University of Reading

Environmental and socio-economic policies in oil and gas regions: triple bottom line approach

Article

Published Version

Creative Commons: Attribution-Noncommercial-No Derivative Works 4.0

Open access

Heim, I. ORCID: https://orcid.org/0000-0003-3023-4839, Crowley Vigneau, A. and Kalyuzhnova, Y. ORCID: https://orcid.org/0000-0002-5781-8837 (2023) Environmental and socio-economic policies in oil and gas regions: triple bottom line approach. Regional Studies, 57 (1). pp. 181-195. ISSN 1360-0591 doi: 10.1080/00343404.2022.2056589 Available at https://centaur.reading.ac.uk/104075/

It is advisable to refer to the publisher's version if you intend to cite from the work. See Guidance on citing.

To link to this article DOI: http://dx.doi.org/10.1080/00343404.2022.2056589

Publisher: Taylor & Francis

All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the End User Agreement.

www.reading.ac.uk/centaur

University of Reading

CentAUR

Central Archive at the University of Reading

Reading's research outputs online

Regional Studies

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cres20

Environmental and socio-economic policies in oil and gas regions: triple bottom line approach

Irina Heim, Anne Crowley Vigneau & Yelena Kalyuzhnova

To cite this article: Irina Heim, Anne Crowley Vigneau & Yelena Kalyuzhnova (2022): Environmental and socio-economic policies in oil and gas regions: triple bottom line approach, Regional Studies, DOI: 10.1080/00343404.2022.2056589

To link to this article: https://doi.org/10.1080/00343404.2022.2056589

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

View supplementary material

Published online: 16 May 2022.

Submit your article to this journal

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=cres20

REGIONAL STUDIES
https://doi.org/10.1080/00343404.2022.2056589

Routledge Taylor & Francis Group
RSA Regional Studies Association

POLICY DEBATES

OPEN ACCESS Check for updates

Environmental and socio-economic policies in oil and gas regions: triple bottom line approach

Irina Heim[a], Anne Crowley Vigneau[b] and Yelena Kalyuzhnova[c]

ABSTRACT

Sustainability is a critical issue for resource-rich countries encountering environmental and social problems in remote regions and struggling to overcome the national economy's reliance on the oil and gas industry. We explore, through a case study of Russian oil-producing regions, the interdependency of economic, social and environmental issues by analysing the trade-offs between the need to adopt new technology to combat gas flaring and the demand for socio-economic policies. The findings suggest that international companies can serve as effective vectors for promoting gas flaring technologies if regional governments take a flexible integrated approach to socio-economic and environmental policies formulation.

KEYWORDS

sustainability; triple bottom line; socio-economic policy; oil and gas; flaring

JEL Q48, Q58, R1, R58

HISTORY Received 11 April 2021; in revised form 9 March 2022

INTRODUCTION

Stagnant economies, rising inequality, sluggish regional growth and growing concerns regarding environmental pollution have recently renewed interest in policy formulation, as was noted by Bailey et al. (2019). In this relation, the concept of sustainable development is becoming increasingly important in local and regional policies and strategies. However, integrating environmental and economic aims has proved difficult (Gibbs et al., 2005). Environmental and social problems have become a cause of concern for businesses, especially in emerging countries that built their economies around the oil and gas (O&G) industry. As Elkington noted, the triple bottom lines (TBLs) are interrelated, interdependent and partly in conflict because of existing trade-offs between social, environmental and economic dimensions (Elkington, 1997, 1998). Indeed, the rhetoric of sustainability has not changed the fact that businesses on the ground focus more on economic results than on social and environmental issues, leading to unacceptable outcomes for the whole society, such as growing environmental pollution (Carbo et al., 2014). What remains largely unexplored in the literature is how these three dimensions are interconnected and how firms can achieve an optimal balance for both business and society (Svensson et al., 2018; Van der Byl & Slawinski, 2015).

Likewise, regional studies on O&G regions have primarily focused on socio-economic development, institutions, the national system of innovation and the importance of foreign direct investment (FDI)-related spillovers along with absorptive capacity (Smith & Thomas, 2017). While the importance of environmental policies for O&G regions is acknowledged, the way they interact with local and national social and economic policies is largely understudied. Simultaneously, economic geography suggests that economic activities are not happening in a vacuum, but are embedded in specific socio-economic contexts, which require an analysis of the influence of socio-institutional structures and regulatory conditions affecting the system under study (Martin & Sunley, 2015).

To research the impact of various levels of economic and social policymaking on regional environmental outcomes, this study applies the TBL to the investigation of the environmental policies of three O&G regions. Resource-rich regions are well suited to this type of enquiry as oil extraction activities are among the main

CONTACT Irina Heim irina.heim@henley.ac.uk
[a] Henley Business School, University of Reading, Reading, UK
[b] MGIMO University, Moscow, Russia
[c] Centre for Euro-Asian Studies, Henley Business School, University of Reading, Reading, UK

Supplemental data for this article can be accessed online at https://doi.org/10.1080/00343404.2022.2056589.

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

sources of pollution (Omondi, 2021; *National Geographic*, n.d.). The TBL framework suggests which institutional environments facilitate sustainable development, and particularly how regional socio-economic policies (SEPs)[1] affect the O&G industry's ability to abide by environmental protection rules. SEPs primarily require that companies operating in the O&G industry contribute to regional economic development. O&G companies either voluntarily subscribe to SEPs or do so as a prerequisite to win the bid for the exploration of an O&G field. The high concentration of FDI in regions rich in natural resources reveals that a significant proportion of the industry is governed/controlled by multinational enterprises (MNEs) (Domínguez-Jiménez & Poitiers, 2020). As previous studies suggest, MNEs operating in the O&G industry have the potential to contribute positively to sustainable development in certain institutional environments (Van Zanten & Van Tulder, 2018). Thus, we aim to answer the following research question: How does the design of regional SEPs impact the environmental performance of the O&G industry and what is the role of international companies in the adoption of environmental practices by the O&G industry? This study employs the interpretivist-sensemaking multilevel case study methodology as a research strategy (Edwards, 2012; Yin, 2014) to modify the existing TBL framework by integrating the role of policy.

Russia has been selected as the focus country in this study because it flares the most associated petroleum gas (APG)[2] in the world and currently pursues an environmental agenda at a national level and SEPs in the O&G industry at a regional level. Russian regions also appropriate significant foreign investments. However, institutional context can also create conflicting pressures on companies in the oil industry (Levy & Kolk, 2002). To further investigate these opportunities and pressures in terms of achieving sustainability, through interviews with key informants and the study of secondary data we research both foreign and local O&G companies operating in three regional jurisdictions in Russia, which allows us to compare the effects of different SEPs on environmental performance. The policies are analysed at the regional level: while a general environmental policy framework is formulated at the national level, implementation is region-specific.

Our research joins recent work in regional studies and more specifically, the research on the transition to a green economy (Deutz & Gibbs, 2008; Ferns et al., 2019; Gibbs et al., 2005; Gibbs & O'Neill, 2017; Turok et al., 2017) and seeks to bring the concept of sustainability and TBL into regional studies by highlighting the role of regional SEPs in shaping environmental outcomes. Likewise, by highlighting the role of international companies, our study also correlates with research on the role of global value chains in regional development (Crescenzi & Iammarino, 2017). Our findings that green technologies adopted by O&G companies are translated into regional socio-economic and environmental benefits also correlate with ideas of evolutionary economic geography on how knowledge production is translated into regional development (Boschma et al., 2017; Capello & Lenzi, 2018; Kogler, 2015). In this vein, our paper makes an original contribution to the literature on sustainability and regional studies by suggesting an integrated approach to policy formulation at the regional level.

This paper aims to stimulate a policy debate and further research on how the design of regional policies affects the ability of O&G regions to reach environmental and socio-economic goals by showing that MNEs can serve as effective vectors for advancing the environmental agenda when regional governments take a flexible integrated approach when formulating socio-economic and environmental policies. When analysing SEPs across Russian resource-rich regions, similar to what was suggested by Tysiachniouk (2020) on the example of the US oil regions, we conceptualize three main approaches to SEP policy in O&G regions: paternalist, formalized and flexible. The latter approach is revealed to be the preferable option in terms of the balance achieved between environmental and socio-economic trade-offs, as pursued at the regional and national policy levels.

The rest of the paper is organized as follows. The next two sections present the theory and context of the study, the fourth section reports the findings of the three case studies, and is followed by the next two sections devoted to a discussion and policy recommendations. The paper concludes with a brief presentation of the main results and highlights how effective place-based SEP and the environmental targets of O&G companies can be balanced.

TRIPLE BOTTOM LINE (TBL) AS A THEORETICAL LENS FOR PLACE-BASED POLICYMAKING IN THE O&G REGIONS

Sustainable development is among the most challenging paradigms for the international O&G industry (Elkington, 1999). The TBL is a framework linked to sustainable development that is used in this study to explain the social and environmental performance of this sector of the economy. It refers to the social, environmental and economic value or impact of an investment (Elkington, 1998; Elkington, 2018; Hammer & Pivo, 2017). The TBL concept emerged as a tool to support organizational sustainability goals and suggests that business activities should be aligned with their interrelated dimensions – profits (economic), people (social) and the planet (environmental) – to support wider sustainability goals (Slaper & Hall, 2011). Companies are increasingly expected to undertake social and environmental responsibilities across the globe and industries and contribute to the United Nation's (UN) 17 Sustainable Development Goals (SDGs). O&G companies in emerging markets are also pursuing the implementation of the TBL sustainability model (Ruka & Rashidirad, 2018). However, one of the main difficulties is the absence of a universal or standard method for calculating the TBL or the measures comprised within each of the three TBL categories. While this may explain

why the concept is difficult to implement in practice, theories on TBL suggest that this flexibility could be viewed as a strength because it allows researchers to adapt the general framework to the needs of different entities, projects or policies in different geographical boundaries (Slaper & Hall, 2011).

As suggested by Leach et al. (2010), energy technologies have become a part of socio-technical and political systems and thus transitions to low-carbon pathways must not only consider technologies but also broader social, political and governance settings. More recently the emerging concept of a green economy has induced a policy focus on the potential for change to existing socio-economic development pathways. A major component of this has comprised low-carbon initiatives – attempts to reduce greenhouse gas emissions and mitigate climate change – and the development of a low-carbon economy (Gibbs & O'Neill, 2017). According to the US Environmental Protection Agency (EPA) (n.d.), greenhouse gas emissions comprise 80% of CO_2, which enters the atmosphere through burning fossil fuels (coal, natural gas and oil), biological materials and certain chemical reactions. Therefore, gas flaring is among the most challenging environmental problems facing the world today. Flaring can be defined as 'the process by which natural gas is burned off in a controlled manner when extracting oil' (Donev et al., 2018, p. 1). Flaring is both an environmental and an economic problem. It is a negative externality resulting from the extraction and production of petroleum: not only does flaring cause environmental damage affecting the local population and society as a whole, but also it is a waste of natural gas, a non-renewable natural resource that could otherwise be used in positive economic activities to increase the well-being of society (Banerjee & Toledano, 2017). Reports on sustainability in O&G firms use emissions of greenhouse gases resulting from flaring of APG as an indicator of environmental performance (Infante et al., 2013).

Another key component of TBL is socio-economic. In the highly regulated O&G industry, businesses are not expected to put profits, that is, their sustainability, first because O&G projects give the highest return on invested capital but also create negative environmental externalities in the form of pollution (Heim & Romanov, 2020). The oligopoly nature of the industry and the need to negotiate initial terms of the contracts between the O&G company and the government make it impossible for investors to migrate to competitors whose profits are not constrained by a social agenda. Simultaneously, O&G companies are subject to regional SEPs aimed at high oil rent redistribution towards local citizens and enterprises (Bradshaw, 2006; Heim & Salimov, 2020).

Since the O&G industry is organized around O&G regions, the regions and regional policies can play an important role in the adaptation of the TBL. In particular, the regional studies literature stresses the importance of regional policies and strategies when addressing environmental issues (Deutz & Gibbs, 2008). Gibbs et al. (2005) note that the concept of eco-industrial networks brings together firms and the local community for mutual beneficial developments. These networks give firms the incentive to train and hire local staff, introduce better physical working conditions, improve worker health and productivity, and provide communities with the power to influence decisions regarding the future industrial and commercial development of corporations operating locally (Heim et al., 2019). The concept of eco-industrial networks emphasizes the social advantages of eco-industrial development as much as the economic and environmental benefits. This concept explains mainly how companies from different industries can collaborate to improve their economic performance while minimizing their environmental impact. Gibbs and O'Neill (2017) state that there are different discourses of the green economy, and one approach may not fit all, because some of them have little to offer countries of the Global South. In the UK and the European Union, the green transition that emphasizes restricting the extraction of fossil fuels has been challenged by the recent energy price shock resulting from the overreliance on market mechanisms to solve the climate emergency (*The Guardian*, 2021). This transition could make many regions vulnerable, particularly those reliant on oil, gas and coal extraction, and therefore studies of how different territories are adapting and introducing more holistic and resilient strategies to cope with the urgency of decarbonization are urgently needed (Turok et al., 2017). Sustainability transitions research, drawing on work in evolutionary economic geography suggests that some regions can become powerful promoters of sustainable transitions, because of the specific interplay of actors, networks and institutions available in some places and not others (Truffer & Coenen, 2012). Evolutional economic geography research stresses that some regions may adopt development patterns where innovation is primarily based on imitation processes, frequently dependent on relationships between local firms and dominant firms, typically multinationals (Capello & Lenzi, 2018). The technological change is viewed as embedded in the socio-economic realities that drive the continuous search for the change endogenously from within the system. These transformative and adaptive mechanisms shape the evolution of the space economy that affects regional economic growth and prosperity (Kogler, 2015). Actors in these geographical milieus also set up systematic linkages with external sources to maintain the inflow of important information about new technologies (Bathelt et al., 2004). The more recent literature stresses that spatial proximity, density and localized processes should be placed in the wider context of economic globalization. Global value chains are dependent on MNEs that function as a connector operating in multilevel networks (Crescenzi & Iammarino, 2017). However, what the prior literature does not suggest is a holistic view of how the development of regions and the activities of MNEs are correlated with environmental policies/SEPs.

ENVIRONMENTAL AND SOCIO-ECONOMIC POLICIES (SEPs) IN THE RUSSIAN CONTEXT

One of the specificities of resource-rich countries is that they need to develop environmental sustainability based on international commitments that can conflict with the regional SEPs used by regional governments to foster sustainable socio-economic development. In particular, our study is set in the extreme context (Eisenhardt & Graebner, 2007) of the relationship between MNEs, the local institutional environment and the climate change agenda as suggested by previous studies (Du & Vieira, 2012; Ferns et al., 2019), and also between MNEs and local stakeholders in Russia, such as regional governments introducing regional SEPs aiming at redistribution of resource rent. So, for example, between 1995 and 2002, Sakhalin oblast received about US$2.6 billion of FDI, which represents 8.6% of total cumulative FDI in Russia during that period, placing the region third in Russia after Moscow city and Moscow oblast, leaving St Petersburg behind (Bradshaw, 2004).

The climate change agenda is introduced by the national government as a response to global multilateral initiatives. At a global level, environmental damage is considered a non-market external social cost: a cost that polluting firms impose on society but do not bear themselves. Therefore, environmental policies are introduced to reduce pollution (Agerton et al., 2020; Coase, 1960). In Russia, global actors such as the World Bank with its Global Gas Flaring Reduction partnership (GGFR) have been leading awareness campaigns and aid programmes since the early 2000s to help reduce this practice (World Bank, n.d.). Russia's environmental strategy induced the creation of a complex regulatory framework, involving over 30 laws and 200 bylaws concerned with biodiversity, climate change, natural resources and Indigenous people (Gladun & Zakharova, 2020). The new UN's SDGs require countries to measure progress towards more efficient and enduring use of natural resources, which will consecutively require the global engagement of local stakeholders as an essential element of a global partnership for sustainable development (Graute, 2016).

Despite efforts to reduce its environmental footprint (for a brief overview of the environmental and legal framework in Russian oil-producing regions, see Appendix A in the supplemental data online), Russia remains the country that flares the most APG in the world, with 23.3 billion m^3 released into the atmosphere in 2019. Its annual flared volumes doubled between 1999 and 2019 (World Bank, 2019). Russia's main flaring sites coincide with the major oil-producing regions of the country: the North-West, the Volga, Ural, Siberia and Sakhalin (Figure 1). The opening of new fields in Eastern Siberia, distributed on a large geographical area and far from existing infrastructure, turned the area into the first flaring region of Russia. The European part of the country accounts for about 18% of the APG extracted in Russia (Eder et al., 2019) and other notable flaring sites are the Komi Republic, the Nenets Autonomous Okrug (NAO) (a district in the Timan-Pechora region) and Orenburg oil fields (located in the Volga region). The areas of the Yamalo-Nenets and the Khanty-Mansi Autonomous Okrugs have high values of black carbon emissions (Vasileva & Vinogradova, 2017).[3] High concentrations of black carbon can be found in the Kara Sea when air flows from the gas flaring areas of north-western Siberia (Shevchenko et al., 2016).

Flaring, therefore, is an environmental externality of the oil-production process that is impacted by the other two layers of the TBL strategy, which can affect various issues, including employment, procurement, taxation, ownership and property rights in oil-producing regions (Kalyuzhnova et al., 2016). Figure 2 illustrates our perception of how the organizational strategy in the economic, social and environmental spheres is shaped by regional, national and international policies. The economic, social and environmental value-added produced by a firm result from the complementary but also competitive interaction between the multiple policymaking levels. The characteristics of the policies a firm must abide by in three spheres determine the degree to which it can influence outcomes. In order to understand how the roles and responsibilities of businesses and governments are likely to change, it is necessary to consider how the activities of corporations and value chains regulated by governments evolve through different stages in response to public pressure (Elkington, 2006). Moreover, the recent research suggests that the urgent need to progress to renewable forms of energy may result in new forms of governance to address the multiple challenges facing policy, regulation and implementation (Määttä, 2021).

In particular, we argue that MNEs function as intermediaries between the three layers of a policy – international, national and regional – transforming three dimensions of TBL policy into performance outcomes. This study further explores the different types of TBL strategies and suggests a preferred SEP policy option that actors in the O&G industry would benefit from adopting.

FINDINGS

The analysis of secondary data on environmental indicators, legislative acts and specific SEPs in each of the regions based on methods discussed in Appendix B in the supplemental data online helped the authors to interpret the primary findings and place them in their regional context. Information about the three major oil-producing regions in Russia selected for this study is presented in Appendix C online. These data reveal that the economy of all three regions is highly reliant on oil production, with the share of extractive industries representing 71–83% of their regional gross domestic product (GDP). The three regions also have a regional GDP per capita above the national average. Population density is low in

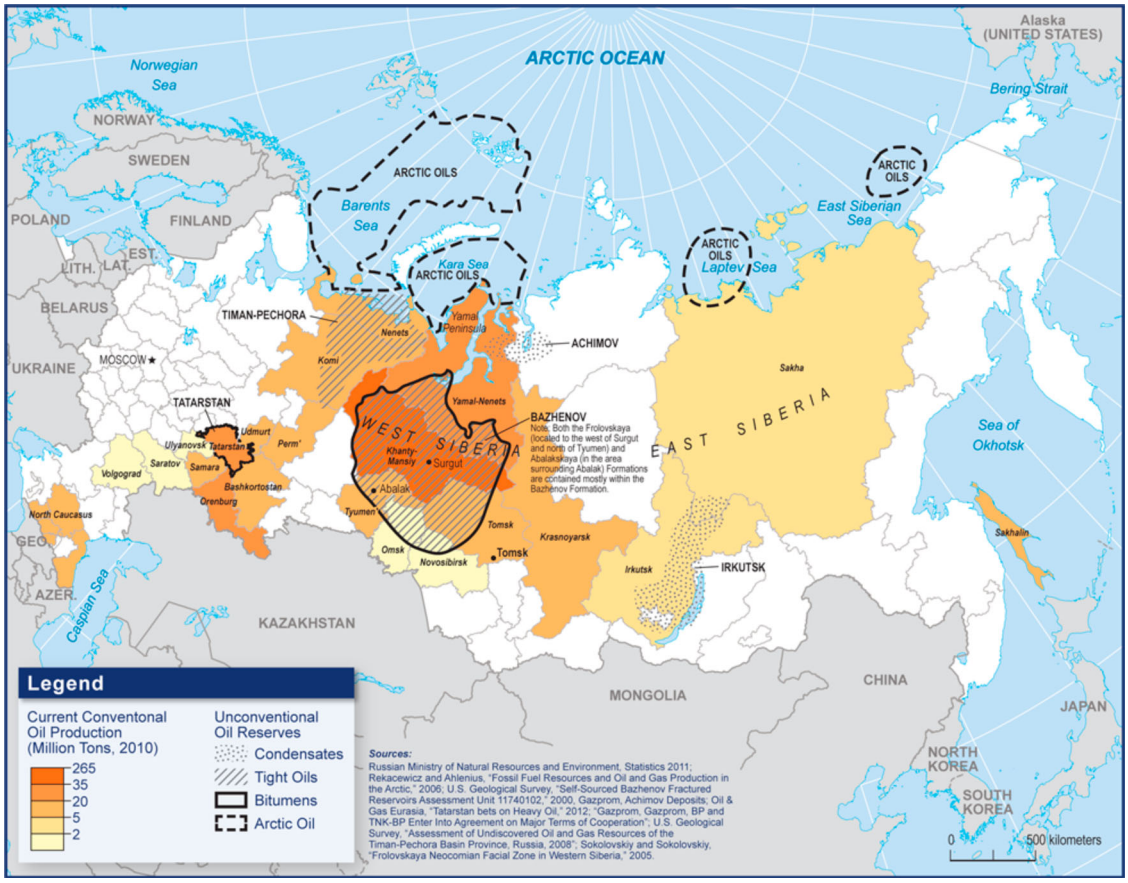

Figure 1. Russia oil and gas regions.
Source: Gordon and Sautin (2013). Permission to use granted by the Carnegie Endowment for International Peace.

all three regions, with the main differences between them being that the Nenets region accounts for 33,000 Indigenous nomad people with specific needs to be catered for, and Khanty-Mansi has flaring sites around its main cities, as they were built to support the oil production industry. Measures to protect the Indigenous population, considered unable to 'fend for itself', in the Nenets region may have been a contributing factor to the emergence of paternalism as a socio-economic model. In Khanty-Mansi, the proximity of flaring sites to main cities and the high urbanization rate may explain why the region was more affected by the pollution resulting from APG flaring and decided to reduce it. In Nenets and particularly Sakhalin, oil production commenced later than in Khanty-Mansi, where environmental damage had more time to accumulate.

Figure 3 presents the data for APG flaring in Russia, according to the Russian Federal State Statistics Service

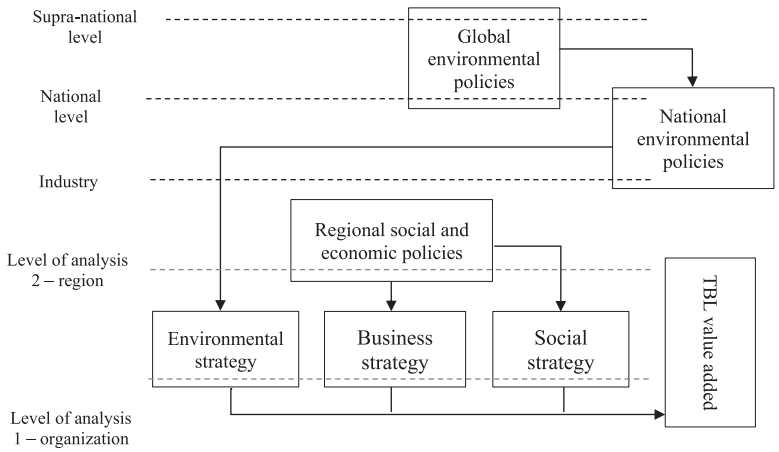

Figure 2. A firm's triple bottom line (TBL) strategy shaped by regional, national and international policies.
Source: Authors based on a review of the literature.

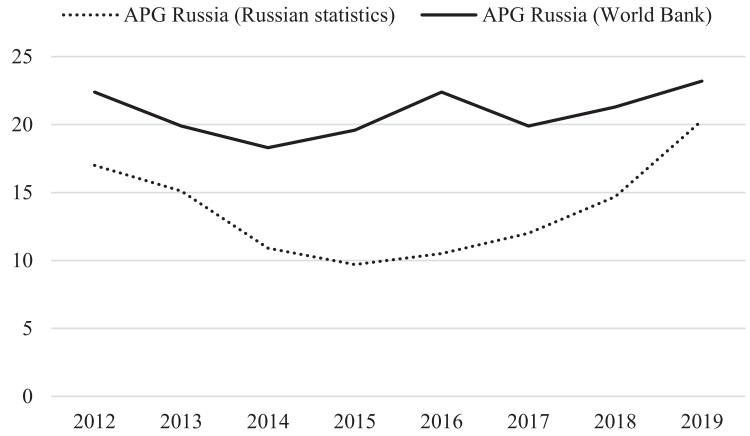

Figure 3. Levels of associated petroleum gas (APG) flaring (billions of m^3) in Russia, 2012–19.
Sources: Authors based on data from the World Bank (https://www.ggfrdata.org/) and the Russian Federal State Statistics Service (https://rosstat.gov.ru/).

and the World Bank. The graphs show that the levels of APG flaring are increasing.

To assess the levels of environmental damage, we used an indicator of pollutant emissions into the atmospheric air from stationary sources provided by the Russian Statistical Committee. The share of extractive industries in total regional GDP indicates that the O&G industry accounts for most of the region's industrial production, and, consequently, most of the pollution (see Appendix C in the supplemental data online). Figure 4 presents the pollutant emissions of the three O&G regions, illustrating levels of APG flaring. The graphs show a significant reduction in the Khanty-Mansi region in 2016 compared with Nenets and Sakhalin, which confirms our findings from the interviews. This change can be attributed to the specific policy approach adopted by the region, as discussed below.

The overall failure to reduce flaring in Russia conceals significant differences between the regions, one of which managed to significantly reduce its flaring. While the statistical data show that the majority of Russian oil sites maintained or increased their level of flaring, the Khanty-Mansi Autonomous Okrug (KMAO) appears as an exception, managing to increase its APG utilization rate from 73% in 1980 to 96% in 2018 (Department of Public Relations of KMAO, 2018). The effects of APG utilization on pollution levels clearly indicate this trend (the dynamics of pollution levels and APG flaring in three oil-producing regions) (Figure 4). These contrasting outcomes can be correlated with differences in regional SEPs.

Differences in regional SEPs

The health and safety, education and employment, well-being and culture of Indigenous people as well as the creation of linkages with local suppliers are social and economic indicators that are all regulated by regional policies in Russia. Policies in the oil industry regulate the interactions between foreign companies and national or regional governments by trying to promote a fair basis for profit sharing; they impact all activities related to the oil business, from production to commercialization. Details of the relationship between international players and their obligations to the community are formulated in production sharing agreements (PSAs). These agreements vary significantly across regions and firms and reveal an eclectic map of SEPs across Russia. We will consider the different forms they take in the NAO, the island of Sakhalin (Sakhalin) and KMAO. This section considers how these regional SEPs may have both positive and negative effects on flaring and how they affect a region's ability to follow the three priorities of the TBL framework simultaneously. Figure 5 illustrates the main features of the three different TBL modes that will be summarized in the following subsections.

Vignette 1: Paternalist TBL approach (the Nenets Autonomous Okrug – NAO)

The companies currently involved in the extraction of these resources in NAO are Russian Lukoil, Rosneft, Naryanmarneftegas, Bashneft and the French company Total, which has a 20% stake in Yamal LNG. Socio-economic requirements are negotiated by the region's governor with the management of these companies. The requirements are ad hoc, of limited-term or renewable on a yearly basis. The local administration has the upper hand in negotiations and often imposes its financial requirements on Russian O&G companies and MNEs, which adapt to national and local regulations and have little leeway to share international best practices. In cases where the O&G companies are run by the government, both parties to the agreement are the state. The paternalist approach may discourage MNEs from participating and investing in oil operations, as the 'rules of the game' are not clearly established. For example, a special advisor at an oil company noted that the Russian O&G industry would have benefited from more cooperation with MNEs:

> The international firms, which were operating in the 2000s on the Russian market, remain in some form today (BP,

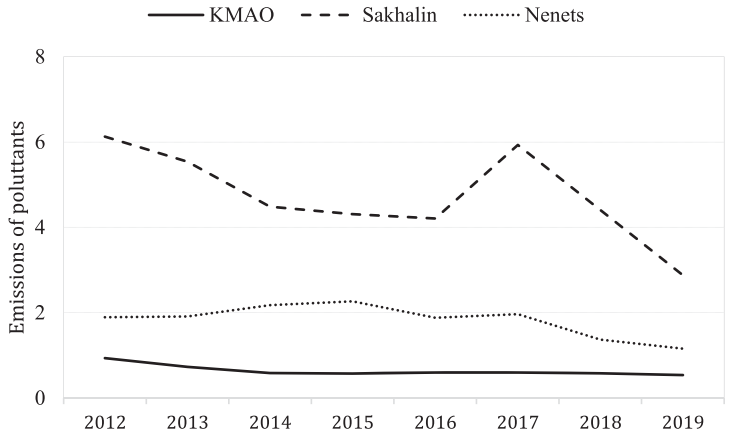

Figure 4. Emissions of pollutants from stationary sources into atmospheric air (thousands of tons per million tons of oil extracted) in the three Russian oil and gas exploration regions, 2012–19.
Source: Authors based on Russian Federal State Statistics Service data (https://rosstat.gov.ru/).

> Total, Shell) but could have played a more diverse and constructive role had they been able to exert more influence on activities.
>
> (interview 14)

The main socio-economic contribution expected from companies in the NAO is paying taxes, which are levied on the companies' profits and spent at the regional administration's discretion. The funds are used to improve the region's infrastructure, for example, building roads, bridges, schools, hospitals and other facilities. After 2013, the idea of compensation for land damage was included in some agreements. However, this still did not enable the region and oil companies to tackle pressing environmental problems. As other sources also demonstrate, oil spills, which pollute water and soil, contaminate drinking water, and exterminate fish, continue to negatively affect local residents and, particularly reindeer herders (Loe et al., 2017). Flaring continues on several sites in the region, including the Kharyaga field, located in a sensitive permafrost area and presenting at least eight almost constant flares. Reindeer herders report disrupted sleep from the noise and light provoked by flares from the Bovanenkovo site and disorientation among the reindeers in identifying their usual migration routes (Raygorodetsky, 2017). So far, socio-economic requirements in the NAO have not addressed essential environmental issues such as flaring. This may be because the measures are not formalized requirements inspired by international best practices but are ad hoc benefit-sharing agreements, in which foreign companies if they are at all involved, have little to no influence. The lack of formalization means that the outcome depends on the core intentions of the local administration and its willingness to adopt TBL practices. Large funds transit through local governments, which autonomously decide what social and ecological projects to invest in, increasing the high risk of corruption. A non-governmental organization (NGO) representative said:

> The efforts of local governments in promoting sustainable economic development based on taxing the O&G industry are just not effective in most cases; the problems range from corruption to creating an assisted population with ever-growing expectations and little money is spent on diversifying the regional economy.
>
> (interview 12)

Vignette 2: Formalized TBL approach (the Sakhalin Oblast)

The ineffective benefit-sharing agreements of the NAO can be contrasted with the explicitly formulated socio-economic requirements developed for Sakhalin II, an O&G exploratory project on the Russian island of Sakhalin, launched in 1994. It was Russia's first offshore gas project and induced the first liquefied natural gas plant in Russia. The shareholders of the Sakhalin project are Gazprom (Russia), Royal Dutch Shell (Netherlands), Mitsui (Japan) and Mitsubishi (Japan). The socio-economic requirements of Sakhalin II are formulated in four different documents: the PSA, the company's policy, its contracting and procurement procedure, and its reporting procedure. The correctness of the reports is audited regularly according to the PSA. However, the impact of SEPs on the adoption of advanced environmental technologies depends primarily on their articulation as noted by an O&G company director:

> If generically, they link the utilisation of associated gas to local expertise in order to promote energy efficiency then that will help with the development of homemade and appropriate regional solutions. If they are worded to command the use of policy requirements and restrict foreign involvement, then they are aimed at resistance to change and may have detrimental effects in terms of efficiency.
>
> (interview 3)

The Sakhalin II contracting and procurement policy defines the main rules all parties are to abide by, including safety requirements, anti-bribery and corruption measures, fair competition and transparency principles as well as norms for the respect, support and promotion of human

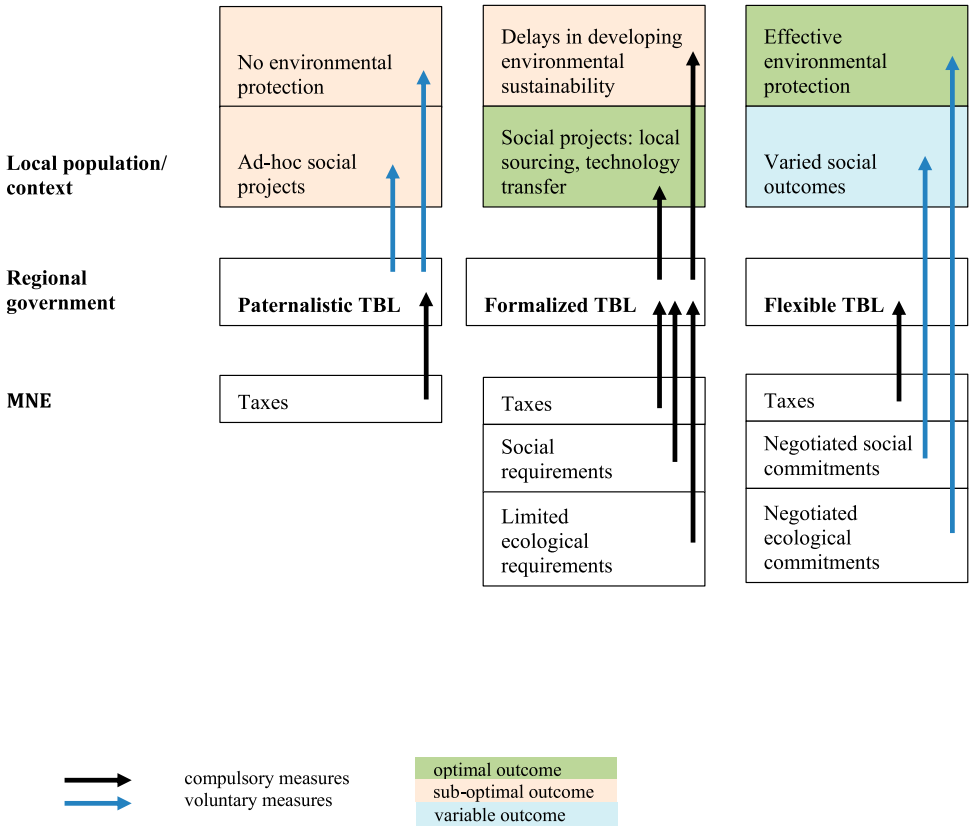

Figure 5. The triple bottom line (TBL) approaches.
Source: Authors.

rights and sustainable development (Sakhalin-II, 2020). The Sakhalin II PSA offers some of the clearest indications regarding socio-economic requirements compared to other PSAs, which do not directly address the question of socio-economic development. By explicitly formulating these requirements, the Sakhalin II PSA provides foreign investors with a clear understanding of what they are committing to from the start: As a manager working at the World Bank explained:

> Having it [socio-economic requirements] all down on paper and officialised reinforces the confidence of foreign investors as it leaves less room for misunderstandings or deliberate distortions regarding the obligations and rights of each side.
>
> (interview 10)

This PSA has been extensively recognized as benefiting all parties and appears as the best practice regarding the interaction between local and foreign stakeholders. It encourages both sides to jointly address environmental issues and deals directly with the issue of flaring. However, while the initial plan was to separate the associated gas from oil at the platform and to re-inject all the APG, problems with the compressor induced substantial delays with the target finally being reached (European Bank for Reconstruction and Development (EBRD), n.d.). This is because the socio-economic requirements in the case of Sakhalin II led to restricting the number of foreign subcontractors that could be engaged in the project's realization. For example, a director within an MNE operating on the Sakhalin II production site described the ways in which formalizing socio-economic requirements can be detrimental to environmental protection. A director within an MNE:

> One of the reasons we experienced a delay in utilizing the associated gas was that the foreign contribution to the project was limited to 30% and our priority was to solve the most critical operational and technological issues, rather than to reduce flaring which was a secondary priority in the early 2000s.
>
> (interview 3)

As a result of such formalization, most of the foreign expertise was used to solve operational issues rather than to address environmental issues such as flaring. As APG utilization projects are associated with the need to develop technical solutions, restricting foreign contributions can be damaging. While Sakhalin II is gradually coming to abide by the best standards regarding flaring, the formalized TBL mode appears to have created an unnecessary delay.

Vignette 3: Flexible TBL approach (the Khanty-Mansi Autonomous Okrug – KMAO)

Socio-economic initiatives in KMAO have been assimilated into voluntary social, economic and environmental actions, in which the O&G company plays a major part but on a voluntary basis. Benefit-sharing agreements are designed

to consider international standards and local specificities. The companies provide funding for projects based on an agreement with the governor of the region and municipalities and help develop social infrastructure. Oil companies directly interact with the beneficiaries of aid, and funding does not pass through the regional authorities. This approach to TBL differs from the approach adopted in NAO in the way that O&G companies participate in decision-making on what to fund. It allows them to avoid some of the downfalls of the paternalist approach to TBL, as direct communication between the oil company and the receiver of aid reduces the risk of corruption linked to the funds transiting through regional bureaucracies. These initiatives allowed the region to effectively address the problem of flaring by involving international corporations in cooperation with local companies (see Appendix D in the supplemental data online). The lack of strict socio-economic requirements allows the local government to attract international expertise when necessary to develop technical solutions to solve the problem of flaring. As a consultant at the World Bank noted, a large part of the GGFR's work on the ground was to put the government of KMAO and local O&G companies in contact with MNEs having managed to stop flaring. A consultant at the World Bank said:

> We [the GGFR] brought to Khanty-Mansi experts from the Alberta Energy Company on at least three occasions to consult on technical issues. They had great affinities with the Canadians because of the cold and the difficulties linked to the ice … and they spoke about how they managed to reduce their flaring.
>
> (interview 6)

The Monolit-Salym Petroleum Development, a joint venture between Gazprom Neft (Russia) and Royal Dutch Shell (Netherlands) operating in KMAO, reflects the benefits of an international approach to increasing APG utilization. It provided the incentive, financing, know-how and technology that allowed the region to develop solutions to flaring: the associated gas was used for power generation at production sites, for gas processing plants and for municipal heating. In 2000, innovative technology for gas processing and gas-to-liquid conversion was implemented to process the APG. The dry gas was transported through a new 70 km-long gas pipeline, and the gasoline and liquefied petroleum gas (LPG) were delivered with tankers to oil operations in the region or were used to produce on-site electricity (Chakrabarti, 2012). A partnership between Salym Petroleum Development and the firm Blue Line induced a commercial project aimed at utilizing APG comprising the construction and launch of a gas turbine power plant to create electric power and the construction of an LPG plant. An environmental expert based in KMAO emphasized the importance of international cooperation at the business level to help address environmental challenges:

> Monolit-Salym and all it has accomplished in the region [KMAO] is the living proof that international businesses can help a region move out of a gridlock. They are efficient precisely because they have a financial motivation to reach environmental goals.
>
> (interview 15)

This approach appears to be an effective implementation of the TBL framework as it simultaneously addresses environmental sustainability and social and economic issues. Through APG utilization for energy generation and other purposes, environmental protection stops being a cost and contributes to generating profits. Formalized interaction with MNEs allows the diffusion of the best management practices, the implementation of ethical standards and the development of a new skillset in local communities.

This TBL mode allows for more flexibility than the previous two; it rests upon international standards and can allow for productive international interaction and flaring technology transfer. However, the results also depend on the commitment of the regional administration and the oil companies. The KMAO committed early on to combatting flaring, and the predominant flexible approach to the TBL allowed it to develop the international interaction necessary to find effective solutions.

Summary of the three vignette studies

The *paternalist TBL approach* that was adopted in NAO appears to be a suboptimal solution, as it relies entirely on taxation and on the regional authorities to fund appropriate support projects, inducing an inability to support environmentally friendly economic development. The *formalized TBL approach* (as in the Sakhalin II agreement) offers clarity to all participants, reassures international players and satisfies the needs for Russian content in the local economy, and as such appears to be the best practice. However, reduced foreign participation can slow down the process of developing socially optimal solutions in many spheres, including the environment and dealing with the problem of flaring. The formal design of the SEPs and the failure to prioritize the APG utilization projects over the development of production, induced delays in developing technical solutions to combat flaring. The *flexible TBL approach* presents many opportunities by laying most of the responsibility for social fairness and local economic development on the oil firms and having them transmit international environmental standards to local enterprises. The exceptional case of KMAO illustrates how a flexible TBL approach can create a context that facilitates the exchange of international best practices and helps a regional industry become more sustainable. However, the outcome of this approach depends on the social corporate responsibility commitments of the O&G companies involved. From our perspective, a flexible TBL approach, in contrast to a paternalist or formalized approach, presents an opportunity for businesses to better integrate economic, social and environmental best practices and reduce the risks of corruption.

The design of SEPs appears to affect the O&G industry's ability to successfully implement environmental

protection measures. The Russian government's progressive crackdown on flaring starting in 2009, which takes the form of new legislation requiring APG utilization rates of at least 95% (see Decrees 7 and 1148 in Appendix A in the supplemental data online), has faced significant resistance from oil-producing regions. While the national government benefits from taxing oil production, it also seeks to fulfil its international commitments to reduce CO_2 emissions (e.g., Kyoto Protocol) and to improve its international image. Conversely, regional governments traditionally prioritize economic development and social policies over international environmental concerns, particularly in remote zones where flaring occurs far from inhabited areas. However, the case studies show that SEPs vary across regions, highlighting how their design and the interplay of national and regional policies contribute to shaping environmental outcomes. As such, the existence of regional SEPs cannot be automatically associated with a lower (or higher) chance of compliance with environmental standards, as their goals vary, with some aimed at reducing or regulating foreign contributions to economic activities (paternalist and formalized approaches) and others encouraging them (flexible approach). Hence, we offer a new perspective on policy design in resource-rich countries. SEPs should focus less on limiting international participation by promoting local contributions and more on clarifying each side's input, managing expectations and encouraging the exchange of best practices.

The exceptional case of KMAO shows that a flexible approach allows international corporations to play a key role in helping local authorities and businesses implement the necessary environmental solutions to utilize their APG. International corporations through joint ventures and joint initiatives with Russian firms provide the know-how and technical solutions that are necessary to solve environmental problems such as flaring. The international experience of MNEs in implementing utilization solutions in different contexts makes their contribution irreplaceable, explaining the stark difference in outcomes in the implementation of anti-flaring measures between KMAO and the majority of Russian oil-producing regions. Other factors that set the grassroots for this region's success in reducing flaring include the high density of population around flaring sites inducing increased awareness of pollution, the continuous support for utilization projects ensured by two regional governors over a period of 25 years, and the incentives offered by the GGFR including facilitating access to the European Bank for Reconstruction and Development (EBRD) funding and reputational gains (see Appendix D in the supplemental data online). Consistent with the evolutionary perspective in economic geography these findings can be interpreted as path-dependent processes characterized by trajectories and paradigms, understood as learning processes (Capello & Lenzi, 2018). The findings in this study highlight the policy approach under which TBL occurs in one area rather than another and explain why some regions are more successful in adopting sustainable practices than others. The case of KMAO reveals the flexible approach as the preferable institutional design to ensure that none of the TBLs are neglected. However, SEPs need to promote the involvement of MNEs; otherwise, even a flexible TBL approach will fail to effectively promote sustainability.

DISCUSSION

Although overall APG flaring increased in Russia during the last five years (Figure 3), some regions demonstrated improvements in levels of pollutant emissions and APG flaring (Figures 4 and 5). Three major Russian oil-producing regions were selected as case studies to explore how differences in regional SEPs impact environmental outcomes. Regional policies may include elements of employment policy, educational policy, industrial policy, tax policy, social policy, family policy, health policy, and housing policy (Vecernik, 2009). In Russia, such regional SEPs are frequent in remote oil-producing regions with Indigenous populations, harsh climatic conditions and where income inequality and economic diversification are major challenges, such as Nenets and Khanty-Mansi (Tysiachniouk & Petrov, 2018). They are adopted by regional governments in oil-producing regions and usually require the participation of O&G companies. The policies in resource-rich areas aim to benefit groups that are seen as disadvantaged and address concerns about the effective use of resource revenues to build a sustainable and diversified local economy in the future (Hunsberger et al., 2017).

Our comparative and qualitative analysis of three oil-producing regions in Russia identified that the success of national attempts in meeting international environmental commitments to reduce CO_2 emissions by reducing gas flaring depended largely on policymaking at a regional level. The three vignettes show that the paternalist and formalized approaches to SEPs in oil-producing regions are subject to an array of international, state-level, regional and local rules and may negatively affect the ability of organizations to achieve environmental sustainability, and therefore result in suboptimal outcomes. We found three approaches to the formulation of the SEPs and therefore to TBL issues – paternalist, formalized and flexible – and uncovered the implications of these approaches regarding the ability of organizations to improve their environmental performance.

This research contributes to the regional studies literature, particularly, to studies on the transition to a green economy (Gibbs & O'Neill, 2017; Turok et al., 2017) and the role of global value chains in regional development (Crescenzi & Iammarino, 2017). Our findings that green technologies adopted by O&G companies are translated into regional socio-economic and environmental benefits also correlate with ideas of evolutionary economic geography which shows how knowledge production is translated into regional development (Boschma et al., 2017; Capello & Lenzi, 2015; Kogler, 2015). This research also offers a new perspective on the study of sustainability in the O&G sector, by highlighting how regional policies have an impact on the implementation of the TBL (Ferns et al.,

2019), and revealing the optimal way to address and resolve ethical concerns regarding the operations of O&G companies and their contributions to climate change and global warming through APA flaring. Overall, our findings corroborate research conducted on benefit-sharing arrangements between oil companies, native corporations, the North Slope Borough and Indigenous people in Alaska and Northern Russia (Tysiachniouk, 2020; Tysiachniouk & Petrov, 2018).

First, this study offers a new theoretical perspective on the TBL framework, suggesting that the design of regional SEPs and the involvement of MNEs are key factors that determine whether social and environmental sustainability can be effectively pursued. Particularly, we contribute new insights to the understanding of trade-offs between regional SEPs and national environmental targets and the role MNEs play in overcoming incompatibilities between regional and national levels of governance. In the Russian case, the international environmental agenda is promoted by the national government and conflicts in some cases with regional SEPs.

The confrontation between the national and regional levels of policymaking can be overcome with the intermediation of MNEs in regions where regional policies allow it, like in KMAO. This follows previous studies on regional policies in Finland, which suggested that regional policies may fail due to constraining practices inherited by regional institutions and other constraints that stand in the way of productive change (Jauhiainen, 2008).

MNEs have been shown to bring in international environmental best practices and technical solutions to flaring, making national and regional policy agendas more compatible. This finding follows previous studies conducted by Smith and Thomas (2017), who found that the creation and development of clusters of FDI in less developed Russian regions may become a rewarding pursuit and represent a source of international diffusion of technology, and by Crescenzi and Iammarino (2017) who stressed the importance of proximity between local and non-local agents in the establishment and governance of local and global value chains attributed to MNEs.

The study highlights how a policy perspective can inform the theory on regional studies and organizational sustainability. The entire study (and more specifically vignette 2) also suggests that all three components of the bottom line are liable to conflict with each other including the environmental and social aspects. While the literature has so far focused on how prioritizing social and environmental questions may require trade-offs regarding economic profitability (Elkington, 1997, 1998; Gao & Bansal, 2013; Siltaloppi et al., 2020; Van der Byl & Slawinski, 2015), few studies envisage the potential conflicts between social and environmental projects. Formalizing socio-economic requirements and the development of local social capital may limit the involvement of MNEs, which are key to developing environmentally friendly solutions, as illustrated in the case of combatting flaring.

POLICY IMPLICATIONS

Several policy recommendations can be made based on this empirical analysis of the role of SEPs in the environmental performance of O&G companies in the Russian regions.

This study, by revealing the ways in which all the dimensions of the TBL framework are interconnected, argues that their management needs to be comprehensive. As progress made on one front has been shown to have in some cases negative repercussions on the other two, policymakers need to adopt a holistic approach involving all sectors and stakeholders. The coordination of activities of different actors at the regional level should lead to a fusion of their activities. The necessary prioritization of decarbonization should be accompanied by measures supporting other aspects of the TBL framework. Multilevel governance involving different players and the promotion of active citizenry on energy issues can ensure no aspects of the TBL are neglected. This recommendation is in line with the collaborative approaches that have recently been applied to energy transitions (Määttä, 2021).

By highlighting the contradictions between regional and national policies, this study also raises the question of the optimal level at which the TBL should be coordinated. To avoid conflicting agendas between national and regional governments, the strategy adopted to balance the three elements of the TBL should be defined at a regional level, where the costs of environmental degradation, poor economic activity and social problems are all directly perceptible. This provides an additional justification for the idea that regional policies are essential when addressing environmental issues (Deutz & Gibbs, 2008). MNEs automatically become key actors and mediators between different policymaking levels in the realization of the TBL policy (Smith & Thomas, 2017). National governments preserve the essential role of establishing general targets and ensuring a follow-up of progress across the regions.

National governments may benefit from decentralizing policymaking on environmental matters and allowing each region to follow its path to sustainability. The example of Russia reveals that differences in regional conditions linked to geographical position, climate and APG to oil ratios make different approaches necessary in developing solutions to utilize APG. Each region may need to transfer different technologies and even develop customized SEPs to support the local economy while promoting international environmental best practices. This corroborates the idea expressed in the literature that physical closeness is not sufficient to justify the use of the same SEP and that distant regions may share common features warranting similar development policies (Crescenzi et al., 2016).

Additionally, when national or federal governments allow regions to evolve and take on commitments at their own pace, it reinforces global interconnectedness and promotes non-spatially bounded linkages leading to a more effective diffusion of knowledge across space (Bathelt et al., 2004; Boschma et al., 2017). Allowing

some regions to break ahead may also have a spillover effect on the rest of the country, leading to improved economic and environmental performance. In this way, regions can become powerful promoters of sustainable transitions (Truffer & Coenen, 2012).

Our study likewise shows that regional governments have much to gain from taking the initiative to make O&G activities in their regions more sustainable. Indeed, cooperation with international organizations and MNEs to reach environmental goals does not necessarily need to occur at a national level. Although the benefits of interrelatedness have been foremost analysed at the national system level, international trade and cooperation have been shown to be important motors of sustainable regional development (Gambardella et al., 2009; Van Zanten & Van Tulder, 2018). Regional policymakers within states can effectively become independently involved in international initiatives to reduce flaring as illustrated by the regional case of the Khanty-Mansi administrative region in Russia. The adoption of SEPs promoting sustainability allowed the region to solve local environmental problems and increased their chances of attracting foreign investments, simultaneously improving their business attractiveness, both nationally and globally. This case study confirms that developing linkages between local and international companies facilitates the adoption of international standards on flaring APG gas, as MNEs can provide the necessary technology and skills to develop solutions to promote the utilization of associated gas. This interaction also contributes to wider economic development.

The findings also suggest that regional TBL approaches should be based on international best practices and move away from the paternalist strategy of generating economic rents and creating financial dependence on the O&G industry. Instead, policymakers should focus on the development of backward and forward links, by promoting the procurement of local goods and services, the employment of local people, the development of local competencies and the transfer of technology as described in prior literature (Kalyuzhnova et al., 2016; Tordo et al., 2013). SEPs underlying the chosen TBL approach should consider the availability of an industrial supply base in different regions. Effectively improving a region's social and economic sustainability by developing local contributions to the production process requires a thorough mapping of its potential.

In line with previous research (e.g., Crescenzi & Rodríguez-Pose, 2011; Levy & Kolk, 2002; Martin & Sunley, 2015), we argue that localized socio-institutional features should allow positive environmental technology spillovers from global firms to their host locations. Effective SEPs, while supporting the local people and the regional economy, should pave the way for international cooperation and the involvement of international players in the production process. Technological development and the sharing of expertise can only occur if foreign players are sufficiently empowered and motivated by SEPs to fulfil their functions. Overall, we suggest that regional policymakers in resource-rich countries carefully evaluate all the details of SEPs and related regulations before selecting their TBL approach. They should consider not only the potential socio-economic benefits of the selected approach but also how it impacts the activities of MNEs and the transfer of environmental technologies, particularly technologies preventing APG flaring.

CONCLUSIONS

This study contributes to research on sustainability and regional studies by suggesting that international business is an important factor in ensuring that regional SEPs productively interplay with national and international environmental efforts and that none of the TBL dimensions are neglected. It also shows that the TBL framework can be adopted by different stakeholders in the O&G industry to create institutional conditions that allow MNEs not only to play a positive role in host countries' socio-economic development but also to help overcome incompatibilities between place-based and national policymaking and reduce the environmental footprint and greenhouse gas emissions.

The findings in this study have important implications for policymakers and businesses operating in resource-rich countries. First, if sustainable development in resource-rich countries is to be achieved, policies initiatives targeting decarbonization need to be deliberated and negotiated by stakeholders of all levels and from different sectors. This can help overcome the corruption problems linked to underdeveloped institutions and an inactive civil society that can be witnessed in most resource-rich countries. Second, this research shows that all the dimensions of the TBL framework are interconnected, and their management needs to be comprehensive. Focusing on one aspect may have negative repercussions on the other two, even emphasizing social issues may come at an environmental cost. Third, the success of anti-flaring policies in one of the regions was directly linked to the availability of international expertise, testifying to the key role MNEs can play in helping implement environmental policies. Effective regional SEPs in the O&G sector make businesses follow international best practices, instil the desire to stop flaring and create platforms allowing the necessary international actors to help develop technical solutions to flaring. Ineffective regional SEPs, which focus on income redistribution and unproductive projects, may induce corruption. By excluding international actors, they pull the focus away from environmental concerns and may hinder the development of solutions to flaring.

From a theoretical perspective, understanding how regional SEPs affect environmental outcomes is a fruitful area for future study. As the cases of three Russian oil-producing regions illustrate, regional policies are important in creating the conditions for reducing greenhouse emissions. Environmental performance must be examined as regards its regional dynamics and not merely as a national phenomenon. Future studies may apply an evolutionary economic perspective as the key concept in achieving

contextualization to develop a deep knowledge of regional economic and environmental development, inequalities, and policy prescriptions (Gong & Hassink, 2019).

From a practical perspective, designing optimal regional SEPs based on a flexible TBL approach could help Russia and perhaps other states meet their 2015 UN Paris Climate Agreement commitments and the UN SDG targets. It is expected that this study will stimulate more debate on reducing APG flaring in Russian regions and, more generally, on environmental policies at the regional level.

A limitation of the study is linked to the difficulty in obtaining reliable data on flaring and pollution in Russia, especially at a regional level, and more generally to the secrecy surrounding the O&G industry. For example, one caveat is the lack of insights from policymakers who showed some reluctance at being interviewed and at discussing the specifics of the environmental performance of their region. Personal communications with local representatives of oil companies and universities partially filled the gap regarding how environmental damage and anti-flaring policies were perceived on the ground. Close contacts with industry associations also helped us overcome this limitation and provide us with an alternative communication channel to diffuse our policy recommendations.

Although the findings of this study focus on country-specific trends, the correlation between SEPs and environmental outcomes can inform policymaking and help determine the balance between the TBL components in other resource-rich provinces, regions, and countries in the developing world. While there are dramatic differences between legal, regulatory and governing regimes around the world, developing countries with natural resources have common features such as an overreliance of the economic structure on resource extraction, structural problems, and ecological issues arising from the dominance of the O&G industry. The findings and recommendations of this study would benefit from being tested in further studies on resource-intensive economies in the Middle East, Latin America and Africa. The idea suggested by this study that the environmental and social bottom lines could conflict not only with the economic bottom line but also between themselves warrants further study.

ACKNOWLEDGEMENTS

We are grateful for the extremely helpful comments from the editorial team and anonymous reviewers. We are also thankful for the positive feedback from the reviewers of the Academy of International Business 2021 (online) Annual Meeting, SIG Sustainability in International Business.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

FUNDING

No funding was received for this project.

NOTES

1. SEPs in resource-rich countries aim to overcome the negative influence of an overreliance on the primary sector of the economy.
2. APG is extracted from the water–oil emulsion by-product of crude oil production in field conditions (Shurupov & Kretova, 2011).
3. Black carbon is a particular matter that is emitted from APG, which is a strong short-lived climate forcer (EPA, 2012; Huang & Fu, 2016).

ORCID

Irina Heim http://orcid.org/0000-0003-3023-4839
Anne Crowley Vigneau http://orcid.org/0000-0001-7466-2451
Yelena Kalyuzhnova http://orcid.org/0000-0002-5781-8837

REFERENCES

Agerton, M., Gilbert, B., & Upton, G. B. (2020). *The economics of natural gas flaring in US shale: An agenda for research and policy* (Working Paper). Baker Institute. https://www.bakerinstitute.org/media/files/files/03160f6a/ces-agerton-etal-naturalgas-072420. pdf

Bailey, D., Glasmeier, A., Tomlinson, P. R., & Tyler, P. (2019). Industrial policy: New technologies and transformative innovation policies? *Cambridge Journal of Regions, Economy and Society*, *12*(2), 169–177. https://doi.org/10.1093/cjres/rsz006

Banerjee, S. D., & Toledano, P. (2017). *A policy framework to approach the use of associated petroleum gas*. Columbia Center on Sustainable Investment, Columbia University.

Bathelt, H., Malmberg, A., & Maskell, P. (2004). Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography*, *28*(1), 31–56. 10.1191/0309132504ph469oa

Boschma, R., Coenen, L., Frenken, K., & Truffer, B. (2017). Towards a theory of regional diversification: Combining insights from evolutionary economic geography and transition studies. *Regional Studies*, *51*(1), 31–45. https://doi.org/10.1080/00343404.2016.1258460

Bradshaw, M. (2004). Foreign investment in the Russian oil and gas industry: lessons from Sakhalin. In Proceedings of the 2nd International Conference on Globalisation in Russia's Regions: The Regional Dynamics of Northeast Asia and Russia's Globalisation in the 21st Century.

Bradshaw, M. (2006). Observations on the geographical dimensions of Russia's resource abundance. *Eurasian Geography and Economics*, *47*(6), 724–746. https://doi.org/10.2747/1538-7216.47.6.724

Capello, R., & Lenzi, C. (2015). Knowledge, innovation and productivity gains across European regions. *Regional Studies*, *49*(11), 1788–1804. https://doi.org/10.1080/00343404.2014.917167

Capello, R., & Lenzi, C. (2018). Regional innovation patterns from an evolutionary perspective. *Regional Studies*, *52*(2), 159–171. https://doi.org/10.1080/00343404.2017.1296943

Carbo, J., Langella, I. M., Dao, V. T., & Haase, S. J. (2014). Breaking the ties that bind: From corporate sustainability to socially sustainable systems. *Business and Society Review*, *119* (2), 175–206. 10.1111/basr.12029

Chakrabarti, S. (2012). *Reducing gas flaring provides significant opportunities.* https://www.ebrd.com/news/speeches/reducing-gas-flaring-provides-significant-opportunities.html

Coase, R. (1960). The problem of social cost. *Journal of Law and Economics*, *3*(1), 1–44. 10.1086/466560

Crescenzi, R., & Iammarino, S. (2017). Global investments and regional development trajectories: The missing links. *Regional Studies*, *51*(1), 97–115. https://doi.org/10.1080/00343404.2016.1262016

Crescenzi, R., Nathan, M., & Rodríguez-Pose, A. (2016). Do inventors talk to strangers? On proximity and collaborative knowledge creation. *Research Policy*, *45*(1), 177–194. https://doi.org/10.1016/j.respol.2015.07.003

Crescenzi, R., & Rodríguez-Pose, A. (2011). *Innovation and regional growth in the European Union*. Springer.

Department of Public Relations of KMAO. (2018). *UGRA will share positive experience in increasing level of utilization of associated petroleum gas*. https://admhmao.ru/en/vse-novosti/ugra-will-share-positive-experience-in-increasing-level-of-utilization-of-associated-petroleum-gas/

Deutz, P., & Gibbs, D. (2008). Industrial ecology and regional development: Eco-industrial development as cluster policy. *Regional Studies*, *42*(10), 1313–1328. https://doi.org/10.1080/00343400802195121

Domínguez-Jiménez, M., & Poitiers, N. (2020). FDI another day: Russian reliance on European investment. *Bruegel Policy Contribution*, *3*, 1–13. http://aei.pitt.edu/id/eprint/102553

Donev, J., Hanania, J., Heffernan, B., Jenden, I. J., & Stenhouse, K. (2018). *Energy education – Flaring*. University of Calgary. https://energyeducation.ca/encyclopedia/Flaring

Du, S., & Vieira, E. T. (2012). Striving for legitimacy through corporate social responsibility: Insights from oil companies. *Journal of Business Ethics*, *110*(4), 413–427. https://doi.org/10.1007/s10551-012-1490-4

Eder, L. V., Provornaya, I. V., & Filimonova, I. V. (2019). Problems of rational use of associated petroleum gas in Russia. *Geography and Natural Resources*, *40*(1), 9–14. 10.1134/S1875372819010025

Edwards Jr, D. B. (2012). Researching international processes of education policy formation: Conceptual and methodological considerations. *Research in Comparative and International Education*, *7*(2), 127–145. 10.2304/rcie.2012.7.2.127

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, *50*(1), 25–32. 10.5465/amj.2007.24160888

Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Capstone.

Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st century business. *Environmental Quality Management*, *8*(1), 37–51. 10.1002/tqem.331008010

Elkington, J. (1999). Triple bottom line: Implications for the oil industry. *Oil and Gas Journal*, *97*(50), 139–141. https://www.ogj.com/home/article/17230708/the-triple-bottom-line-implications-for-the-oil-industry

Elkington, J. (2006). Governance for sustainability. *Corporate Governance: An International Review*, *14*(6), 522–529. 10.1111/j.1467-8683.2006.00527.x

Elkington, J. (2018). 25 years ago I coined the phrase 'triple bottom line.' Here's why it's time to rethink it. *Harvard Business Review*, *25*, 2–5. https://hbr.org/2018/06/25-years-ago-i-coined-the-phrase-triple-bottom-line-heres-why-im-giving-up-on-it

European Bank for Reconstruction and Development (EBRD). (n.d.). *Sakhalin II (phase 1) oil project.* https://www.ebrd.com/work-with-us/projects/psd/sakhalin-ii-phase-1-oil-project.html

Ferns, G., Amaeshi, K., & Lambert, A. (2019). Drilling their own graves: How the European oil and gas supermajors avoid sustainability tensions through mythmaking. *Journal of Business Ethics*, *158*(1), 201–231. https://doi.org/10.1007/s10551-017-3733-x

Gambardella, A., Mariani, M., & Torrisi, S. (2009). How 'provincial' is your region? Openness and regional performance in Europe. *Regional Studies*, *43*(7), 935–947. https://doi.org/10.1080/00343400801932268

Gao, J., & Bansal, P. (2013). Instrumental and integrative logics in business sustainability. *Journal of Business Ethics*, *112*(2), 241–255. https://doi.org/10.1007/s10551-012-1245-2

Gibbs, D., Deutz, P., & Proctor, A. (2005). Industrial ecology and eco-industrial development: A potential paradigm for local and regional development? *Regional Studies*, *39*(2), 171–183. https://doi.org/10.1080/00343400500059959

Gibbs, D., & O'Neill, K. (2017). Future green economies and regional development: A research agenda. *Regional Studies*, *51* (1), 161–173. https://doi.org/10.1080/00343404.2016.1255719

Gladun, E., & Zakharova, O. V. (2020). Traditional environmental values as the frameworks for environmental legislation in Russia. *Ethics, Policy & Environment*, *23*(1), 1–16. https://doi.org/10.1080/21550085.2020.1746004.

Gong, H., & Hassink, R. (2019). Co-evolution in contemporary economic geography: Towards a theoretical framework. *Regional Studies*, *53*(9), 1344–1355. https://doi.org/10.1080/00343404.2018.1494824

Gordon, D., & Sautin, Y. (2013). *Opportunities and challenges confronting Russian oil*. Carnegie Endowment for International Peace. https://carnegieendowment.org/2013/05/28/opportunities-and-challenges-confronting-russian-oil-pub-51856

Graute, U. (2016). Local authorities acting globally for sustainable development. *Regional Studies*, *50*(11), 1931–1942. https://doi.org/10.1080/00343404.2016.1161740

Hammer, J., & Pivo, G. (2017). The triple bottom line and sustainable economic development theory and practice. *Economic Development Quarterly*, *31*(1), 25–36. https://doi.org/10.1177/0891242416674808

Heim, I., Kalyuzhnova, Y., Li, W., & Liu, K. (2019). Value co-creation between foreign firms and indigenous small-and medium-sized enterprises (SMEs) in Kazakhstan's oil and gas industry: The role of information technology spillovers. *Thunderbird International Business Review*, *61*(6), 911–927. https://doi.org/10.1002/tie.22067

Heim, I., & Romanov, M. (2020). The Oil and Gas industry in Kazakhstan's investment regimes. In I. Heim (Ed.), *Kazakhstan's diversification from the natural resource sector: Strategic and economic opportunities* (pp. 31–53). Palgrave Macmillan.

Heim, I., & Salimov, K. (2020). The effects of oil revenues on Kazakhstan's economy. In I. Heim (Ed.), *Kazakhstan's diversification from the natural resource sector: Strategic and economic opportunities* (pp. 55–81). Palgrave Macmillan.

Huang, K., & Fu, J. S. (2016). A global gas flaring black carbon emission rate dataset from 1994 to 2012. *Scientific Data*, *3*(1), 1–11. https://doi.org/10.1038/sdata.2016.104

Hunsberger, C., German, L., & Goetz, A. (2017). 'Unbundling' the biofuel promise: Querying the ability of liquid biofuels to deliver on socio-economic policy expectations. *Energy Policy*, *108*, 791–805. https://doi.org/10.1016/j.enpol.2017.04.017

Infante, C. E. D. D. C., de Mendonça, F. M., Purcidonio, P. M., & Valle, R. (2013). Triple bottom line analysis of oil and gas industry with multicriteria decision making. *Journal of Cleaner Production*, *52*, 289–300. https://doi.org/10.1016/j.jclepro.2013.02.037

Jauhiainen, J. S. (2008). Regional and innovation policies in Finland–towards convergence and/or mismatch? *Regional Studies*, *42*(7), 1031–1045. https://doi.org/10.1080/00343400701543140

Kalyuzhnova, Y., Nygaard, C. A., Omarov, Y., & Saparbayev, A. (2016). *Local content policies in resource-rich countries*. Palgrave Macmillan.

Kogler, D. F. (2015). Evolutionary economic geography–theoretical and empirical progress. *Regional Studies*, *49*(5), 705–711. https://doi.org/10.1080/00343404.2015.1033178

Leach, M., Scoones, I., & Stirling, A. (2010). *Dynamic sustainabilities: Technology, environment, social justice*. Earthscan.

Levy, D. L., & Kolk, A. (2002). Strategic responses to global climate change: Conflicting pressures on multinationals in the oil industry. *Business and Politics*, *4*(3), 275–300. https://doi.org/10.1080/136952502200004

Loe, J. S. P., Kelman, I., Fjærtoft, D. B., & Poussenkova, N. (2017). Arctic petroleum: Local CSR perceptions in the Nenets region of Russia. *Social Responsibility Journal*, *13*(2), 307–322. 10.1108/SRJ-10-2015-0150

Martin, R., & Sunley, P. (2015). Towards a developmental turn in evolutionary economic geography? *Regional Studies*, *49*(5), 712–732. https://doi.org/10.1080/00343404.2014.899431

Määttä, S. (2021). Rethinking collaborative action and citizen empowerment: Characterising a whole-of-society approach to the energy transition. *Energy Research & Social Science*, *81*, 102277. https://doi.org/10.1016/j.erss.2021.102277

National Geographic. (n.d.). Education/classroom resources/resource library/pollution. *National Geographic*. https://www.nationalgeographic.org/encyclopedia/pollution

Omondi, B. (2021). *The most polluting industries in 2021*. https://ecojungle.net/post/the-most-polluting-industries-in-2021/

Raygorodetsky, G. (2017). They migrate 800 miles a year. Now it's getting tougher. *National Geographic*. https://www.nationalgeographic.com/magazine/2017/10/nenets-yamal-herders-energy-development/

Ruka, A., & Rashidirad, M. (2018). Exploring the environmental strategy of big energy companies to drive sustainability. In Proceedings of ISER 119th International Conference, Kuala Lumpur, Malaysia, 1–2 April 2018.

Sakhalin-II, P. S. A. (2020). *Russian content. General guideline for contractors*. http://www.sakhalinenergy.ru/media/user/inform/Guideline_for_contarctors_eng.pdf

Shevchenko, V. P., Kopeikin, V. M., Evangeliou, N. I., Lisitzin, A. P., Novigatsky, A. N., Pankratova, N. V., Starodymova, D. P., Stohl, A. N., & Tompson, R. (2016). Atmospheric black carbon over the North Atlantic and the Russian Arctic seas in summer–autumn time. *Chemistry for Sustainable Development*, *24*(4), 441–446. https://doi.org/10.15372/KhUR20160402

Shurupov, S. V., & Kretova, T. A. (2011). Estimation of associated petroleum gas resource in oil production. *Russian Journal of General Chemistry*, *81*(12), 2525–2530. https://doi.org/10.1134/S1070363211120206

Siltaloppi, J., Rajala, R., & Hietala, H. (2020). Integrating CSR with business strategy: A tension management perspective. *Journal of Business Ethics*, *174*(3), 507–527. https://doi.org/10.1007/s10551-020-04569-3

Slaper, T. F., & Hall, T. J. (2011). The triple bottom line: What is it and how does it work. *Indiana Business Review*, *86*(1), 4–8. https://www.ibrc.indiana.edu/ibr/2011/spring/article2.html

Smith, N., & Thomas, E. (2017). Regional conditions and innovation in Russia: The impact of foreign direct investment and absorptive capacity. *Regional Studies*, *51*(9), 1412–1428. https://doi.org/10.1080/00343404.2016.1164307

Svensson, G., Ferro, C., Høgevold, N., Padin, C., Varela, J. C. S., & Sarstedt, M. (2018). Framing the triple bottom line approach: Direct and mediation effects between economic, social, and environmental elements. *Journal of Cleaner Production*, *197*, 972–991. https://doi.org/10.1016/j.jclepro.2018.06.226

The Guardian. (2021, September 20). Editorial: *The Guardian* view on an energy price shock: a crisis in the making. *The Guardian*. https://www.theguardian.com/commentisfree/2021/sep/20/the-guardian-view-on-an-energy-price-shock-a-crisis-in-the-making

Tordo, S., Warner, M., Manzano, O., & Anouti, Y. (2013). *Local content policies in the oil and gas sector*. World Bank Publ.

Truffer, B., & Coenen, L. (2012). Environmental innovation and sustainability transitions in regional studies. *Regional Studies*, *46*(1), 1–21. https://doi.org/10.1080/00343404.2012.646164

Turok, I., Bailey, D., Clark, J., Du, J., Fratesi, U., Fritsch, M., Harrison, J., Kemeny, T., Kogler, D., Lagendijk, A., Mickiewicz, T., Miguelez, E., Usai, S., & Wishlade, F. (2017). Global reversal, regional revival? *Regional Studies*, *51*(1), 1–8. https://doi.org/10.1080/00343404.2016.1255720

Tysiachniouk, M. S. (2020). Disentangling benefit-sharing complexities of oil extraction on the North Slope of Alaska. *Sustainability*, *12*(13), 5432. https://doi.org/10.3390/su12135432

Tysiachniouk, M. S., & Petrov, A. N. (2018). Benefit sharing in the Arctic energy sector: Perspectives on corporate policies and practices in Northern Russia and Alaska. *Energy Research & Social Science*, *39*, 29–34. https://doi.org/10.1016/j.erss.2017.10.014

US Environmental Protection Agency (EPA). (2012). *Report to Congress on black carbon*. https://www3.epa.gov/airquality/blackcarbon/2012report/fullreport.pdf

US Environmental Protection Agency (EPA). (n.d.). *Overview of greenhouse gases*. https://www.epa.gov/ghgemissions/overview-greenhouse-gases

Van der Byl, C. A., & Slawinski, N. (2015). Embracing tensions in corporate sustainability: A review of research from win–wins and trade-offs to paradoxes and beyond. *Organization & Environment*, *28*(1), 54–79. https://doi.org/10.1177/1086026615575047

Van Zanten, J. A., & Van Tulder, R. (2018). Multinational enterprises and the Sustainable Development Goals: An institutional approach to corporate engagement. *Journal of International Business Policy*, *1*(3), 208–233. https://doi.org/10.1057/s42214-018-0008-x

Vasileva, A. V., & Vinogradova, A. A. (2017). Black carbon in air over northern regions of Russia: Sources and spatiotemporal variations. *Atmospheric and Oceanic Optics*, *30*(6), 533–541. https://doi.org/10.1134/S1024856017060161

Vecernik, J. (2009). *Czech society in the 2000s: A report on socio-economic policies and structures*. Academia.

World Bank. (2019). *Global gas flaring tracker report*. http://worldbank.org.

World Bank. (n.d.). *Global gas flaring reduction partnership (GGFR)*. https://www.worldbank.org/.

Yin, R. K. (2014). *Case study research design and Methods* (5th ed.). Sage.