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The Journal promotes the dissemination of research results and scholarly papers by teaching and research scholars in Africa and across the world in broad areas of sustainable development law and policy. The thematic focus of the journal spans across broad areas of sustainable development law and policy ranging from the economic, social, and environmental dimensions. As such papers that explore broad themes of sustainable development such environment, natural resources, green economy, international trade, banking, taxation, public policy, public private partnerships, alternative dispute resolution, human rights, peace, and conflict studies are normally given top consideration.

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CONTENTS

Editorial Comment

Prof. Eduardo G. Pereira and Dr. Ngozi Chinwa Ole

ARTICLES

1. The Place of Petroleum in Energy Transition in Nigeria 1
**Eduardo G Pereira, Ngozi Chinwa Ole, Lilian Adat,
Temiloluwa Omidiji, and Adefisayo Oyedeji**
2. Petroleum Laws, Regulations, and Sustainable Development: 22
Oil and Gas Perspectives from Nigeria, Norway, and Saudi Arabia
**Olusola Joshua Olujobi, Oshobugie Suleiman Irumekhai, and
Oghenevwogaga Odjugo**
3. Renegotiating For Sustainability: Aligning Nigerian Petroleum 48
Contracts with Environmental Goals and Investor Interests
Nnennaya J Nwali and Ibiere H Jumbo
4. Sustainability of Local Content Policy in the Nigerian and Angolan 71
Oil and Gas Sector: An Assessment
**Ngozi Chinwa Ole, Eti Best Herbert, Onyekachi Eni,
Eduardo G Pereira, and Empire Nyekwere Hechime**
5. The ESG Agenda in the Oil and Gas Industry 96
Timothy Affonso
6. Towards a Legal Regime for Health and Safety in Energy Transition 113
**Peter Kayode Oniemola, Onyemaechi Titilayo Ogiri, Anthony
Adebiyi Adepoju, Soibi O. Bob-Manuel, Oluwatumininu Omotoye,
and Kehinde A. Anifalaje**
7. Sustainable Oil and Gas Issues: Decommissioning, CCUS, and 135
Circular Economy
Opeyemi Omotuyi, Eduardo G. Pereira, and Ngozi Chinwa Ole
8. Petroleum Disputes: An Analysis of Current and Emerging Patterns 157
Dominic O. Akabuiro
9. Development and Incentives for Mature Provinces, Mature Fields, 179
Marginal Fields and Marginal Accumulations: Case Studies on Nigeria,
Angola and Brazil
Eduardo G. Pereira, Shiva Balliram, Isis Oliver, Samantha Ramdeen,

**Cosmos Nike Nwedu, Hirdan Katarina de Medeiros Costa,
Nathália de Oliveira Souza, and Lucca Galatro**

10. EITI as a Primer for Sustainable Development: A Case Study of Nigeria
Val Uche Obi SAN 205
11. Developing Nature-Based Solutions to Climate Change: Legal Challenges
and Emerging Solutions 225
**Eduardo G. Pereira; Danielle M.T. Denny, Timothy Affonso;
Dominique Mouette, and Alberto Fossa**
12. Regulatory Gaps and Challenges with Large-Scale CCUS Development:
Disparity between Advancements in CCS and CCU 252
**Eduardo G Pereira, Nathalia Souza, Opeyemi Omotuyi, Alberto Fossa,
and Edmilson Moutinho dos Santos**
13. Climate Targets and Financial Challenges in the Global South: The Case
of Carbon Capture and Storage 270
**Eduardo G. Pereira, Opeyemi Omotuyi, Leanna Ramkhalawan,
Thomas Muinzer, Alberto Fossa, and Edmilson Moutinho dos Santos**
14. The Impact of Economic Development on Legal Frameworks on
Environmental Protection in Qatar 287
Mohammed Al-Sulaiti
15. Examining the Nexus Between Book Publishing and the Sustainable
Development Goals 319
Clement Taiwo Oguntayo and Ifeoluwa A. Olubiyi

PUBLIC LECTURES

16. Fostering Trade and Investment Integration for Sustainable Development:
Perspectives From the Economic Community of West African
States (ECOWAS) 342
H.E. Dr. Omar Alieu Touray, President of the ECOWAS Commission
17. Fostering Trade and Investment Integration for Sustainable Development:
The Role of International Law 350
Emmanuel Ibe Kachikwu
18. Fostering Regional Trade Integration for Sustainable Development 366
Hon. Baboucarr Ousmaila Joof

19. Attaining Best Practices in the Administration of Criminal Justice in Ekiti State: Towards a Paradigm Shift Honourable Justice Rahman Oshodi	372
20. Accelerating Water Security in the MENA Region through the Effective Implementation of the Law on Transboundary Aquifers Mohammed Tawfiq Ladan	386

EDITORIAL COMMENTS

Prof. Eduardo G. Pereira¹, and Dr. Ngozi Chinwa Ole²

The global energy landscape is undergoing a profound transformation as the world grapples with the dual challenges of meeting growing energy demand and mitigating the impacts of climate change. This special issue, expertly curated by Prof. Eduardo G. Pereira and Dr Ngozi Chinwa Ole, delves into the complex relationship between the oil and gas sector, energy transition, and sustainable development. Through fifteen carefully selected academic articles, this collection offers a multifaceted examination of the critical issues facing the petroleum industry in an era of increasing environmental consciousness and evolving energy paradigms. It contains fifteen academic articles dealing with (i) The place of Petroleum in energy transition, energy security, energy justice and sustainable development, (ii) Petroleum Laws and Regulations and Sustainable Development, (iii) Petroleum Contracts and Sustainable Development, (iv) Sustainable Oil and Gas Issues 1: Local Content, (v) Sustainable Oil and Gas Issues 2: Environmental, Social Governance, (vi) Sustainable Oil and Gas Issues 3: Health and Safety, (vii) Sustainable Oil and Gas Issues 4: Decommissioning, Circular Economy and CCUS, (viii) Petroleum Disputes: An Analysis of Current and Emerging Patterns, (ix) Mature Provinces, (x) EITI, (xi) The Legal, Policy, and Administrative Challenges in Developing Nature-Based Solutions to Climate Change, (xii) Regulatory Gaps and Challenges with Large-Scale CCUS Development, (xiii) Financial Challenges to Meet Climate Target in the Global South.

The first paper deals with “The Place of Petroleum in Energy Transition, Energy Security, Energy Justice, and Sustainable Development”. The role of petroleum in the global energy mix is intensely debated and scrutinised.³ The oil and gas industry is at a crossroads as the world moves towards cleaner energy sources.⁴ This special issue section explores the intricate balance between maintaining energy security, ensuring a just transition, and

¹ Prof. Eduardo G. Pereira is a worldwide recognized scholar specialising in Natural Resources and Energy Law. He is a founding partner at the International Energy Law Training and Research Company as well as at the International Energy Law Advisory Group. He has been active in the natural resources and energy industry for more than 15 years and is an international expert on oil, gas and energy contracts and regulations. His experience in this area – both academic and practical – is extensive. He has practical experience in over 50 jurisdictions covering America, Europe, Africa and Asia. Dr. Pereira concluded his doctoral thesis on oil and gas joint ventures at the University of Aberdeen (Scotland). He conducted postdoctoral research at the Oxford Institute for Energy Studies (University of Oxford, UK), the Scandinavian Institute of Maritime Law (University of Oslo, Norway), the Institute of Energy and Environment (University of São Paulo, Brazil) and more recently at the Canadian Institute of Resources Law (University of Calgary, Canada). He possesses positions as a full-time, part-time, honorary, adjunct and/or visiting scholar in several leading academic institutions around the world. He is also a series editor for the Global South Series at the Journal of Sustainable Development Law and Policy and an associate editor of OGEL. He is also the author and editor of several leading oil and gas textbooks. Further information about his profile can be found at www.eduardogpereira.com

² Senior Lecturer/Director, Law Clinic, Federal University Oye-Ekiti, Nigeria; Research Team Head, Environment and Water Regulation Unit, ACEWATER, Osun State, Nigeria. Email: olengozi@gmail.com.

³ <https://www.irena.org/Digital-Report/World-Energy-Transitions-Outlook-2023>

⁴ IEA (International Energy Agency). (2021). *Net Zero by 2050: A Roadmap for the Global Energy Sector*. IEA. <https://www.iea.org/reports/net-zero-by-2050>

pursuing sustainable development goals. Energy security has traditionally been closely tied to fossil fuel resources, particularly oil and gas.⁵

However, as the world shifts towards renewable energy sources, the definition of energy security is evolving.⁶ The article examines how countries are navigating this transition, balancing their need for reliable energy supplies with commitments to reduce greenhouse gas emissions. Energy justice is another critical aspect addressed in this context.⁷ The transition from fossil fuels has significant socioeconomic implications, particularly for communities and economies heavily dependent on the oil and gas sector.⁸ The articles may explore strategies for ensuring a fair and equitable transition that doesn't leave vulnerable populations behind. The overarching theme of sustainable development provides a framework for evaluating the petroleum industry's future.⁹ The United Nations' Sustainable Development Goals (SDGs) are a blueprint for balancing economic growth, environmental protection, and social progress.¹⁰ The articles in this section likely analyse how the oil and gas sector can align its operations and long-term strategies with these global objectives.

The second paper discusses “Petroleum Laws and Regulations and Sustainable Development”. The legal and regulatory landscape governing the oil and gas industry is crucial in shaping its environmental and social impacts.¹¹ This special issue section examines how petroleum laws and regulations are evolving to incorporate sustainable development principles. Traditional petroleum laws primarily focus on resource ownership, extraction rights, and revenue sharing.¹² However, there is a growing trend towards incorporating environmental safeguards, social responsibility clauses, and sustainability metrics into these legal frameworks.¹³ The article explores case studies from

⁵ Yergin, D. (2020). *The New Map: Energy, Climate, and the Clash of Nations*. Penguin Press.

⁶ Cherp, A., & Jewell, J. (2014). The concept of energy security: Beyond the four As. *Energy Policy*, 75, 415-421. <https://doi.org/10.1016/j.enpol.2014.09.005>; Thomas L Muinzer, Eduardo G Pereira, Patrick R Baker, Opeyemi Y Omotuyi, Climate Change and a Just Energy Transition in Eduardo G. Pereira, Thomas Muinzer, Patrick Baker, *Energy Law and the Sustainable Development Goals: Host Government Instruments for Sustainability in Oil and Gas Operations* (Routledge, 2024)

⁷ Sovacool, B. K., Burke, M., Baker, L., Kotikalapudi, C. K., & Wlokas, H. (2017). New frontiers and conceptual frameworks for energy justice. *Energy Policy*, 105, 677-691. <https://doi.org/10.1016/j.enpol.2017.03.005>

⁸ Newell, P., & Mulvaney, D. (2013). The political economy of the “just transition”. *The Geographical Journal*, 179(2), 132-140. <https://doi.org/10.1111/geoj.12008>

⁹ Sachs, J. D. (2015). *The Age of Sustainable Development*. Columbia University Press.

¹⁰ United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. <https://sdgs.un.org/2030agenda>

¹¹ Talus, K. (2012). *EU Energy Law and Policy: A Critical Account*. Oxford University Press.

Wawryk, A. S. (2014). International environmental standards in the oil industry: Improving the operations of transnational oil companies in emerging economies. *International Energy Law Review*, 2, 50-65.

¹² Cotula, L. (2010). *Investment Contracts and Sustainable Development: How to Make Contracts for Fairer and More Sustainable Natural Resource Investments*. IIED, London.

Gao, Z. (1994). International petroleum exploration and exploitation agreements: A cross-jurisdictional approach. *Journal of Energy & Natural Resources Law*, 12(4), 281-305. <https://doi.org/10.1080/02646811.1994.11433131>

¹³ Shemberg, A. (2008). *Stabilization Clauses and Human Rights*. International Finance Corporation and UN Special Representative of the Secretary-General on Business and Human Rights.

Wawryk, A. (2003). International environmental standards in the oil industry: Improving the operations of transnational oil companies in emerging economies. *Journal of Energy & Natural Resources Law*, 21(4), 402-435. <https://doi.org/10.1080/02646811.2003.11433138>

different countries, highlighting innovative approaches to regulating the industry in a way that promotes sustainable practices. The "social license to operate" concept has become increasingly important for oil and gas companies.¹⁴ This refers to the level of acceptance or approval granted to a company by local communities and other stakeholders.¹⁵ The legal and regulatory frameworks discussed in the paper address how this concept is codified into law, requiring companies to engage more meaningfully with affected communities and demonstrate tangible benefits beyond mere resource extraction.¹⁶

The third paper deals with "Petroleum Contracts and Sustainable Development". Building on the legal and regulatory context, this section focuses on how sustainability considerations are incorporated into petroleum contracts.¹⁷ These agreements, typically between governments and oil companies, set the terms for exploration, production, and revenue sharing. Traditionally, petroleum contracts have prioritised maximising economic returns for the host country and the operating company.¹⁸ However, there is a growing recognition of the need to balance these financial objectives with environmental and social responsibilities.¹⁹ The articles in this section may examine new contractual models that incentivise sustainable practices, such as reduced carbon emissions, water conservation, and biodiversity protection. Performance-based contracts that link financial rewards to sustainability metrics are an emerging trend in the industry.²⁰ These articles

¹⁴ Owen, J. R., & Kemp, D. (2013). Social license and mining: A critical perspective. *Resources Policy*, 38(1), 29-35. <https://doi.org/10.1016/j.resourpol.2012.06.016>

Prno, J., & Slocombe, D. S. (2012). Exploring the origins of "social license to operate" in the mining sector: Perspectives from governance and sustainability theories. *Resources Policy*, 37(3), 346-357. <https://doi.org/10.1016/j.resourpol.2012.04.002>

Eduardo G. Pereira, Tuuli Timonen, Elina Aleynikova (eds.), *Governing Law and Dispute Resolution in the Petroleum Industry* (Edward Elgar 2022),

¹⁵ Gunningham, N., Kagan, R. A., & Thornton, D. (2004). Social license and environmental protection: Why businesses go beyond compliance. *Law & Social Inquiry*, 29(2), 307-341. <https://doi.org/10.1111/j.1747-4469.2004.tb00338.x>

¹⁶ Olawuyi, D. S., & McHugh, J. (2019). Sustainable Development and the Oil and Gas Industry: Challenges and Perspectives. *Sustainable Development Law & Policy*, 19(1), 1-5.
Van Alstine, J. (2014). Transparency in resource governance: The pitfalls and potential of "new oil" in sub-Saharan Africa. *Global Environmental Politics*, 14(1), 20-39. https://doi.org/10.1162/GLEP_a_00216

¹⁷ Hodgson, S., & Campbell, K. (2017). Legal frameworks for petroleum resources: The role of contracts and agreements. *Journal of World Energy Law & Business*, 10(4), 311-320. <https://doi.org/10.1093/jwelb/jwx025>

Cotula, L. (2010). *Investment Contracts and Sustainable Development: How to Make Contracts for Fairer and More Sustainable Natural Resource Investments*. IIED, London.

Eduardo G. Pereira, Thomas Muinzer, Patrick Baker, *Energy Law and the Sustainable Development Goals: Host Government Instruments for Sustainability in Oil and Gas Operations* (Routledge, 2024).

¹⁸ Bindemann, K. (1999). *Production-Sharing Agreements: An Economic Analysis*. Oxford Institute for Energy Studies.

Tordo, S. (2007). *Fiscal Systems for Hydrocarbons: Design Issues*. World Bank Working Paper No. 123. <https://doi.org/10.1596/978-0-8213-7039-2>

¹⁹ Toledano, P., Maennling, N., & Thomashausen, S. (2017). *A Framework to Approach Shared Use of Mining-Related Infrastructure*. Columbia Center on Sustainable Investment.

Nwapi, C. (2016). A survey of the literature on local content policies in the oil and gas industry in East Africa. *The Extractive Industries and Society*, 3(4), 1075-1084. <https://doi.org/10.1016/j.exis.2016.09.006>

²⁰ Alfaro, J., & Meurice, J. (2020). Contractual and performance incentives for sustainable development in the oil and gas sector. *Energy Policy*, 137, 111076. <https://doi.org/10.1016/j.enpol.2020.111076>

Phillips, J. (2017). Integrating environmental and social responsibility in oil contracts. *Natural Resources Journal*, 57(3), 655-678.

might explore how such contracts are structured, the challenges in implementing them, and their potential to drive meaningful change in corporate behaviour.

The fourth article deals with “Sustainable Oil and Gas Issues 1: Local Content”. Local content policies aim to ensure that a significant portion of the goods, services, and workforce used in oil and gas projects are sourced from the host country.²¹ This special issue section delves into how local content initiatives intersect with sustainable development goals. While local content requirements have traditionally been seen primarily as a means of economic development, there is growing recognition of their potential to contribute to broader sustainability objectives.²² The article shall explore how local content policies can be designed to promote skills transfer, technological innovation, and the development of industries that support the energy transition. The challenges of implementing effective local content policies are likely addressed, including capacity building, quality standards, and the potential for these requirements to conflict with international trade agreements.²³ The article also examines case studies of successful local content initiatives that have contributed to sustainable economic diversification in oil-producing countries.

Article five deals with “Sustainable Oil and Gas Issues 2: Environmental, Social Governance (ESG)”. Environmental, Social, and Governance (ESG) criteria have become increasingly important in the oil and gas sector, driven by investor pressure, regulatory requirements, and changing public expectations.²⁴ This section examines how ESG considerations reshape the industry's operations and strategic planning. On the environmental front, the articles likely explore strategies for reducing greenhouse gas emissions, minimising water usage, and protecting biodiversity in areas affected by oil and gas operations. The industry's efforts to improve its environmental performance through

²¹ Tordo, S., Warner, M., Manzano, O. E., & Anouti, Y. (2013). *Local Content Policies in the Oil and Gas Sector*. World Bank. <https://doi.org/10.1596/978-0-8213-9931-7>

Eduardo G. Pereira, Christopher Matthews and Heike Trischmann, “Local Content Policies in the Petroleum Industries: Lessons Learned” (2019) *Oil and Gas, Natural Resources and Energy Journal* Vol 4, Number 5, Pages 632-674,

Warner, M. (2011). *Local Content in Procurement: Creating Local Jobs and Competitive Domestic Industries in Supply Chains*. Greenleaf Publishing.

²² Esteves, A. M., Coyne, B., & Moreno, A. (2013). Local content initiatives: Enhancing the subnational benefits of the oil, gas, and mining sectors. *Canadian Journal of Development Studies*, 34(2), 158-176. <https://doi.org/10.1080/02255189.2013.787001>

Ovadia, J. S. (2016). Local content policies and petro-development in Sub-Saharan Africa: A comparative analysis. *Resources Policy*, 49, 20-30. <https://doi.org/10.1016/j.resourpol.2016.04.003>

²³ Kazzazi, A., & Nouri, B. (2012). A local content decision framework for upstream oil and gas projects. *Project Management Journal*, 43(4), 60-76. <https://doi.org/10.1002/pmj.21282>

Ibrahim, M. A. (2015). Local content policy, human capital development and sustainable business performance in the Nigerian oil and gas industry. *International Journal of Business and Management Studies*, 7(2), 41-59.

²⁴ Global Reporting Initiative (GRI) & IPIECA. (2020). *Sustainability Reporting Guidance for the Oil and Gas Industry*. GRI.

UN PRI. (2018). *Evaluating ESG factors in the oil and gas sector*. United Nations Principles for Responsible Investment.

Khan, M., Serafeim, G., & Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review*, 91(6), 1697-1724. <https://doi.org/10.2308/accr-51383>

Elena I Athwal, Damilola S Olawuyi, Eduardo G Pereira, ESG considerations for midstream and downstream oil and gas in Eduardo G. Pereira, Damilola S. Olawuyi, *Oil and Gas in Africa* (2nd edn Globe Law and Business, due for publication in 2024)

technological innovations, such as methane leak detection and carbon capture technologies, may be discussed.²⁵ Social aspects of ESG in the oil and gas sector encompass various issues, including community relations, labour practices, and human rights. The articles may examine how companies address these challenges, particularly in regions with complex social and political dynamics.²⁶ Governance issues, including transparency, anti-corruption measures, and board diversity, are crucial for building stakeholder trust and ensuring long-term sustainability.²⁷

Article six deals with “Sustainable Oil and Gas Issues 3: Health and Safety”. Health and safety have long been priorities in the oil and gas industry due to the inherent risks of exploration, production, and processing activities.²⁸ This special issue section examines how health and safety practices are evolving in line with sustainable development principles. The article shall explore the industry's efforts to move beyond mere compliance with safety regulations towards a more holistic approach to worker wellbeing. This could include initiatives to address mental health, work-life balance, and long-term health impacts associated with the industry.²⁹ Technological advancements, such as using artificial intelligence and robotics to perform high-risk tasks, are likely discussed as potential solutions for improving safety and operational efficiency.³⁰

²⁵ BP. (2021). *Energy Transition and Low Carbon Strategy*. BP Sustainability Report.

International Energy Agency (IEA). (2020). *Methane Tracker 2020: Reducing Emissions of Methane in Oil and Gas*. IEA.

IEA. (2021). *CCUS in Clean Energy Transitions*. International Energy Agency.

²⁶ International Finance Corporation (IFC). (2012). *Performance Standards on Environmental and Social Sustainability*. IFC.

Frynas, J. G. (2009). *Beyond corporate social responsibility: Oil multinationals and social challenges*. Cambridge University Press.

Amnesty International. (2020). *Time to Rein In Big Oil: New Approaches to Human Rights Due Diligence in the Oil and Gas Industry*. Amnesty International Report.

²⁷ Transparency International. (2011). *Promoting Revenue Transparency: 2011 Report on Oil and Gas Companies*. Transparency International.

Gillies, A., & Heuty, A. (2011). *Governance and Transparency in Oil and Gas Sector: Emerging Standards and Best Practices*.

Revenue Watch Institute. Hess, D. (2007).

Social reporting and new governance regulation: The prospects of achieving corporate accountability through transparency. *Business Ethics Quarterly*, 17(3), 453–476. <https://doi.org/10.5840/beq200717328>

²⁸ Morrison, D., & Reniers, G. (2017). A case study in the global oil and gas industry: Health, safety, and environmental performance. *Journal of Cleaner Production*, 142, 1101–1110. <https://doi.org/10.1016/j.jclepro.2016.09.153>

International Labour Organization (ILO). (2021). *Safety and Health in the Oil and Gas Industry*. ILO.

BP. (2021). *BP Sustainability Report 2020: Health, Safety, and Sustainability Performance*. BP.

Eduardo G. Pereira, Timothy Affonso, Patrick Baker, “Petroleum Exploration in the Gulf of Mexico: Are Coastal Areas Safe from a Transboundary Oil Spill?” *Oil, Gas, Energy Quarterly*, 2024,

²⁹ Shell. (2021). *Sustainability Report 2020: People, Safety, and Wellbeing*. Royal Dutch Shell. National Institute for Occupational Safety and Health (NIOSH). (2020). *Mental Health in the Workplace: Oil and Gas Extraction Workers*. NIOSH, U.S. Department of Health and Human Services. Robertson, I. T., Leach, D. J., Doerner, N., & Smeed, M. (2012). Poor health but not absent: Prevalence, predictors, and outcomes of presenteeism. *Journal of Occupational Health Psychology*, 17(3), 345–358. <https://doi.org/10.1037/a0028309>

³⁰ Boehm, M., & Thomas, O. (2013). Looking beyond compliance: Oil and gas industry safety and the promise of advanced technologies. *Journal of Petroleum Technology*, 65(10), 58–60. <https://doi.org/10.2118/1012-0058-JPT>

Article seven deals with “Sustainable Oil and Gas Issues 4: Decommissioning, Circular Economy, and CCUS”. As many oil and gas fields end their productive lives, decommissioning has become a significant issue for the industry.³¹ This section explores how decommissioning activities can be conducted to minimise environmental impact and maximise resource recovery.

The concept of the circular economy, which aims to eliminate waste and maximise resource efficiency, is increasingly being applied to the oil and gas sector. The articles may examine innovative approaches to repurposing infrastructure, recycling materials, and finding new uses for depleted reservoirs.³² Carbon Capture, Utilization, and Storage (CCUS) technologies are a potential bridge between the current fossil fuel-dominated energy system and a low-carbon future. This article also explores the technical, economic, and regulatory challenges associated with scaling up CCUS and its potential role in achieving net-zero emissions targets.³³

Article eight deals with “Petroleum Disputes: An Analysis of Current and Emerging Patterns”. The complex nature of oil and gas operations and their significant economic and environmental impacts often lead to disputes between various stakeholders.³⁴ This section of the special issue analyses current trends in petroleum-related disputes and

Accenture. (2018). *Digital Innovation in Oil and Gas: A Holistic Approach to Safety and Operational Efficiency*. Accenture Strategy.

Schatsky, D., & Muraskin, C. (2021). *AI and Robotics in the Oil and Gas Industry: Improving Safety and Efficiency*. Deloitte Insights.

³¹ Offshore Decommissioning Authority (ODA). (2020). *Decommissioning Insight Report 2020*. ODA. Okoro, E. E., & Musara, C. (2020). Decommissioning of oil and gas installations: Mitigating environmental impacts in line with international standards. *Journal of Environmental Management*, 273, 111119. <https://doi.org/10.1016/j.jenvman.2020.111119>

Fowler, A. M., Jørgensen, A.-M., Svendsen, J. C., Macreadie, P. I., Jones, D. O. B., & Booth, D. J. (2018). Environmental benefits of leaving offshore infrastructure in the ocean. *Frontiers in Ecology and the Environment*, 16(10), 571-578. <https://doi.org/10.1002/fee.1827>

Eduardo G. Pereira, Alexandra Wawryk, Catherine Banet, Heike Trischmann, Keith Hall (eds.), *Regulation of Decommissioning, Abandonment and Re-Use Initiatives in the Oil and Gas Industry: From Obligation to Opportunities* (Kluwer International Law 2020)

³² Velenturf, A. P. M., Archer, S. A., Gomes, H. I., Christgen, B., Lag-Brotons, A. J., & Purnell, P. (2019). Circular economy and the oil and gas sector: New opportunities for waste reduction and resource reuse. *Science of the Total Environment*, 690, 651-661. <https://doi.org/10.1016/j.scitotenv.2019.06.044>

Bonomi, A., De Moura, L. B., & Ometto, A. R. (2021). The oil and gas industry and the circular economy: A systematic literature review and directions for future research. *Journal of Cleaner Production*, 328, 129623. <https://doi.org/10.1016/j.jclepro.2021.129623>

Roe, S., Streck, C., Obersteiner, M., Frank, S., Griscom, B., Drouet, L., ... & Lawrence, D. (2019). Contribution of the oil and gas sector to the circular economy and climate change mitigation: Reuse of infrastructure and byproducts. *Nature Climate Change*, 9, 72-74. <https://doi.org/10.1038/s41558-018-0343-1>

³³ Global CCS Institute. (2020). *Global Status of CCS 2020: Scaling up the CCS Value Chain*. Global CCS Institute.

IEA (International Energy Agency). (2020). *CCUS in Clean Energy Transitions*. IEA. <https://www.iea.org/reports/ccus-in-clean-energy-transitions>

Bui, M., Adjiman, C. S., Bardow, A., Anthony, E. J., Boston, A., Brown, S., & Dowell, N. M. (2018). Carbon capture and storage (CCS): The way forward. *Energy & Environmental Science*, 11(5), 1062-1176. <https://doi.org/10.1039/C7EE02342A>

³⁴ Elina Aleynikova, Tuuli Timonen, Eduardo G. Pereira, chapter, “The Oil and Gas Industry is Prone to Disputes” in Eduardo G. Pereira, Tuuli Timonen, Elina Aleynikova (eds.), *Governing Law and Dispute Resolution in the Petroleum Industry* (Edward Elgar 2022),

emerging patterns that reflect changing industry dynamics.³⁵ The article shall explore a range of dispute types, including those between host governments and oil companies, inter-state conflicts over resource ownership, and community-led litigation over environmental and social impacts. The role of international arbitration in resolving these disputes and how sustainability considerations are increasingly factoring into arbitral decisions may be examined.³⁶ Emerging areas of dispute, such as those related to climate change liability or the stranding of assets due to energy transition policies, are likely discussed. The articles may also consider how alternative dispute resolution mechanisms and preventive legal strategies are employed to manage conflicts sustainably.³⁷

Article nine deals with “Mature Provinces”. Many of the world's major oil and gas producing regions are considered “mature provinces,” where production has peaked or is declining. This section examines the unique challenges and opportunities these areas present in the context of sustainable development and energy transition.³⁸ The articles may explore strategies for maximising recovery from mature fields while minimising environmental impact, such as enhanced oil recovery techniques and the application of digital technologies. The economic and social implications of declining production in these regions, including job transition and economic diversification issues, are likely addressed.³⁹ The potential for repurposing infrastructure in mature provinces for

³⁵ Salacuse, J. W. (2013). *The Three Laws of International Investment: National, Contractual, and International Frameworks for Foreign Capital*. Oxford University Press.

Schreuer, C. (2009). *The ICSID Convention: A Commentary*. Cambridge University Press.

Cambridge Arbitration Reports. (2019). *Global Energy Disputes: Legal and Regulatory Issues*. Cambridge University Press.

Fietta, S., & Mordsley, R. (2015). Investment disputes in the energy sector: The role of international arbitration. *Journal of World Energy Law & Business*, 8(1), 3-29. <https://doi.org/10.1093/jwelb/jwv003>

³⁶ Bernardini, P. (2010). International arbitration in the oil and gas sector: Recent trends and challenges. *Journal of International Arbitration*, 27(6), 561-574.

Kolo, A., & Wälde, T. (2008). Renegotiation and adaptation of international investment contracts: The role of contract doctrines. *The Journal of World Investment & Trade*, 9(1), 5-57. <https://doi.org/10.1163/221190007X00124>

Farah, Y., & Reyes, R. (2018). Oil and gas disputes: International arbitration and sustainability challenges. *Transnational Dispute Management Journal*, 15(3), 49-73.

³⁷ Peel, J., & Osofsky, H. M. (2018). *Climate Change Litigation: Regulatory Pathways to Cleaner Energy*. Cambridge University Press.

Streck, C., & Chagas, T. (2020). *Climate Change and International Investment Law: Arbitration and Disputes Arising from Stranded Fossil Fuel Assets*. Environmental Defense Fund.

Chaisse, J., & Nottage, L. (2021). The role of international arbitration in addressing climate change and stranded assets: Legal frameworks and emerging challenges. *Journal of Energy & Natural Resources Law*, 39(1), 21-42. <https://doi.org/10.1080/02646811.2020.1866308>

³⁸ Sorrell, S., Speirs, J., Bentley, R., Brandt, A., & Miller, R. (2012). Global oil depletion: A review of the evidence. *Energy Policy*, 38(9), 5295-5305. <https://doi.org/10.1016/j.enpol.2010.04.046>

Thomsen, L., & Jacobsen, J. (2017). Oil and gas in mature provinces: The challenges and opportunities for continued production. *International Journal of Energy Economics and Policy*, 7(1), 267-273.

Kellogg, R. (2014). The effect of uncertainty on investment: Evidence from Texas oil drilling. *American Economic Review*, 104(6), 1698-1734. <https://doi.org/10.1257/aer.104.6.1698>

³⁹ Alvarado, V., & Manrique, E. (2010). Enhanced oil recovery: An update review. *Energies*, 3(9), 1529-1575. <https://doi.org/10.3390/en3091529>

Bailey, M., & Grover, R. (2015). Digital transformation in oil and gas: Opportunities for enhancing recovery and reducing environmental footprint. *Journal of Petroleum Technology*, 67(6), 24-31. <https://doi.org/10.2118/0615-0024-JPT>

alternative energy projects, such as geothermal energy production or hydrogen storage, may be discussed as a pathway for sustainable development in these areas.⁴⁰

Article ten deals with “Extractive Industries Transparency Initiative (EITI)”. The final section of this special issue focuses on the Extractive Industries Transparency Initiative (EITI), a global standard for promoting open and accountable management of extractive resources. The EITI is crucial in enhancing governance and reducing oil, gas, and mining corruption.⁴¹ The article in this section examines the impact of EITI implementation on resource-rich countries, focusing mainly on Nigeria and analysing how increased transparency has affected government revenues, public trust, and foreign investment. The challenges of implementing EITI standards, particularly in countries with weak institutional capacity or political resistance to transparency, are likely discussed.⁴² The evolution of the EITI to incorporate broader sustainability issues, such as environmental reporting and gender equality, may be explored.⁴³

The eleventh article deals with “The Legal, Policy, and Administrative Challenges in Developing Nature-Based Solutions to Climate Change”. The article highlights the

Babadagli, T. (2010). Developments in enhanced oil recovery technologies in mature oil fields. *Energy & Fuels*, 24(1), 230-247. <https://doi.org/10.1021/ef900810u>

⁴⁰ Fleming, D. A., & Measham, T. G. (2015). Local economic impacts of an unconventional energy boom: The coal seam gas industry in Australia. *Australian Journal of Agricultural and Resource Economics*, 59(1), 78-94. <https://doi.org/10.1111/1467-8489.12043>

Bridge, G. (2004). Contested terrain: Mining and the environment. *Annual Review of Environment and Resources*, 29(1), 205-259. <https://doi.org/10.1146/annurev.energy.28.011503.163434>

Bradshaw, M. J. (2010). Global energy dilemmas: A geographical perspective on energy security, energy equity, and environmental sustainability. *Geography Compass*, 4(6), 816-830. <https://doi.org/10.1111/j.1749-8198.2010.00340.x>

⁴¹ Gillies, A., & Heuty, A. (2011). Does transparency work? The challenges of measurement and effectiveness in resource-rich countries. *Development Policy Review*, 29(4), 469-487. <https://doi.org/10.1111/j.1467-7679.2011.00540.x>

Corrigan, C. C. (2014). Breaking the resource curse: Transparency in the natural resource sector and the Extractive Industries Transparency Initiative. *Resources Policy*, 40, 17-30. <https://doi.org/10.1016/j.resourpol.2013.10.003>

Le Billon, P. (2011). Extractive sectors and illicit financial flows: What role for transparency initiatives? *Anti-Corruption Resource Centre*.

https://resourcegovernance.org/sites/default/files/rgi-analyzing_the_role_of_eiti.pdf

Eduardo G. Pereira, Rochelle Spencer, Jonathon Moses (eds.), *Sovereign Wealth Funds, Local Content Policies and CSR: Developments in the Extractive Sector* (Springer 2021),

⁴² David-Barrett, E., & Okamura, K. (2016). Norm diffusion and reputation: The rise of the Extractive Industries Transparency Initiative. *Governance*, 29(2), 227-246. <https://doi.org/10.1111/gove.12163>

Sovacool, B. K., Walter, G., Van de Graaf, T., & Andrews, N. (2016). Energy governance, transnational rules, and the resource curse: Exploring the effectiveness of the Extractive Industries Transparency Initiative (EITI). *World Development*, 83, 179-192. <https://doi.org/10.1016/j.worlddev.2016.01.021>

Kolstad, I., & Wiig, A. (2009). Is transparency the key to reducing corruption in resource-rich countries? *World Development*, 37(3), 521-532. <https://doi.org/10.1016/j.worlddev.2008.07.002>

⁴³ Aaronson, S. A. (2011). Limited partnership: Business, government, civil society, and the public in the Extractive Industries Transparency Initiative (EITI). *Public Administration and Development*, 31(1), 50-63. <https://doi.org/10.1002/pad.588>

Ölcer, D. (2009). Extracting the maximum from the EITI. *OECD Development Centre Working Paper No. 276*. <https://doi.org/10.1787/220784641447>

Hilson, G., & Maconachie, R. (2009). Good governance and the Extractive Industries Transparency Initiative: The relationship between EITI and state capacity. *Policy Studies*, 30(2), 177-190. <https://doi.org/10.1080/01442870902723442>

promise of Nature-Based Solutions (NbS) in addressing climate change and other sustainability challenges, such as biodiversity loss, land degradation, and pollution.⁴⁴ It examines NbS like reforestation, coastal restoration, and sustainable agriculture, emphasizing their potential for carbon sequestration, enhanced biodiversity, and socio-economic co-benefits.⁴⁵ Key examples include floodplain restoration, urban tree planting, and agroforestry systems.⁴⁶ However, widespread adoption is hindered by significant legal, policy, and administrative challenges. These include the absence of robust regulatory frameworks, funding gaps, unclear land tenure, and inadequate coordination among governmental agencies.⁴⁷ Additionally, the article identifies philosophical and pragmatic barriers to NbS, such as concerns about misuse, inequitable distribution of resources, and the lack of tools to quantify benefits.⁴⁸ It argues that overcoming these challenges requires strong legal frameworks, prioritization of NbS in policymaking, and integration with other societal solutions.⁴⁹ Engaging local communities, ensuring equitable distribution of benefits, and fostering international collaboration are also deemed essential for accelerating NbS implementation and scaling their impact on sustainable development.⁵⁰

The twelfth article deals with “Regulatory Gaps and Challenges with Large-Scale CCUS Development”. The paper explores the crucial role of Carbon Capture, Utilization, and Storage (CCUS) technologies in achieving climate goals, particularly for decarbonizing hard-to-abate sectors.⁵¹ It differentiates between Carbon Capture and Storage (CCS), which involves capturing CO₂ and storing it underground, and Carbon Capture and Utilization (CCU), which focuses on reusing captured CO₂ for industrial applications.⁵²

⁴⁴ IPBES IS-PP on B and ES, ‘Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services’ (2019) <<https://zenodo.org/records/6417333>>

⁴⁵ IUCN IU for C of N, IUCN Global Standard for Nature-Based Solutions: A User-Friendly Framework for the Verification, Design and Scaling up of NbS: First Edition (1st edn, IUCN, International Union for Conservation of Nature 2020) <<https://portals.iucn.org/library/node/49070>>

⁴⁶ EGGERMONT, H. et al. Nature-based Solutions: New Influence for Environmental Management and Research in Europe. *GAIA - Ecological Perspectives for Science and Society*, v. 24, n. 4, p. 243–248, 1 jan. 2015.

⁴⁷ LINNERTHOOTH-BAYER, J.; SCOLOBIG, A. Tackling policy barriers to nature-based solutions. Disponível em: <<https://iiasa.ac.at/policy-briefs/sep-2023/tackling-policy-barriers-to-nature-based-solutions>>.

⁴⁸ UNEP, U. N. E. P. Ministerial Declaration: UNEA-5. Disponível em: <<http://www.unep.org/environmentassembly/inputs-ministerial-declaration-unea-5>>.

⁴⁹ CASHORE, B. et al. Policy design for biodiversity: How problem conception drift undermines “fit-for-purpose” Peatland conservation. *Policy and Society*, p. puae019, 14 jun. 2024.; COHEN-SHACHAM, E. et al. Core principles for successfully implementing and upscaling Nature-based Solutions. *Environmental Science & Policy*, v. 98, p. 20–29, 1 ago. 2019.

⁵⁰ JONES, X. H.; ROE, D.; HOLLAND, E. Nature-based solutions in action: lessons from the frontline. Canadá: iied, 2021.; RICHARDS, K. More Countries Including Nature in Their Climate Action Plans, but Step Change Still Needed to. Disponível em: <https://wwf.panda.org/wwf_news/?4248391/NDCsreport>.

⁵¹ SDE ++ 2023, Stimulation of Sustainable Energy Production and Climate Transition, Commissioned by the Dutch Ministry of Economic Affairs and Climate Policy, <https://english.rvo.nl/sites/default/files/2023-09/BrochureSDE2023English.pdf>.

⁵² T. Wilberforce, A.G. Olabi, E.T. Sayed, K.Elsaid, M.A. Abdelkareem. *Progress in carbon capture technologies*, *Sci Total Environ*, 761 (2021), Article 143203, 10.1016/j.scitotenv.2020.143203; Nazarian L.N., et al. Imaging algorithms for evaluating suspected rotator cuff disease: Society of radiologists in ultrasound consensus conference statement *Radiology*, 267 (2013), p. 589. Pires F.O., et al. The influence of peripheral

While regulatory frameworks for CCS have advanced globally, including Brazil's Law No. 14.993, significant gaps persist in regulating CCU, stifling its large-scale development.⁵³ The article highlights financial and regulatory barriers, noting that less than 0.5% of annual global clean technology investments are allocated to CCUS, limiting its scalability, especially in developing nations.⁵⁴ The analysis outlines the importance of robust regulatory frameworks that address liability, CO₂ storage, and the lifecycle of CCU projects.⁵⁵ Case studies, including Brazil, reveal how the lack of a regulated carbon trading market and clear financial incentives hinders CCUS adoption.⁵⁶ The article also identifies policy discrepancies, such as the exclusion of Enhanced Oil Recovery (EOR) from CCS regulations, despite its potential to bridge operational costs.⁵⁷ Recommendations include creating transparent legal structures, incentivizing carbon pricing mechanisms, and forming technical oversight committees to align CCUS projects with sustainable development goals.

The thirteenth article deals with the “Financial Challenges to Meet Climate Target in the Global South”. The article examines the potential of Carbon Capture and Storage (CCS) as a crucial technology for achieving global climate targets while addressing its financial challenges, particularly in the Global South.⁵⁸ CCS is presented as a versatile solution for decarbonizing industries, especially in “hard-to-abate” sectors,⁵⁹ by capturing CO₂ emissions from power plants and industrial sources for underground storage.⁶⁰ However, the high capital costs, lack of commercially viable CO₂ utilization options, and limited financial resources in developing countries hinder its widespread adoption.⁶¹ The article

affluent signals on the rating of perceived exertion and time to exhaustion during exercise at different intensities *Psychophysiology*, 48 (2011), pp. 1284-1290

⁵³ IEA, Legal and Regulatory Frameworks for CCUS: An IEA CCUS Handbook <https://iea.blob.core.windows.net/assets/bda8c2b2-2b9c-4010-ab56-b941dc8d0635/LegalandRegulatoryFrameworksforCCUS-AnIEACCUSHandbook.pdf>

⁵⁴ CCUS in Clean Energy Transitions: A New Era for CCUS (International Energy Agency, 2021) <https://www.iea.org/reports/ccus-in-clean-energy-transitions/a-new-era-for-ccus>

⁵⁵ Ian Havercroft, Richard Macrory and Richard Stewart (eds), *Carbon Capture and Storage: Emerging Legal and Regulatory Issues* (Bloomsbury, 2018).

⁵⁶ Brazil, Decree No 11,075 of 19 May 2022 https://www.planalto.gov.br/ccivil_03/_ato2019-2022/2022/decreto/D11075.htm

⁵⁷ Relatório de Implementação do Marco Regulatório de Carbon Capture, Use and Storage – CCUS (2024) https://www.gov.br/anp/pt-br/canais_atendimento/imprensa/relatorioccusstm24.04.09.pdf; Jürgen-Friedrich Hake and Olga Shenk, “International Cooperation in Support of CCUS”, pp.311-327.

⁵⁸ “High Investment Costs and Untested Technology are Challenges for the Carbon Capture Industry” DBRS Morningstar, 10 October 2023, <https://dbrs.morningstar.com/research/421543/high-investment-costs-and-untested-technology-are-challenges-for-the-carbon-capture-industry>. See also “Barriers to Successfully Implementing Carbon Capture, Utilization, and Storage (CCUS)” CECO Environmental, 25 April 2024, <https://www.cecoviro.com/barriers-to-successfully-implementing-carbon-capture-utilization-and-storage-ccus/#:~:text=High%20Costs&text=The%20costs%20associated%20with%20building,to%20the%20overall%20cost%20burden>

⁵⁹ IEA (2020), *Energy Technology Perspectives 2020 - Special Report on Carbon Capture Utilisation and Storage: CCUS in clean energy transitions*, OECD Publishing, Paris, <https://doi.org/10.1787/208b66f4-en>.

⁶⁰ Shen, M., Kong, F., Tong, L. et al. Carbon capture and storage (CCS): development path based on carbon neutrality and economic policy. *Carb Neutrality* 1, 37 (2022). <https://doi.org/10.1007/s43979-022-00039-z>

⁶¹ “High Investment Costs and Untested Technology are Challenges for the Carbon Capture Industry” DBRS Morningstar, 10 October 2023, <https://dbrs.morningstar.com/research/421543/high-investment-costs-and-untested-technology-are-challenges-for-the-carbon-capture-industry>

emphasizes the need for financial mechanisms, including international public finance, corporate funding, and sustainable finance, to overcome these barriers and support CCS deployment in these regions.⁶² For developing countries, the challenges are compounded by lower per capita incomes and reliance on fossil fuels for energy security. The article argues for tailored financial solutions, policy coherence, and international collaboration to accelerate CCS implementation. Drawing on lessons from the Global North, it highlights the importance of tax incentives, investment credits, and global partnerships in bridging the financial gap.⁶³ It concludes that a flexible, phased approach to energy transition is essential for the Global South, combining initial reliance on affordable fossil fuels with gradual integration of CCS and renewable technologies.

The fourteenth article deals with ‘Examining the Nexus between the book publishing and Sustainable Development Goals in Nigeria’. The article analyses the relationship between the book publishing and sustainable development goals in the country. It evaluates its contribution to ending poverty in all forms (Goal 4); decent work and economic growth (Goal 8); protecting, restoring and promoting sustainable use of territorial ecosystems e.t.c (Goal 15). The book further attempts to evaluate the role that the book industry play in achieving the African Agenda 2023 and ECOWAS Vision 2050. It establishes that the Nigerian book industry has not lived up to expectation when benchmarked against the mentioned goals. It recommends some legal and policy reforms that will strengthen the role of the book industry in contributing to sustainable development.

The fifteenth and the final article analyses the legal and economic happenings that inform the Qatar environmental laws in sustainable development. The article establishes the nexus between Qatar’s economic projections and its environmental issues. It tries to situate the ongoing decarbonisation strategy in the context of the Paris Agreement 2015. It analyses the legal and policy framework applicable to decarbonisation and establishes that there is an emerging recognition of sustainable development. Regardless, they argue that the existing legal framework is reactionary and is not keeping up with growing economic and demographic growth. Recommendations were made to address the identified legal gaps. The article calls for the need to strengthen the effectiveness of environmental law implementation and ensure the mainstreaming of sustainable development in the developmental model in Qatar.

In conclusion, this special issue comprehensively examines the complex interplay between the oil and gas sector, energy transition, and sustainable development. Bringing together expert analyses on a wide range of topics – from legal and contractual frameworks to operational issues and dispute resolution – offers valuable insights for policymakers, industry leaders, and researchers navigating the challenges of building a more sustainable energy future. As the world grapples with the urgent need to address climate change while ensuring energy security and economic development, the perspectives presented in these articles contribute to the ongoing dialogue on the role of petroleum in a rapidly evolving global energy landscape.

⁶² United Nations, *Transforming our World: The 2030 Agenda for Sustainable Development*, op cit., paras 41 & 43. See also “The Future We Want” op cit., para 252; the ‘Addis Ababa Action Agenda’ op cit., para 50.

⁶³ ‘Agenda 21’ op cit., para 30.8