to resolve commons issues, be it fisheries, forests, fresh water, or oil. Science, in this context the collective-action theory, can serve as the basis for the duty to treat international commons as jointly owned and impose duties on co-owners to establish joint management mechanisms to ensure public participation and other procedural guarantees. This theory may, in principle, eventually be proven wrong. At that stage, a new theory will suggest a more efficient norm that will then become the new norm. (Benvenisti, 2002, pp. 215-216)

Thus, States would be bound to implement international unitization taking into account the commitments under the Paris Agreement framework (Braga et al., 2023). Taking another point of view: the lack of cross-boundary unitization drives climate change, aggravating its impacts and harming other States – indeed the whole humankind.

However, doctrine still points to some shortcomings and issues concerning the current state of unitization. The issues range from weak enforcement to asymmetries between the parties. The absence of diligence and regulatory implementation is also to blame. (Worthington, 2020) Thus, similarly to other areas of regulation, these obligations should also furnish States with the means to overcome the issues associated with unitization.

Accordingly, considering the intricate impacts of climate change previously discussed, the regulation of the fossil fuel chain should be envisaged as a true transnational legal order. Indeed, the need of cooperation and international organizations in the existing international climate transnational regime has already been recognized (Braga et al., 2023)

The unitization scenario is no different. It also requires increased levels of cooperation and stronger institutions in order to overcome the lack of capabilities of the States and promote the inclusion of multiple actors. Likewise, cooperation also furnishes international community with effective tools to establish a working transnational legal order on unitization. (Abbott, 2014)

5. Nature's Turn

In addition to the so needed cooperation and collective action on oil unitization, the energy industry also lacks the recognition dimension of climate justice. Many disputing interests take place in the energy industry and public and private actors alike may not reach a common understanding.

Not only this creates additional obstacles to transformative actions in the industry – like the shortcomings previously discussed –, but it should be noted that the rights and interests of affected communities remain silenced. Accordingly, energy justice must also take into consideration the goal of delivering means to represent community interests and impacted groups.

Shifting from the anthropocentric law, some jurisdictions have gone as far as creating legal personality to the environment, such as Colombia, Ecuador, New Zealand, Spain and Bolivia. Indeed, national and international legal frameworks have been adopting a 'legal ontological turning'. (Jefferson et al., 2023)

To acquire legal personality means to have acknowledged not only its rights but also its interests and the capacity to pursue them and their protection, independently of any other will or at least reducing the dependency to external factors. It would allow its participation in all processes of a TLO, from the law/decision-making to the efforts of inducing compliance and seeking enforcement.

Thus, environmental legal personality could enhance international law by ensuring public interests are involved in law-making. It could also furnish compliance mechanisms to the established obligations - or at least secure an actor with legal personality purposely adopting environment's interests to uphold polluters' accountability. It allows public interest to compete in a similar position to profit-seeking actors – predominant in the energy sector.

> These types of legal reform could potentially create new opportunities for synergies to be forged between different human groups to limit environmental harm and to foster sustainable enterprise. Such opportunities may hold particular promise when these reforms are coupled with or motivated by efforts to reformulate business in away that would abandon exclusive profit seeking and instead focus on purpose. (Jefferson et al., 2023, p.347)

As previously discussed, the protection and preservation of the environment is a matter of community interest intertwined with the full enjoyment of human rights. The embodiment of nature's interest would also promote social equity (Jefferson et al., 2023) and an inclusive sustainable development (Burgers, 2022). Cosmopolitan justice could be attained thereof through the enforcement of international environmental law.

The recent developments on the recognition of legal personhood to nature is made in three different ways. First, some jurisdiction recognize Nature's Right as a whole, encompassing all that is non-human. In some cases, law creates a legal person to an environmental feature or determined ecosystem. Lastly, legal personhood can be granted to specific non-human beings (Jefferson et al., 2023).

In regard to the energy sector, specifically oil life-cycle, the reservoirs as one environmental feature could be conceived legal personhood – and even as the common authority over the oil field. These new laws could empower governmental agents with tools to hold accountable the different agents involved in the oil and gas chains.

> (…) isolated responsive actions, where citizens and communities rely on the expansion of legal personality to hold companies to account for environmental harm caused by profit-seeking behaviour will likewise not suffice (…) legal systems must recognize the

> different kinds of obligation and benefit that emerge out of the embeddedness of relationships between corporate entities, humans, and beyond-human beings as situated in specific environments. Legal systems should both ensure that the duties of companies to limit and reverse ecological degradation are upheld, and encourage companies to define and adhere to purpose statements that aim to achieve positive social and environmental outcomes. (Jefferson et al., 2023, pp. 350-351)

Firstly, it would include public interest in order to promote a regular unitization process, shifting the focus from profit-seeking to environmental preservation and efficiency. (Kurki, 2022) It could also present itself as a solution to conflicting interests and asymmetry between parties, concluding the climate justice cycle.

Finally, it expands access to justice by furnishing another legitimate actor in national and international legal systems to claim climate change obligations before courts and tribunals. Environmental legal persons could sponsor climate change litigation, which has been praised for pushing forward important progress and climate action.

6. Conclusion

In conclusion, energy production ought to make use of short-term solution to reduce waste and enhance energy efficiency. In this context, this article proposes mandatory unitization constitutes an international obligation of States under the Paris Agreement framework since the practice reduces waste and prompts better resource management. Thus, cross-boundary unitization and domestic mandatory unitization are climate actions which States have the duty to implement considering its commitments.

Unitization alongside the expansion of legal personality would not only enable a more sustainable energy development but it would also promote holistic justice. Consequently, these new means of participation altogether can be the cornerstone of oil and gas exploitation in a future inclusive sustainable development.

> Science, in this context the collective-action theory, can serve as the basis for the duty to treat international commons as jointly owned and impose duties on co-owners to establish joint management mechanisms to ensure public participation and other procedural guarantees. (Benvenisti, 2002, p.216)

However, they also should be granted resources to overcome the issues associated with unitization in order to enforce regulation. Moreover, it must incorporate mechanisms to assure the rights and interests regarding climate change and the ones affected by its impacts in order to deliver climate justice. In this sense, the recognition of legal personality to nature could deliver procedural, recognition and cosmopolitan justice.

Existing organizations could stand up to the task of governing the unitization process worldwide. The International Maritime Organization (IMO), for instance, could extend its mandate to also encompass offshore reservoirs. Nevertheless, one could go as far as proposing new specialized institutions to oversee the unitization processes. This time, the Commission on the Limits of the Continental Shelf (CLCS) could serve as an example.

These institutions would have the mandate to promote, coordinate and facilitate unitization of offshore reservoirs and could also function as the common authority over the unity. Even if they lack authority for mandatory controls, a variety of tools could be deployed to provide the right incentives and preclude harmful actions. (Abbott, 2014)

Otherwise, States bordering the reservoir can constitute the common authority and eventual disputes be redirected to arbitral and/or specialized tribunals such as ITLOS. They are empowered to foster governance and overcome the shortcomings of unitization, mainly cross-boundaries.

> (…) conservation regulatory program list first grant the commission authority, coupled with the affirmative obligation, to ensure all oil and gas development within the state takes place so as to maximize recovery of the oil and gas resource in the most economically efficient and environmentally benign manner possible. To accomplish this goal, the commission must assume an active role in determining how development will transpire in each reservoir, from the initial wildcat well through completion of enhanced recovery operations (…) Developers must coordinate their efforts to obtain the information required to determine the probable limits of a reservoir and thereby identify those who have an ownership interest in the development. All owners' rights would be protected by ensuring their correlative rights in the reservoir are identified, quantified, and recognized in an appropriate manner. (Pierce, 2009, pp. 777-779)

Companies must not shy away from compulsory unitization. Not only they have to share the burdens of transformative actions, but this short-term solution would also favour their interests. By the way of sharing information and technology, economic outcomes would be boosted. Likewise, coordination thereof promotes predictability and identification of ownership rights.

The recognition of legal personality to oil reserves could assure that the climate change commitments subdue the exploration of such reserve, giving legal tools to protect nature and local communities' interests. The legal personality would also reassure the unitization as it would put the reservoir under the same legal structure and authority. Additionally, it could foster alignment of priorities and lessen conflict of interests that may occur in a unitized reservoir.

Unitization is not only a feasible short-term climate action but it also could foster new solutions and approaches to comprehensively promote climate justice. Indeed, unitization is compatible with the recognition of legal personhood to nature's features, promoting each other's efficiency and being complementary in delivering energy justice in all forms.

It also opens the door to new approaches to international law. It poses the relevance of new actors in global governance of urgent issues. It also questions traditional stances of conflict of law and jurisdiction in relation to public international law. Access to justice and climate justice are relatable and international private law could enforce unitization and build upon it to reassure access to justice.

Finally, one must envisage a new pattern of energy global governance in order to meet climate goals. The Energy Charter Treaty (ECT), an attempt in international energy cooperation, failed due to lack of acceptance. However, it opened interesting venues for sustainability goals. The ECT had binding force and provided for energy efficiency in international cooperation together with dispute resolution.

> On the other hand, the search for a global model for energy co-operation, if and when it should take place, cannot end with the text and the structure of the Charter. The Charter would be no more and no less than a starting point in the considerations for a well-balanced, universally acceptable mode of co-operation. (Dolzer, 2015, p.450)

The international community must reach a treaty on international energy cooperation following these principles with a reorientation towards environmental protection. (de Graaf & Squintani, 2021) On another hand, international climate regime requires an adaptation of current governance institutions such as the WTO and regional International Organizations (IGOs). Even though they already have provisions on the matter (Dolzer, 2015), it still greatly relies in vague principles of treaty interpretation without any positive obligation.

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