



Geopolitics in the Anthropocene: The Sakhalin Project as a Case of Energy Sovereignty vs. Climate Neutrality¹

*Geopolítica no Antropoceno: O Projeto
Sakhalin como um Caso de Soberania
Energética vs. Neutralidade Climática*

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Sajalín como un Caso de Soberanía
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Abstract

This article examines the Sakhalin Project as a critical case study of Russia's climate action amid a shifting international order. Positioned at the intersection of energy sovereignty, climate neutrality, and geopolitics, the project serves as a pilot experiment for Russia's national climate strategy. The analysis employs a theory-consuming approach, drawing on geoeconomics and two-level game theory, and relies on secondary data to interpret the project's legal, economic, and technological instruments. The findings show that Sakhalin combines technical innovation with strategic rationality, revealing a hybrid model of climate governance in a sanctioned and authoritarian context. Finally, the article discusses the limits and potential of Sakhalin as an example of "climate sovereignty" in the Anthropocene.

Keywords: Energy sovereignty, Climate neutrality, Geoeconomics, Climate governance, Russia, Anthropocene.

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Resumo

O presente artigo analisa o Projeto Sakhalin como um estudo de caso crítico sobre a atuação climática da Rússia diante de uma ordem internacional em transição. Situado na interseção entre soberania energética, neutralidade climática e geopolítica, o projeto funciona como experimento piloto da estratégia climática nacional russa. A análise fundamenta-se em uma abordagem teórico-consumidora, com ênfase na geoeconomia e na teoria dos jogos de dois níveis, e utiliza dados secundários para interpretar os instrumentos legais, econômicos e tecnológicos adotados. Os resultados demonstram que o projeto combina inovação técnica com racionalidade estratégica, revelando um modelo híbrido de governança climática em contexto autoritário e sancionado. Por fim, o artigo discute os limites e potencialidades do caso Sakhalin como exemplo de “soberania climática” no Antropoceno.

Palavras-chave: Soberania energética, Neutralidade climática, Geoeconomia, Governança climática, Rússia, Antropoceno.

Resumen

Este artículo analiza el Proyecto Sajalín como un estudio de caso crítico sobre la acción climática de Rusia en el contexto de un orden internacional en transformación. Ubicado en la intersección entre soberanía energética, neutralidad climática y geopolítica, el proyecto funciona como experimento piloto de la estrategia climática nacional rusa. El análisis se basa en un enfoque teórico-consumidor, con énfasis en la geoeconomía y la teoría de los juegos de dos niveles, y emplea datos secundarios para interpretar los instrumentos legales, económicos y tecnológicos utilizados. Los resultados muestran que el proyecto combina innovación técnica con racionalidad estratégica, revelando un modelo híbrido de gobernanza climática en un contexto autoritario y sancionado. Finalmente, el artículo discute los límites y potencialidades del caso Sajalín como ejemplo de “soberanía climática” en el Antropoceno.

Palabras clave: Soberanía energética, Neutralidad climática, Geoeconomía, Gobernanza climática, Rusia, Antropoceno.



1. Introduction

For most of the Putin era, climate change has occupied a marginal position in Russian state policy. As Beuerle (2024, 252) notes, “climate change has not ranked high on the agenda of Russian decision-makers, and Russian climate policy has lacked ambition.” Only in recent years, particularly after the ratification of the Paris Agreement in 2019, has the issue gained greater visibility in national discourse. Russia’s Deputy Energy Minister, Pavel Sorokin, reflected this shift by affirming that “Russia will pursue its own climate-related goals and put forward proposals on tackling global warming as an alternative to the agenda promoted by the West” (Reuters 2024a).

This stance is indicative of a broader geopolitical trend, in which climate neutrality goals are filtered through national concerns over energy sovereignty and security. According to the UNFCCC (2021), climate neutrality is achieved when greenhouse gas emissions are balanced by an equivalent or greater amount of emissions removed from the atmosphere, resulting in net-zero emissions. While the concept is rooted in global cooperation, its implementation is often marked by uneven power dynamics and conflicting strategic priorities.

The notion of the *Anthropocene*, introduced by Crutzen and Stoermer (2000), highlights the central role of humanity in shaping the Earth’s geophysical processes. Their perspective stresses not only the environmental damage caused by human activity since the late 18th century but also humanity’s capacity to innovate in the face of crisis. The Anthropocene framework, therefore, offers a critical lens to understand how climate policy decisions intersect with questions of sovereignty, development, and geopolitics.

Russia’s position in the global climate regime is both strategic and contradictory. As one of the world’s leading energy producers, the country relies heavily on fossil fuels for economic growth and geopolitical leverage. Despite adopting the Climate Doctrine in 2009 and updating it in 2023, Russia continues to prioritize natural gas and nuclear energy as pillars of its decarbonization pathway. Simultaneously, the country is experiencing climate impacts at a faster rate than the global average, including accelerated permafrost thawing and widespread forest fires (The Moscow Times 2021; Reuters 2024b).

Following the invasion of Ukraine in 2022, environmental issues were further deprioritized in Russia’s national agenda. The updated climate doctrine, for instance, omits any mention of fossil fuels or their role in global warming.





According to Pudovkin (2023), several environmental initiatives were weakened due to the war effort and the urgent drive to replace Western imports.

It is within this context of strategic tension between climate responsibility and energy sovereignty that the Sakhalin climate neutrality project emerges. Located on Sakhalin Island in the Russian Far East, the project aimed to make the region carbon-neutral by 2025 and served as a pilot for national carbon trading system. It symbolizes Russia's attempt to balance environmental commitments with geopolitical and economic interests.

Against this backdrop, this article asks: How does the Sakhalin Project illustrate the intersection of energy sovereignty, climate neutrality, and geopolitics in Russia's evolving climate strategy? To answer this question, the study employs an interpretative qualitative case study methodology, drawing on secondary sources such as policy documents, academic literature, and news reports. By analyzing the Sakhalin Project as both a tool and arena of Russian climate diplomacy, this article aims to understand how the country navigates the conflicting demands of environmental responsibility and strategic autonomy in the Anthropocene era.

2. Background

The Sakhalin climate experiment, hereafter referred to as the Sakhalin Project, is described by Popova and Kolmar (2023, 70) as “a prototype of an internal carbon market,” designed to test a range of carbon regulation instruments and assess their potential for nationwide implementation. Strategically located near the Pacific Rim, Sakhalin Island serves as a gateway to Asian markets—including Japan, China, and South Korea—and is endowed with significant reserves of oil and natural gas. These factors make it central to Russia's energy export strategy and a critical node in its international energy transportation routes.

The selection of Sakhalin as the testing ground for Russia's first carbon neutrality initiative is not incidental. Its geographic isolation provides administrative control, while its regional government has historically aligned closely with federal policy goals. Additionally, Sakhalin's proximity to emerging Asian carbon markets—especially Japan's—positions it at the intersection of energy diplomacy and climate finance. These features reinforce the island's relevance as a laboratory for climate governance within the logic of Russian geopolitical strategy.





Officially launched in 2023, the Sakhalin pilot aimed to achieve carbon neutrality by 2025, aligning with Russia's updated Climate Doctrine and Low Carbon Development Strategy. However, the island's economy remains deeply dependent on fossil fuels, with oil, gas, and coal industries comprising the bulk of its output. This reflects the broader structural dilemma in Russian climate policy: advancing decarbonization while maintaining a fossil fuel-driven economic model. According to Popova and Kolmar (2023), the project represented a federal effort to develop climate policy instruments through a trial-and-error approach, with successful mechanisms intended for replication in other regions.

A key feature of the Sakhalin pilot is the introduction of a voluntary carbon market, in which companies may purchase emission allowances and invest in climate projects. This strategy marks a shift toward market-based approaches in Russian environmental governance. As Pudovkin (2023) notes, "Russia has also tried to create a carbon trading market, through which companies could buy permits to emit a certain amount of greenhouse gases." This reflects the growing recognition in Moscow that reconciling environmental targets with economic stability requires flexible policy instruments that engage the private sector. Voluntary mechanisms are viewed as less disruptive than mandatory regulations and are intended to foster collaboration between federal authorities, regional governments, state-owned enterprises like Gazprom and Rosneft, and environmental organizations.

Though domestically framed, the Sakhalin initiative echoes broader global dynamics. Its design aligns with elements of Article 6 of the Paris Agreement, which promotes voluntary cooperation and market-based solutions to support national climate goals. By positioning Sakhalin within this framework, Russia seeks to demonstrate engagement with global climate norms while maintaining strategic autonomy in implementation.

Despite its ambition, the project faces several structural limitations. Regulatory uncertainty, limited technical capacity for monitoring emissions, and institutional fragmentation between federal and regional authorities pose significant challenges. Moreover, fossil fuel companies—many of which operate in Sakhalin—have vested interests in preserving the current energy structure and may resist full implementation of carbon pricing schemes. Public awareness and civil society participation in the island remain limited, potentially weakening local ownership and long-term effectiveness.





Ultimately, the Sakhalin Project functions as both a technical experiment and a political signal. It allows Russian authorities to explore climate regulation mechanisms in a controlled setting, assess their feasibility and scalability, and shape the narrative of Russia's role in the global climate regime. Whether the pilot succeeds will depend on the state's ability to balance environmental commitments with the political and economic imperatives of a resource-based economy.

3. Theoretical Framework

This article analyzes the Sakhalin Project as both a policy instrument and an arena of strategic signaling in Russian climate diplomacy. To examine the intersection of energy sovereignty, climate neutrality, and geopolitics in Russia's climate strategy, the article draws on a combination of geoeconomics, two-level game theory, and insights from critical geopolitics and the political economy of climate governance. This blended framework enables a multi-scalar interpretation of how environmental commitments are instrumentalized within broader strategic logics.

Geoeconomics provides a foundational lens for understanding how states leverage economic instruments—such as trade, energy, and finance—to pursue geopolitical objectives. As Clayton, Maggiori, and Schreger (2024, 1) explain, geoeconomics occurs when states “use their countries’ economic strength from existing financial and trade relationships to achieve geopolitical and economic goals.” Grounded in realist and mercantilist traditions, the concept emphasizes the centrality of economic power in global politics, especially in an era where conventional military projection is increasingly supplemented—or replaced—by financial and technological influence.

The Sakhalin Project exemplifies geoeconomic dynamics in both its design and execution. Following the Russian invasion of Ukraine, Western energy firms such as Shell and ExxonMobil withdrew investments from Sakhalin. In response, the Russian government reasserted control: Presidential Decree No. 723 (Interfax 2023) mandated the replacement of Exxon Neftegas Limited with a Russian operator, Sakhalin-1 LLC, effectively nationalizing the project and reconfiguring the terms of foreign participation. These actions reflect a broader pattern in Russian foreign policy, where economic assets are mobilized as tools of sovereignty and geopolitical signaling.





At the same time, two-level game theory, as articulated by Robert Putnam (1988), offers insight into how Russian authorities mediate between international expectations and domestic political-economic constraints. According to Putnam, national leaders must simultaneously navigate international negotiations and domestic approval processes, seeking win-sets that satisfy both arenas. The case of Sakhalin illustrates this dual negotiation: internationally, it showcases Russia's formal alignment with climate goals under the Paris Agreement; domestically, it allows the Kremlin to promote modernization and technological innovation without undermining its fossil fuel-based economy or antagonizing powerful energy stakeholders.

However, these frameworks alone are insufficient to fully capture the complexity of climate governance in the Anthropocene. The critical geopolitics of climate change—as developed by authors such as Simon Dalby (2009) and Jennifer Clapp (2020)—highlights how environmental policies are embedded in narratives of power, identity, and strategic competition. In this view, climate neutrality is not a neutral or technical goal, but a field of contestation where states negotiate not only emissions targets but also international status, legitimacy, and influence.

From this perspective, the Sakhalin Project can also be interpreted as a form of “climate-washing geopolitics”—a strategic performance in which Russia seeks to present itself as a responsible actor in the international climate regime, while maintaining core elements of its carbon-intensive economic model. As Timothy Mitchell (2011) argues in *Carbon Democracy*, control over fossil fuel infrastructures often underpins the very capacity of modern states to govern and negotiate. In Russia's case, the climate discourse becomes a soft power resource used to reframe its international image without disrupting entrenched economic and political structures.

Moreover, the initiative reflects a form of soft balancing in climate governance. Instead of aligning with Western-led decarbonization norms, Russia pursues a parallel trajectory—developing voluntary carbon markets, emphasizing national circumstances, and resisting the phase-out of fossil fuels. The Sakhalin Project thus embodies a hybrid logic: it is simultaneously a technical experiment, a geopolitical message, and a mechanism for navigating domestic interests.

By integrating geoeconomics, two-level game theory, and critical geopolitical perspectives, this article positions the Sakhalin Project as more than a policy tool, as it becomes a strategic interface where energy sovereignty, environmental





responsibility, and international legitimacy are negotiated in real time. This analytical framework allows for a more nuanced understanding of how climate policy is co-constructed by material interests, institutional constraints, and symbolic power in the context of Russia's evolving global posture.

4. Methodology

This article adopts a qualitative single-case study approach to analyze how the Sakhalin Project illustrates the intersection of energy sovereignty, climate neutrality, and geopolitical strategy in Russia's climate policy. The research is guided by the following question: *How does the Sakhalin Project illustrate the intersection of energy sovereignty, climate neutrality, and geopolitics in Russia's climate strategy?*

Methodologically, the study is grounded in an interpretivist epistemological orientation, which seeks to understand the meanings, discourses, and strategic narratives constructed around the Sakhalin Project within its geopolitical and domestic policy context. Rather than aiming for causal generalizations or tracing specific causal mechanisms, the research prioritizes context-sensitive interpretation and the identification of patterns in meaning-making processes within Russian climate governance.

The choice of a single, information-rich case is justified by both its intrinsic relevance and its role as a microcosm of Russia's broader climate strategy. As Gerring (2007, 6) explains, "a case study may be understood as the intensive study of a single case for the purpose of understanding a larger class of cases (a population)". The Sakhalin Project was selected due to its aggregate of institutional uniqueness, geopolitical significance, and symbolic function in Russia's domestic and international climate discourse.

This is a theory-consuming case study, which uses existing frameworks to explain an empirical phenomenon rather than to develop or test a new theory (Beach e Pedersen 2016). Following the logic of theory-consuming research, this study does not employ the case as a means to test general causal claims in the positivist sense. Instead, it adopts a configurative-idiographic logic, in which the case is examined to explore how a particular combination of institutional, discursive, and geopolitical elements illuminates broader patterns in Russia's climate strategy. The goal is to provide analytic generalization rather than statistical





inference, aligning with the view that richly contextualized cases can yield insights into complex political processes.

At the same time, the research embraces principles of analytical rigor and transparency. While drawing on the emphasis for consistency between theory and evidence and methodological transparency, this study maintains a clear connection between its theoretical framework, research question, data sources, and interpretive claims.

The research relies on secondary sources, including:

- Official government documents (e.g., the 2009 and 2023 Climate Doctrines of the Russian Federation);
- Policy reports;
- Media coverage from reputable sources (Reuters, BBC, Interfax, The Moscow Times);
- Peer-reviewed academic literature.

These materials were analyzed using thematic coding informed by the theoretical framework, focusing on four analytical categories: (1) energy sovereignty, (2) climate neutrality, (3) geopolitical signaling, and (4) institutional coordination. The analysis seeks to uncover how these dimensions are articulated, contested, or reconfigured within the sources over time. While no primary interviews were conducted, triangulation across different types of documents and perspectives enhances the robustness and validity of the findings.

Despite limitations—such as potential bias in state-aligned media or restricted access to internal deliberations—the structured qualitative design, theoretical grounding, and critical evaluation of evidence contribute to the reliability of the analysis. By examining the Sakhalin Project through this interpretive lens, the article contributes to broader debates in climate governance and the international political economy in the Anthropocene.

5. Case Study: Sakhalin Project

The Sakhalin Project has been described as “the most ambitious project in the history of Russia for a truly comprehensive decarbonization policy” (Popova e Kolmar 2023, 70). Launched in 2023 as a pilot for achieving carbon neutrality





by 2025, the initiative combines legal, fiscal, technological, and environmental instruments aimed at transforming Sakhalin Island into a prototype for Russia's national climate strategy. Its design and implementation reflect the underlying tension between energy sovereignty and climate neutrality, positioning Sakhalin as a microcosm of Russia's evolving geopolitical posture in the Anthropocene.

5.1. Institutionalization of Climate Governance

The institutional architecture of the Sakhalin Project reveals a multilayered governance model that integrates federal leadership with regional initiative. At the federal level, the project is supported by Federal Law No. 34-FZ, which established the legal framework for limiting greenhouse gas emissions. The Ministry of Economic Development played a central role in designing the carbon trading system, proposing measures such as income tax and VAT exemptions for carbon unit transactions. The Ministry of Finance, in turn, contributed by formulating fiscal incentive schemes, including subsidies and compensation mechanisms for entities adopting green technologies.

Regionally, the Government of Sakhalin Oblast, led by Governor Valery Limarenko, has emerged as a key driving force. As Beuerle (2024, 258) notes, "Limarenko has shown interest in and understanding for the topic of climate change mitigation, which has stood out in the Russian political sphere." His commitment reflects both the local vulnerability to climate change — including permafrost thaw and forest fires — and a strategic calculation that aligning with global decarbonization trends may secure economic sustainability for the region's fossil-fuel-dependent economy.

Sakhalin's unique infrastructural and ecological conditions also facilitated its selection. The island is not connected to the centralized Russian energy grid and lacks a unified regional energy network, allowing for experimentation with alternative energy sources without immediate risk to national supply chains (Beuerle 2024). Moreover, its low population density (under 500,000 residents) and extensive forest coverage enhance its potential as a carbon sink, thereby increasing the feasibility of achieving short-term carbon neutrality targets.

This institutional arrangement illustrates a two-level game (Putnam 1988) in action: while the federal government positions Sakhalin as an emblem of its climate commitments in international arenas, regional authorities capitalize on the initiative to attract investment, modernize infrastructure, and enhance their





political relevance. The convergence of national signaling and local execution transforms Sakhalin into both a diplomatic instrument and a policy laboratory for Russia's climate governance.

5.2. Technological Transition and Infrastructure

The Sakhalin Project involves an ambitious set of infrastructural transformations aimed at reducing greenhouse gas emissions and increasing carbon sequestration capacity. These initiatives are not merely functional; they serve to project a narrative of innovation, modernization, and leadership in global climate governance.

One of the most significant interventions is the full technical gasification of the Sakhalin region, scheduled for completion by 2025. This includes the conversion of 145 coal boiler houses to gas, the connection of more than 37,000 households and 157 enterprises, and the integration of 66 municipal facilities into the natural gas grid. These efforts are complemented by compensation schemes for citizens to offset gasification-related costs and subsidies for service providers entering agreements with residents (Popova e Kolmar 2023). While framed as climate action, this transition also strengthens Russia's domestic energy sovereignty by reinforcing its existing gas infrastructure.

In parallel, Russia is investing in the development of a hydrogen economy. Plans include establishing hydrogen production facilities and launching a hydrogen-powered train line on Sakhalin Island (Beuerle 2024). This move positions the country to maintain a dominant role in global energy exports even as demand for fossil fuels declines, showcasing hydrogen as a bridge between traditional energy geopolitics and emergent green markets.

Other measures include the reduction of methane emissions through improved waste recycling systems and the planting of thousands of hectares of forest to enhance the region's carbon sink capacity. Both interventions serve a dual purpose: environmental mitigation and international signaling of green credentials. Additionally, the construction of an "Ecopolis"—a planned urban center integrating sustainability technologies and innovation hubs—symbolizes the project's aspiration to become a model for future Russian climate initiatives.

Collectively, these measures are deeply embedded in Russia's hybrid strategy, in which technical innovation is leveraged to sustain a resource-dependent economy while engaging in selective alignment with global climate norms. The





infrastructural push, while substantial, stops short of challenging the foundational role of hydrocarbons in Russia's political economy. As such, it represents a form of climate-washing performativity: an attempt to rebrand Russia as a climate actor without compromising energy sovereignty or geopolitical leverage.

5.3. Geoeconomics and Market Mechanisms

The Sakhalin Project operates as a laboratory for geoeconomic statecraft, where market mechanisms are mobilized to advance Russia's strategic climate agenda while preserving national sovereignty over regulatory design. Central to this experiment is the introduction of a quota system for major emitters: companies emitting more than 50,000 tons of CO₂ equivalent annually were included in 2023, with the threshold dropping to 20,000 tons by 2025. According to Popova and Kolmar (2023), quotas were approved for 35 organizations, which together must reduce approximately 160,000 tons of CO₂ equivalent—a modest 2% cut relative to 2022 emissions, accounting for expected production growth.

The project also involves the creation of a voluntary carbon market, backed by a suite of fiscal incentives. These include income tax and VAT exemptions for carbon unit transactions and subsidies for businesses and residents participating in gasification or adopting clean technologies. Importantly, carbon trading in Sakhalin is embedded within broader financial innovation frameworks, such as green bonds and preferential loans, which signal Russia's intention to modernize its economy without relinquishing state control over core sectors.

While these measures emulate global best practices in climate governance, they do so within a controlled, domestically defined environment. Rather than joining mandatory international emissions trading schemes, Russia positions its voluntary approach as a sovereign alternative, aligned with national interests and capacities. This strategy constitutes a form of “soft balancing” in global climate politics—demonstrating engagement with transnational norms without submitting to externally imposed structures.

Furthermore, the project reveals how carbon markets are not merely technical instruments but also tools of geopolitical signaling and legitimacy-building. By selectively adopting market logic, Russia seeks to rebrand itself as a pragmatic actor in climate governance, while maintaining a high degree of autonomy over resource management and regulatory enforcement. In this sense, the geoeconomic mechanisms deployed in Sakhalin embody a hybrid logic: they





facilitate international cooperation rhetorically, and yet, remain deeply anchored in domestic power consolidation and the maintenance of fossil fuel dominance.

5.4. Geopolitical Stakeholders and International Frictions

The Sakhalin Project, through its various iterations, brings together a constellation of stakeholders whose interests often diverge, reflecting the complex intersection of domestic politics, global capital, and international diplomacy. Key actors include:

- Russian energy companies, such as *Sakhalin Energy* and *Sakhalinmorneftegaz*, central to the island's oil and gas infrastructure;
- Multinational corporations (MNCs) like *Shell*, *Exxon Neftegaz Ltd.*, and *Mitsubishi*, which were heavily involved in the project's early development and financing through production-sharing agreements;
- Foreign governments, notably the United Kingdom and the United States, whose post-2022 sanctions led to the withdrawal of their respective corporations;
- Russian federal and regional institutions, including ministries responsible for energy, finance, and economic development, as well as the Government of Sakhalin Oblast.

The withdrawal of ExxonMobil and Shell, triggered by the escalation of the war in Ukraine and ensuing sanctions, was met with swift and assertive measures by Moscow. In October 2022, President Vladimir Putin signed Decree No. 723, effectively nationalizing Sakhalin-1. The decree transferred operations to the newly created Russian company *Sakhalin-1 LLC*, requiring foreign partners to either accept the new terms or forfeit their participation. This move exemplifies geoeconomic statecraft—the strategic use of energy assets and legal instruments to consolidate national autonomy and project strength amid international confrontation.

Yet paradoxically, while asserting control over strategic resources, Russia simultaneously promotes the Sakhalin Project as a model of international cooperation in climate governance. By leveraging the symbolic language of sustainability and innovation, the Kremlin attempts to recast its geopolitical posture under the rubric of climate neutrality—thus instrumentalizing climate discourse for diplomatic gain.





This dual strategy reveals a hybrid model of climate governance, in which economic coercion and international signaling operate in tandem. The Sakhalin Project is therefore more than a technical decarbonization experiment; it is a strategic interface where Russia negotiates its role in a fragmented international order, using the language of climate responsibility to navigate energy rivalries, economic sanctions, and shifting alliances.

6. Discussion

The Sakhalin Project operates at the fault line between energy sovereignty, global climate commitments, and geopolitical antagonism. Its evolution and implementation reflect the broader transformations in Russia's external and internal strategies, particularly in the wake of the sweeping sanctions imposed following the country's full-scale invasion of Ukraine in 2022.

6.1. Geopolitics and the Weaponization of Infrastructure

In response to Russia's invasion of Ukraine and the subsequent geopolitical rupture with the West, foreign participation in Sakhalin's broader energy sector underwent significant disruption. Western multinational corporations, most notably Shell and ExxonMobil, moved to withdraw from major oil and gas investments in the region, including Sakhalin-2 and Sakhalin-1, respectively. Shell's planned withdrawal from Sakhalin-2 alone involved a multibillion-pound investment, despite the project accounting for roughly 4% of the global LNG market (Leggett 2022). These departures were framed by the companies as moral and political acts intended to undermine Russia's war economy. Estimates from Global Witness (2022) suggest that eight major European and American companies have provided Russia with over USD 95 billion in revenues from joint ventures and state-linked energy holdings since 2014.

Moscow responded assertively—nationalizing Sakhalin-1 through Decree No. 723 (October 2022), transferring operations to a newly created Russian operator, and issuing retaliatory sanctions against American and European officials. It also actively blocked the European Union's bid to host COP29, signaling how climate diplomacy itself has become entangled in broader geopolitical frictions. These actions illustrate the instrumentalization of energy and climate infrastructure as





tools of statecraft. Sakhalin thus becomes more than a regional pilot; it functions as a proxy battlefield in a broader geoeconomic confrontation, where the control of carbon flows, technology, and market access is deployed as leverage in the contest for international influence.

This dynamic reinforces the relevance of two-level game theory (Putnam 1988): while Russian policymakers seek to maintain international credibility by projecting climate engagement, they simultaneously cultivate domestic narratives of sovereignty and resistance. Likewise, Russia's creation of a voluntary carbon market and framing of Sakhalin as a model of international cooperation signals a strategy of soft balancing—symbolically adhering to global norms while avoiding alignment with externally imposed regimes.

Despite the turbulence, the Sakhalin experiment was legally enshrined in March 2022 and formally launched in September of that year, following more than 100 official reports and press releases between 2020 and 2023 that documented the buildup and strategic intentions behind the project (Beuerle 2024).

6.2. Anthropocene Logics and the Limits of Replication

From an Anthropocene perspective, the Sakhalin Project exemplifies how climate mitigation has become a deeply politicized and human-driven process. Efforts to create carbon neutrality through reforestation, hydrogen development, gasification, and market instruments reflect not only technological ambition, but also the constraints and contradictions of late-industrial decarbonization.

In October 2023, Sakhalin became the first Russian region to implement binding greenhouse gas quotas, covering 35 organizations for the 2024–2028 period. The policy established a penalty of 1,000 roubles per ton of CO₂ equivalent above the cap, and aimed to reduce emissions by approximately 2 million tons by 2025—a figure roughly equivalent to the annual emissions of countries like Malta (The Moscow Times 2021).

One of the most ambitious subprojects involves the development of a hydrogen-powered train line, slated to begin service in 2026, part of a broader strategy to integrate Russia into the global hydrogen economy. This builds on a 2021 protocol signed between Rosatom, Russian Railways, and Transmashholding for the delivery of seven hydrogen trains and supporting refueling infrastructure (Hydrogen Central 2021; FuelCellsWorks 2025).





Efforts in reforestation and carbon sinks are equally notable. As of March 2024, 20 climate projects had been registered in Russia, with the potential to generate between 1.5 and 10 million units of carbon, especially through forest sinks. However, challenges such as licensing, forest mortality, and economic options in certain regions still impose limits on the replicability of the model (Nevzorova 2024).

While the project demonstrates what is technically possible when state capacity, infrastructure, and capital converge, it also reveals the limits of scalability. Few countries possess Russia's combination of territorial scale, centralized governance, and fossil-fuel wealth. Moreover, the project's entanglement with federal institutions and national priorities renders it vulnerable to political and diplomatic disruptions.

Nonetheless, Sakhalin provides a compelling model of how subnational initiatives can act as laboratories for climate innovation, inviting broader reflection on a pluralist architecture of global climate governance in the Anthropocene.

6.3. Balancing Climate Responsibility and Sovereignty

Ultimately, the Sakhalin Project underscores the challenge of reconciling national ambition with global responsibility. Russia's trajectory in climate diplomacy remains marked by ambivalence: it oscillates between portraying itself as a cooperative actor and asserting unilateral control over its decarbonization path.

As climate neutrality becomes an arena of international status and competition, projects like Sakhalin gain symbolic and strategic value. They are no longer merely technical experiments, but sites of geopolitical negotiation, performance, and power projection. The crucial task ahead—for Russia and other major emitters—is to institutionalize credibility: transitioning from climate performativity to transparent and durable action, without compromising national autonomy or international equity.

Whether Sakhalin serves as a replicable blueprint or a cautionary tale will depend not only on its technical outcomes, but on its ability to endure and adapt to the turbulent political ecology of the Anthropocene.

6.4. Comparative Perspective

Because of Russia's unique position, owing to its geographical size and the evolution of its national and international climate policy, finding a direct





comparison to the Sakhalin project is rather difficult. Parallels can be drawn with the HyNet North West project in the United Kingdom, which aims to reduce the amount of carbon dioxide emitted from across the region by a quarter. The project aims to achieve this objective by using hydrogen production and carbon capture to decarbonize heavy industry. Similar to Sakhalin, the project incorporates heavy industry integration and carbon market mechanisms, and also includes the involvement of local and national governments. Both projects also count on investment from both the private and public sector. However, unlike Sakhalin, the HyNet North West project operates in a cooperative, multilateral environment without the political isolation Russia has faced since the imposition of sanctions by the European Union. Additionally, as the project is spread over both England and Wales, the risk of the nationalisation of the project, which has happened in Sakhalin as a response to Russia's invasion of Ukraine, is significantly lower.

Another project that could be considered for purposes of comparison is Chile's Green Hydrogen Strategy. The strategy has various projects such as the Haru Oni project (HIF) and the HNH project, with both being located in the Magallanes Region of southern Chile. The project aims to take advantage of the region's abundant wind energy to produce and export green hydrogen globally, with an ambitious target of having five gigawatt of electrolysis capacity under development by 2025, producing the most cost-efficient green hydrogen by 2030, and to be among the top three exporters by 2040 (Franco 2024). Similar to Sakhalin and the previously mentioned HyNet, the project looks to raise funds through both the private and public sector. Additionally, both Russia and Chile are looking to tap into the unique advantages of their respective physical regions (forest cover in Sakhalin and wind energy in Magallanes) in order to achieve their broader climate goals.

Another project particularly worthy of analysis is the Masdar City project, a planned carbon-neutral city combining renewable energy, energy-efficient infrastructure, and R&D for green technology. The project is the brainchild of Mubadala Development Company, an Emirati company located in Abu Dhabi, and "aims to run on 100% renewable energy on its completion instead of natural[sic] gas-dominated electricity grid of UAE" (Madhu e Pauliuk 2019, 3). The city is envisioned as a pinnacle of innovation in an age where most cities rely heavily on fossil fuels to power their industries, transportation, and daily life. Designed with sustainability at its core, Masdar City integrates renewable energy systems, smart infrastructure, and green spaces to create a self-sufficient urban ecosystem.





This forward-thinking approach serves to reduce carbon emissions to the bare minimum, setting a benchmark for city design in a net-zero world.

Masdar City, HyNet and Chile's Green Hydrogen Strategy each have their own defining characteristics and particular contexts, yet similar to Sakhalin, they all employ the use of targeted regional initiatives to further climate goals on a national scale as each country charts its own path to net-zero before the 2050 deadline. Each case signals a different approach towards decarbonization initiatives, ranging from advanced urban planning (as is the case of Masdar City), to industrial infrastructure (as observed with HyNet).

However, Sakhalin is unique in the way that Russia has approached the global climate discourse, and its attempt to meld two seemingly opposing elements in a fossil-fuel based economy and a national net-zero strategy. Additionally, the project's trajectory continues to be subject to the turbulence of geopolitical tensions and energy sovereignty, as ongoing tension rages on between Russia and the European Union over the former's actions in Ukraine. In this case, Sakhalin operates under the constraints of heavy international sanctions, foreign divestment, and the potential weaponization of energy assets in response to political pressures, issues that are simply not present in the contexts of Chile, the UK, or the UAE.

From an anthropocene perspective, the Sakhalin project, as well as the other compared examples, illustrates that the political system cannot be ignored when observing these climate projects. HyNet, especially, can be viewed as the possible *ne plus ultra* of a testing ground for innovative green technology in a relatively stable governance framework. Conversely, Sakhalin serves a dual role; having started off as a decarbonization pilot, and later being transformed into an additional tool of geopolitical strategy by Russia. This shows that climate initiatives are not immune to political volatility, and they can be weaponised to gain geopolitical advantage. This is the case not only in Russia, but also in other countries that are facing geopolitical turmoil. Therefore, we can reasonably conclude that in the Anthropocene, where human activity is the dominant force shaping planetary systems, the success or failure of ambitious climate projects depends as much on their political and geopolitical environments as on their technological or ecological merits.

While the Sakhalin project has not yet reached its deadline, it has undoubtedly felt the effects of Russia's tensions on the global political stage. Whether the project will be deemed a success remains to be seen. However, this success, and





that of other similar projects, will hinge not only on resource endowments and technological innovation, but also on the political and economic ecosystems in which they operate. In the race to net-zero discourse, the symbolic contest of technological prowess has taken centre stage, with each country and corporation attempting to develop the most sophisticated technology that integrates buzzwords such as “energy efficiency” and “carbon capture”. However, these remarkable efforts cannot fully thrive in politically charged environments. Instead, they risk being diverted from their primary climate objectives and instead being fashioned into mere pawns in a game of geopolitical chess. This raises the question, especially in the case of the Sakhalin project, as to whether climate neutrality is still the end goal or whether they are reduced to leverage and become secondary to the pursuit of strategic geopolitical advantage.

7 Conclusion

This article examined the Sakhalin Project as a critical case in understanding how Russia navigates the competing imperatives of energy sovereignty and climate neutrality in the Anthropocene. Positioned at the intersection of geoeconomics, environmental diplomacy, and post-sanction statecraft, the Sakhalin initiative offers a rare empirical window into Russia’s evolving climate governance in an era marked by geopolitical fragmentation and environmental urgency.

By relying on a theory-consuming case study approach, the analysis demonstrated that Sakhalin is not merely a technical experiment in carbon reduction but a deeply political project designed to serve multiple audiences and purposes. Domestically, it provides a platform for subnational innovation, rent-seeking opportunities, and elite coalition-building around green development. Federally, it enables Russia to signal selective alignment with global climate norms while preserving autonomy in designing carbon governance mechanisms. Internationally, it serves both as a soft power instrument in climate diplomacy and a hard-power response to Western sanctions, especially after the 2022 invasion of Ukraine.

The findings of this study underscore that climate neutrality, as pursued by Russia, is neither apolitical nor linear. It is a strategic field of contestation, shaped by financial instruments, infrastructural development, legal experimentation, and geopolitical tensions. The Sakhalin Project exemplifies a hybrid model of





climate governance — one that blends voluntary market mechanisms with state control, and where sustainability objectives are negotiated alongside national security and energy dominance.

While the project reflects technological ambition and policy innovation, its viability as a replicable model remains limited. Its success depends on factors unique to Russia: vast natural resources, centralized state capacity, and geopolitical insulation. Moreover, its entanglement with federal objectives and diplomatic disputes renders it vulnerable to external shocks and legitimacy crises.

Nevertheless, Sakhalin provides a compelling example of how the Anthropocene challenges the conventional boundaries between domestic and international politics, and between environmental stewardship and sovereignty. As global climate commitments become increasingly embedded in the geopolitical logic of great power competition, cases like Sakhalin remind us that decarbonization is not just a matter of emissions, but of power, legitimacy, and global order.

Future research should explore whether other resource-rich states — particularly those facing international sanctions or operating under hybrid regimes — are adopting similar strategies. Comparative analyses could illuminate whether Russia's model of climate governance constitutes a new form of “climate sovereignty,” with implications for both the Global North and South in the evolving architecture of international environmental cooperation.

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