
The Role of Energy Law in Promoting Energy Independence and National Security

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Energy laws play a pivotal role in shaping policies that ensure energy independence and strengthen national security. This research investigates how legal frameworks contribute to reducing energy dependence, enhance infrastructure resilience, and support the transition to renewable energy. A qualitative and comparative legal research design has been applied, incorporating an extensive literature review, examination of both domestic and international energy legislation, thematic coding, and a synthesis of findings. In this essay, applied publicly available materials, legislative acts, and scientific publications have been applied to draw general conclusions. Evidence shows that regulatory inconsistencies continue to hinder the use of renewable energy, and loopholes in the protection of infrastructure expose countries to security risks. Nations that successfully adopted and incorporated their legal procedures into the new circumstances are more successful in diversifying energy supply, abusing of geopolitical risks, and facilitating technological changes. Strengthening and harmonizing energy laws

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ensures resilience, independence, and stability in global energy governance systems.

Keywords

Energy Law, Energy Independence, National Security, Renewable Energy, Energy Resilience

1. Introduction

Energy laws play a crucial role in defining the frameworks and policies pertaining to energy production, distribution, and consumption.¹ Legal governance of energy resources has become even more important as nations struggle to maintain both national security and energy self-sufficiency.² Energy priorities across the globe have changed tremendously from the oil crises of the 1970s to the growing emphasis on renewable energy sources.³ Both stages mark the natural connection between energy laws, energy security, and geopolitical stability.⁴ The capacity to satisfy its energy needs without having an overdependence on external providers, also known as energy independence,⁵ has been traditionally regarded as a prior national security policy, especially with the unexpected world energy market conditions and sub-sequent damage to the energy supply chain consistently showing the potential of becoming a threat.⁶

- 1 RAPHAEL HEFFRON, *ENERGY LAW: AN INTRODUCTION* 1-13 (2021); Chijioke Agupugo et al., *Policy and regulatory framework supporting renewable energy microgrids and energy storage systems*, 5(8) *ENG'G SCI. & TECH. J.* 2589-615.
- 2 Daniel Mara et al., *The Place of Energy Security in the National Security Framework: An Assessment Approach*, 15(2) *ENERGIES* 4-29 (2022); Maria Silvestre, *Energy self-consumers and renewable energy communities in Italy: New actors of the electric power systems*, 151 *RENEWABLE & SUSTAINABLE ENERGY REV.* 3-11 (2021).
- 3 CALEB WELLUM, *ENERGIZING NEOLIBERALISM: THE 1970S ENERGY CRISIS AND THE MAKING OF MODERN AMERICA* 1-16 (2023).
- 4 Qiang Wang et al., *Geopolitics and energy security: a comprehensive exploration of evolution, collaborations, and future directions*, 11(1) *HUMAN. & SOC. SCI. COMMUN* 4-22 (2024).
- 5 JULIE DOMAC ET AL., *EUROPEAN ENERGY INDEPENDENCE THROUGH INVESTING IN RENEWABLES: EMPOWERING FREEDOM* 208 (2025).
- 6 Piotr Daniluk, *Strategic Analysis of Energy Security. Methodological Aspects of the Scenario Approach*, 14(15) *ENERGIES* 5-21 (2021); Khalid Khan, *How do supply chain and geopolitical risks threaten energy security? A time and frequency analysis*, 316 *ENERGY* 1-8 (2025).

The interaction of energy law and energy independence can be observed in the manner in which the legal instruments control the available resources; encourage the development of renewable energy sources and distribution; and mitigate risk through geopolitical tensions.⁷ Since the US Energy Independence and Security Act of 2007 was signed to enhance energy efficiency and reduce dependence on foreign oil through the higher uptake of renewable energy,⁸ scholars have paid attention to such legislation as this Act, which is essential to colossal energy security in striking a balance between environmental and economic concerns.⁹ It is argued that vigorous energy policies would present a stable regulatory environment that supports investments in clean energy, thereby further eliminating population reliance on foreign fossil-based energy sources.¹⁰

In the past, the energy dependency was vividly demonstrated. The 1973 oil crisis, which caused serious economic unrest, highlighted the extent to which reliance on foreign sources of energy might pose a danger to national security and economic stability.¹¹ In this context, studies on the pricing of petroleum products after regulatory measures such as the Energy Policy and Conservation Act (EPCA) noted that, through legal measures, energy markets and energy security positions can be easily affected.¹² Such analyses suggest the importance of thorough energy legislation aimed at not only reducing short-term supply threats but also long-term sustainability objectives.

Recent literature also cites the increased complexity of energy security with the emergence of climate change and technological advancement.¹³ Energy security is related to not only the stability of fossil fuels supply, but also the resilience and

- 7 A Maniruzzaman & Khalid Al-Saleem, *Renewable energy and energy justice in the Middle East: international human rights, environmental and climate change law and policy perspectives*, 18(1) J. WORLD ENERGY L. & BUS. 1-22 (2025); Maishera Ifraimu et al., *Geopolitical Risk Management in International Business: Strategies for Mitigating Sanctions and Diplomatic Fallout*, 4(6) INT'L J. ADVANCED MULTIDISCIPLINARY RES. & STUD. 31-4 (2024)
- 8 Fred Sissine, *Energy Independence and Security Act of 2007: A Summary of Major Provisions*, at 3-10, <https://apps.dtic.mil/sti/html/tr/ADA475228>.
- 9 Lowell Ungar et al., *Bending the Curve: Implementation of the Energy Independence and Security Act of 2007*, <https://www.aceee.org/research-report/e1503>; Syed Kham et al., *Measuring the impact of renewable energy, public health expenditure, logistics, and environmental performance on sustainable economic growth*, 28(4) SUSTAINABLE DEV. 833-43 (2020).
- 10 Kaisa Huhta, *The contribution of energy law to the energy transition and energy research*, 73 GLOB. ENVTL CHANGE 1-5 (2022).
- 11 Charles Issawi, *The 1973 Oil Crisis and After*, 1(2) J. POST KEYNESIAN ECON. 3-26 (1978).
- 12 Robert Rogers, *The Effect of the Energy Policy and Conservation Act (EPCA) Regulation on Petroleum Product Prices, 1976-1981*, 24(2) ENERGY J. 63-93 (2003).
- 13 Ahmed Elkhatat & Shaheen Al-Muhtaseb, *Climate Change and Energy Security: A Comparative Analysis of the Role of Energy Policies in Advancing Environmental Sustainability*, 17(13) ENERGIES 1-13 (2024).

sustainability of the so-called energy systems.¹⁴ Current models appreciate the importance of end-to-end planning, which will guarantee not only energy resiliency but also responsiveness to disruption.¹⁵ The challenge of energy resilience also has national security implications. For defense industries, for example, the idea of reliable access to energy is paramount.¹⁶ This new paradigm supports the previous inclination to shift past energy independence to a more sophisticated order concept of energy system stability.

Energy transition, i.e., the substitution of carbon fuel sources with low-carbon and alternative sources, is both a challenge and a prospect for energy laws.¹⁷ It enables the reduction of dependence on foreign fossil fuels, the integration of new technology, and the safeguarding of essential infrastructure.¹⁸ These new realities call for policies and legislation to be formulated accordingly, which accentuates the intertwined dynamics of energy transition, foreign investment, and energy security.¹⁹ However, another issue that arose for this complication was energy aristocracy geopolitics, in which the new economies were confronted with the challenge of previously unprecedented dimensions as far as their energy sources were concerned based on changing world order.²⁰

Despite the trend toward renewable energy, there are still legal difficulties.²¹ Baziar and Parsa indicate that not all countries possess an equal number of regulatory issues to drive the further growth of renewable energy.²² Such obstacles include inapplicable laws, the absence of developed incentives, and contradictions

14 Julia Edigareva et al., *Energy security: key concepts, components, and change of the paradigm* 1-7 (ArXiv Preprint, 2021), <https://arxiv.org/abs/2106.16117>.

15 Richard Schmitz et al., *Energy security and resilience: Revisiting concepts and advancing planning perspectives for transforming integrated energy systems*, 207 ENERGY POL'Y 1-12 (2025).

16 Christopher Reintjes, *Energy Resiliency: How DoD can become Energy Resilient and Still Meet its Renewable Energy Goals* 1-23 (Graduate Thesis, Vermont Law School, 2019), <https://calhoun.nps.edu/entities/publication/02261aac-cefc-4ceb-9c2d-c887dd67cceb>.

17 M. Balashov, *Analysis of Key Directions and Proposals to Minimise the Economic Impact of the Global Energy Transition on Large Energy-Intensive Industrial Consumers of Electricity and Capacity* [Анализ Ключевых Направлений И Предложения По Минимизации Экономических Последствий Глобального Энергоперехода Для Крупных Энергоемких Промышленных Потребителей Электрической Энергии И Мощности], 14(2) STRATEGIC DECISION & RISK MGMT. 164-79 (2023).

18 Jaden Kim et al., *Energy security and the green transition*, 198 ENERGY POL'Y 1-15 (2025).

19 Maria Mauro, *Energy Security, Energy Transition, and Foreign Investments: An Evolving Complex Relationship*, 13(4) LAWS 1-21 (2024).

20 Fen Li et al., *Does Geopolitics Have an Impact on Energy Trade? Empirical Research on Emerging Countries*, 13(9) SUSTAINABILITY 1-24 (2021).

21 Jia Liu et al., *Legal Systems, National Governance and Renewable Energy Investment: Evidence from Around the World*, 32(3) BRIT. ACAD. MGMT. 579-610 (2021).

22 Aliasghar Baziar & Navid Parsa, *Legal Challenges in Renewable Energy Development: A Comparative Study of China and Selected Countries* 3-8 (ArXiv Preprint, 2021), <https://arxiv.org/abs/2412.10203>.

between national and regional interests.²³ This constitutes a serious obstacle to achieving energy independence and environmental goals. Similarly, effective energy governance continues to affect oil-rich nations in which poor policies may threaten demand security even when re-sources are abundant.²⁴

Against this backdrop, this research aims to investigate the effectiveness as well as ineffectiveness of existing legal frameworks in preventing energy risks and the transition towards sustainable energy facilities. This authors further try to determine these gaps and propose legal strategies that may make energy policies more suitable for national security requirements. Energy law is rather than just compliance with rules; it is a strategic instrument that shapes national resilience, economic stability, geopolitical balance, and rankings. Although the road to energy independence is plagued by challenges, effective laws can be designed as vehicles not only to guarantee the unequivocal security of energy but also to attain other sustainability aims. The authors argue that properly structured and applied energy legislation has the potential to close the gap between environmental protection and energy security, bringing about an energy future that will be more sustainable and able to achieve self-sustenance.

2. Key Legal Findings

A. Legal Barriers to Renewable Energy Development

Inconsistent regulatory frameworks and fragmented legal provisions significantly hinder the rapid adoption of renewable energy technologies. Countries with well-structured and enforceable energy laws have achieved higher rates of renewable energy integration than those operating under outdated or conflicting regulations. Regulatory inconsistencies slow the pace of renewable energy deployment, whereas conflicts between national and local jurisdictions limit the overall effectiveness of the policies. The lack of clear incentives for private sector participation has further weakened efforts to expand renewable energy initiatives. These factors collectively underscore the importance of harmonizing legal

23 Erlan Wijatmoko et al., *Legal effectiveness in promoting development policies: A case study of North Aceh Indonesia*, 9(11) HELIYON 1-22 (2023).

24 Amir Moghani & Reyhaneh Loni, *Review on energy governance and demand security in oil-rich countries*, 57 ENERGY STRATEGY REV. 1-20 (2025).

frameworks to remove barriers and create an enabling environment for sustainable energy development.²⁵

B. Energy Infrastructure Resilience

Table 1 highlights the four critical themes that influence energy independence and national security. Legal barriers with high impact levels stem from regulatory inconsistencies that hinder renewable energy adoption. Infrastructure resilience was also rated high because many jurisdictions lack adequate legal protection for critical energy systems, making them vulnerable to threats. Geopolitical impacts are measured as medium impacts and refer to the increasing global vulnerability caused by energy dependence. Finally, energy transition laws continue to change and remain vulnerable to the overall gaps in embracing emerging technologies and thus have a high overall impact.²⁶

Table 1: Themes and Key Findings²⁷

Theme	Key Insights	Impact Level
Legal Barriers	Regulatory inconsistency slows renewable adoption	High
Infrastructure Resilience	Critical infrastructure lacks adequate legal protection	High
Geopolitical Implications	Energy dependence increases vulnerability to geopolitical risks	Medium
Energy Transition	Laws are adapting, but gaps remain in supporting new technologies	High

C. Geopolitical Implications of Energy Dependence

Table 2 provides a comparative summary of legal systems in various locations, demonstrating how legal emphasis affects outcomes and new challenges. The focus on energy efficiency and conservation, together with the drive towards energy security in the US, has achieved success in mitigating oil imports, but the enforcement question remains. China’s emphasis on renewable integration has

25 BENJAMIN SOVACOO & IRA DRUPADY, ENERGY ACCESS, POVERTY, AND DEVELOPMENT: THE GOVERNANCE OF SMALL-SCALE RENEWABLE ENERGY IN DEVELOPING ASIA 311-28 (2012).

26 Parimita Mohanty et al., *Improving community resilience through distributed solar energy as critical infrastructure – A Case Study of South Asia*, 16(3) INT’L J. DISASTER RESILIENCE BUILT ENVTL 309-27 (2025).

27 Compiled by the authors.

increased the capacity for solar and wind power, but it has experienced conflicts at the local level. The EU has prioritized decarbonization in order to achieve policy alignment on the renewables despite market volatility. Oil-rich nations are centered on demand security, yet governance gaps and overdependence on exports continue to hinder long-term energy stability.²⁸

Table 2: Comparative Analysis of Energy Law Frameworks²⁹

Country	Primary Legal Focus	Observed Outcomes	Challenges
US	Energy efficiency & security	Reduced oil imports	Policy enforcement
China	Renewable integration	Increased solar/ wind capacity	Local conflicts
EU	Decarbonization	Policy alignment on renewables	Market volatility
Oil-rich Nations	Demand security	Persistent governance gaps	Overdependence on exports

D. Energy Transition and Legal Adaptation

Table 3 outlines the key risk factors affecting energy security. Cyberthreats with a medium probability, but high impact poses significant challenges to infrastructure protection. Supply disruptions, which are rated high in both probability and impact, remain the most critical risks. Market volatility occurs frequently with a medium impact, whereas regulatory lag, although less frequent, has a high impact by delaying effective energy transitions.³⁰

28 Djula Borozan, *Assessing the impact of geopolitical risk, energy import dependence, and economic policy uncertainty on energy consumption*, 18 ENERGY EFFICIENCY 1-19 (2025).

29 Compiled by the authors.

30 Fernanda Skewes et al., *Navigating the energy transition in South America: Regulatory challenges and trends in Chile’s evolving energy legal landscape*, 121 ENERGY RES. & SOC. SCI. 103957 (2025).

Table 3: Risk Factors in Energy Security³¹

Risk Factor	Probability	Impact
Cyber Threats	Medium	High
Supply Disruptions	High	High
Market Volatility	High	Medium
Regulatory Lag	Medium	High

E. Policy Effectiveness in Energy Independence

Table 4 summarizes the effectiveness of the key policies in achieving energy independence. The Energy Independence Act was highly effective in significantly reducing oil dependence. Renewable subsidies showed medium effectiveness and promoted renewable adoption but were hampered by inconsistent enforcement. Grid-resilience programs have achieved moderate success by improving reliability. International treaties have delivered variable outcomes, reflecting differing national priorities and inconsistent commitment levels among the participating countries.³²

Table 4: Effectiveness of Key Policies³³

Policy	Effectiveness	Key Outcome
Energy Independence Act	High	Reduced oil dependency
Renewable Subsidies	Medium	Increased renewable adoption
Grid Resilience Programs	Medium	Improved reliability
International Treaties	Variable	Mixed results

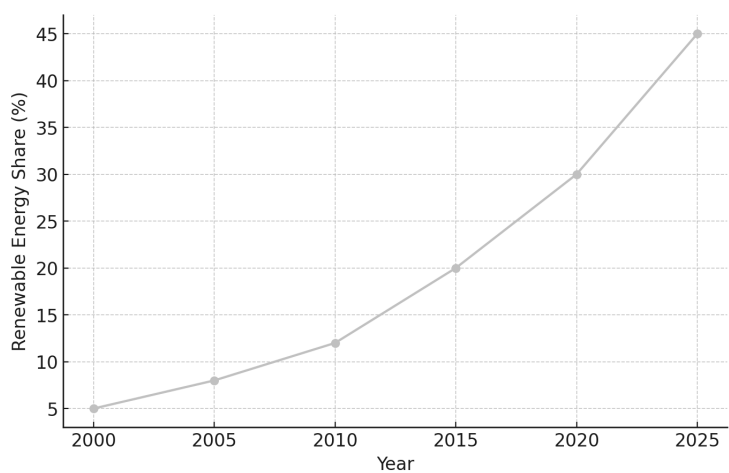
F. Progressive Growth of Renewable Energy Share from 2000 to 2025

Figure 1 shows the steady and significant increase in the share of renewable energy sources between 2000 and 2025. Growth accelerated notably after 2010,

³¹ Compiled by the authors.
³² Sami Ahonen et al., *Framing climate policy around energy independence enhances acceptance and perceived effectiveness: evidence from a Finnish survey experiment*, 178 CLIMATIC CHANGE 1-19 (2025).
³³ Compiled by the authors.

indicating the impact of supportive legal frameworks and policies promoting clean energy. This upward trend reflects the successful integration of renewables, driven by regulatory incentives, technological advancements, and increased commitment to sustainable energy development.³⁴

Figure 1: Growth of Renewable Energy Share Over Time³⁵

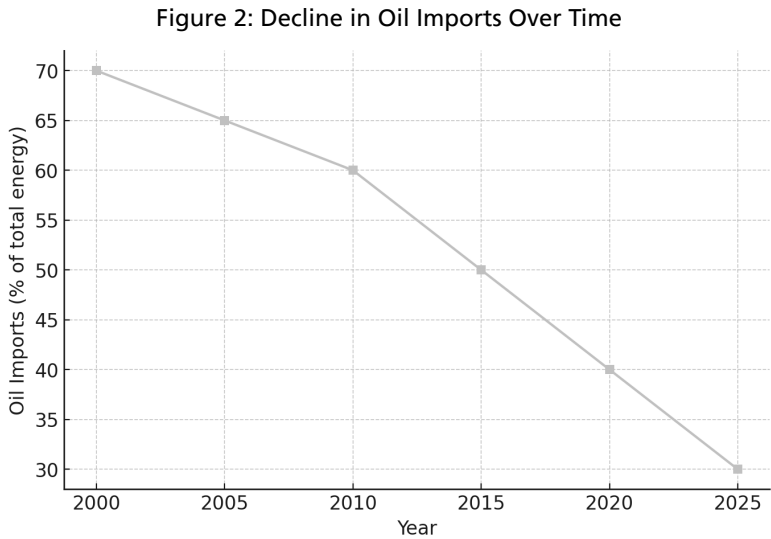


G. Steady Decline in Oil Imports from 2000 to 2025

Figure 2 illustrates the consistent decline in oil imports as a share of total energy consumption between 2000 and 2025. The sharpest decrease occurred after 2010, reflecting the impact of national policies promoting energy efficiency, renewable energy adoption, and domestic energy production. This downward trend highlights the success of strategic legal frameworks in reducing the dependency on foreign oil sources.

34 Ghata Dave et al., *Global scenario on renewable energy and net zero goal emphasizing Indian standpoint: a short review*, ENERGY SYS. 1-22 (2025).

35 Compiled by the authors.



3. Legal and Policy Implications of Energy Law

A. The Foundational Role of Legal Frameworks in Energy Independence

Our findings demonstrate that energy law plays an instrumental role in advancing energy independence and national security, confirming the initial hypothesis that well-designed legal frameworks are pivotal for achieving both objectives. By interpreting these results in the context of previous studies, it becomes clear that legal systems serve as the foundation for promoting energy transitions, mitigating security risks, and ensuring resilience in the face of evolving global energy challenges.

The identification of legal barriers as a critical factor aligns with earlier studies that have highlighted the inconsistency and inadequacy of energy regulations as obstacles to renewable energy development.³⁶ It demonstrates that countries with

36 Emmanuel Obuseh et al., *A Systematic Review of Barriers to Renewable Energy Integration and Adoption*, 9 J. ASIAN ENERGY STUD. 26-45 (2025).

fragmented regulatory systems face significant hurdles in attracting investments and scaling renewable projects. These findings prove that policy conflicts between national and local jurisdictions impede progress.³⁷ Cameron argued that foreign investment in the clean energy sector is heavily influenced by the stability of legal environments, which supports that comprehensive laws are necessary to foster both domestic and international confidence in energy markets.³⁸ These findings also suggest that governments should prioritize harmonizing legal frameworks to remove barriers to renewable energy adoption. As mentioned above, energy law can be a dynamic actor in bringing about energy transition owing to stable regulatory environments that promote innovation and the uptake of clean technologies.³⁹ Absent the harmonized laws, the deployment of renewable sources remains sluggish despite technological improvements.

B. Legal Protection and Resilience of Energy Infrastructure

Meanwhile, the resilience of the energy infrastructure is a key contributor to national security, especially against emerging threats.⁴⁰ Reintjes clarified that energy infrastructure is becoming intertwined with national security because it is prone to both physical and cyberattacks. Simultaneously, he underlined the significance of energy resiliency in defense activities and the accompanying legal structure which should produce the continuity of energy flows even under coercion.⁴¹ These views demonstrate that the absence of legal regulations for protecting infrastructure exposes countries to disruption.⁴²

Contemporary energy security requires integrated planning that considers resilience at multiple levels from local grids to international supply chains. Positive results from grid resilience programs in certain jurisdictions confirm that proactive legal measures can enhance the adaptability of energy systems.⁴³ Future research should focus on designing legal instruments that integrate resilience

37 Mauro, *supra* note 19, at 1-21.

38 Peter Cameron, *Stabilization and the impact of changing patterns of energy investment*, 10(5) J. WORLD ENERGY L. & BUS. 398-403 (2017).

39 Huhta, *supra* note 10, at 1-5.

40 Alexander Farrell et al., *Energy infrastructure and security*, 29 ANN. REV. ENVTL & RES. 421-69 (2024).

41 Reintjes, *supra* note 16, at 1-23.

42 Richard Schmitz et al., *Energy security and resilience: Revisiting concepts and advancing planning perspectives for transforming integrated energy systems*, 207 ENERGY POL'Y 1-18 (2024).

43 Anabel Elmaga, *The Performance, Adaptability, and Stability of the Local Government Units on Government Energy Management Program Implementation*, in ANABEL M. ELMAGA 2024 IOP CONF. SER.: EARTH ENVTL SCI. 1-24 (2024).

requirements into all the stages of energy infrastructure development. This approach advocates for a paradigm shift in energy security beyond the supply to encompass system stability.⁴⁴

C. Legal and Institutional Dimensions of Geopolitical Energy Dependence

The analysis showed that energy dependence continues to be vulnerable, particularly for energy-importing countries.⁴⁵ Nations with comprehensive legal strategies have demonstrated improved resilience to supply disruptions. The diversification of energy sources and the strategic use of international alliances were identified as critical factors in reducing geopolitical risks. The oil crises of the 1970s exposed the vulnerabilities of countries heavily reliant on foreign oil.⁴⁶ Therefore, nations with comprehensive legal strategies are better equipped to mitigate vulnerabilities. The decrease in external dependence and self-supporting are positive aspects of diversification of oil supply. Lovins & Lovins argued that the development of domestic resources was a way towards energy security.⁴⁷ Opinions were divided into the interplay between self-sufficiency and breakthroughs in international collaboration.⁴⁸ A hyper-focus on energy self-sufficiency may lead to isolationism, making energy governance less stable internationally. As a result, geopolitics exert a considerable impact on energy trade, which explains why legislation should consider cross-border dealings to ensure stable access to energy supplies.⁴⁹ It suggests that national energy policies are necessary, but should be supplemented by external partnerships to improve security.

D. Adapting Energy Law to Emerging Technologies and the Green Transition

Recent research shows that legal structures adjust themselves to accommodate energy changes, focusing on the dynamic nature of energy legislation to

⁴⁴ Edigareva et al., *supra* note 14, at 1-7.

⁴⁵ Boroza, *supra* note 28, at 1-19.

⁴⁶ Daniel Haqem & Noraini Zulkifli, *The Opec Oil Price Shock Crisis (1973) and the Actions Taken by the United States: Factor That Contribute to The Oil Change*, 7(1) ASIA. PAC. J. SOC. SCI. RES. 1-22 (2022).

⁴⁷ AMORY LOVINS & L. LOVINS, BRITTLE POWER: ENERGY STRATEGY FOR NATIONAL SECURITY 1-29 (1981).

⁴⁸ Aliaksandr Novikau, *Energy Security in Security Studies: A Systematic Review of Twenty Years of Literature*, 17(3) CENT. EUR. J. INT'L & SEC. STUD. 34-64 (2023).

⁴⁹ Li et al., *supra* note 20, at 1-24.

implement clean energy. The green transition has some demands on the legal systems that need to consider both sustainability and security goals simultaneously.⁵⁰ As gaps still exist for the integration of emerging technologies, the laws should be evolved to adapt to new investment models and technological paradigms.⁵¹ According to Segovia-Hern, considering the resolute actions of green hydrogen and other innovative technologies, insufficient legal and policy frameworks impede the sustainability of green hydrogen adoption and innovation in consumption.⁵² Finally, the regulatory lag remains a factor hindering the full potential of new energy solutions. In a similar vein, a conflict between national sovereignty and global solidarity regarding the net-zero emissions and the necessity for energy laws can address national interests in line with global climate commitments.⁵³ These findings indicate that future research should focus on addressing the challenges of reorganizing energy laws to guarantee the support of innovation, sustain security, and promote the stewardship of the environment concurrently.⁵⁴ Accordingly, the new geopolitical reality presents new legal needs responding to energy dependence but at the same time protect supply chains.

E. Evaluating Policy Effectiveness in Advancing Energy Security

The evaluation of policy effectiveness revealed that national energy acts, such as the US Energy Independence and Security Act of 2007, have played a crucial role in reducing oil dependency and promoting renewable energy adoption.⁵⁵ It further demonstrated that the implementation of this Act yielded significant gains in energy efficiency. Despite their positive contributions, renewable subsidies showed limited effectiveness due to inconsistent enforcement, highlighted by the assessment of the US energy policies.⁵⁶ The mixed outcomes

50 Kim et al., *supra* note 18, at 1-15.

51 Mauro, *supra* note 19.

52 Juan Segovia-Hernández et al., *Green hydrogen production for sustainable development: a critical examination of barriers and strategic opportunities*, 3 RSC SUSTAINABILITY 134-57 (2025).

53 Damilola Olawuyi et al., *Introduction: The New Age of Natural Resources Law and Policy: From Resource Conservation to Net Zero*, in NET ZERO AND NATURAL RESOURCES LAW: SOVEREIGNTY, SECURITY, AND SOLIDARITY IN THE CLEAN ENERGY TRANSITION 1-18 (Damilola Olawuyi et al. eds., 2024)

54 ANATOLE BOUTE, ENERGY DEPENDENCE AND SUPPLY SECURITY: ENERGY LAW IN THE NEW GEOPOLITICAL REALITY 255 (2023).

55 Sissine, *supra* note 8, at 1-28.

56 Robert Dixon et al., *US energy conservation and efficiency policies: Challenges and opportunities*, 38(11) ENERGY POL'Y 6398-408 (2010).

observed in international treaties echo the inconsistencies in international energy governance.⁵⁷ While global agreements are important, their success depends on the alignment of national policies and interests.

The broader context of these findings indicates that energy law is not only a regulatory tool, but also a strategic instrument that influences national resilience, economic stability, and geopolitical positioning.⁵⁸ It is argued that energy independence is intrinsically linked to energy security, which has been confirmed by the analysis of legal frameworks and their impacts.⁵⁹ Ben Ali et al. demonstrated how investments in renewable energy R&D, supported by appropriate laws, can enhance security by reducing reliance on volatile oil markets.⁶⁰ The quality of governance in energy-rich nations significantly determines their ability to meet energy demands.⁶¹ Without effective governance and laws, even resource-abundant countries face energy security risks.

F. Directions for Future Research and Legal Development?

Here, we provide several avenues for future research. First, further investigation is needed into how emerging technologies such as green hydrogen and energy storage can be better supported through legal instruments. Second, comparative studies across regions can reveal additional best practices for energy governance. Finally, interdisciplinary research that integrates legal, technological, and geopolitical perspectives can provide a more holistic understanding of balancing energy independence with global cooperation.

⁵⁷ Novikau, *supra* note 50.

⁵⁸ Morgan Bazilian et al., *Linking Energy Independence to Energy Security*, in IAEE USA THIRD Q. 1-5 (2023).

⁵⁹ David Greene & Paul Leiby, *The Oil Security Metrics Model: A Tool for Evaluating the Prospective Oil Security Benefits of DOE's Energy Efficiency and Renewable Energy R&D Programs* (2006), at 1-119, <https://info.ornl.gov/sites/publications/files/Pub2156.pdf>.

⁶⁰ Mohamed Ali et al., *Climate Change and Energy Security Risk: Do Green Patents, Institutional Quality, and Human Capital Make a Difference?*, (Early View) SUSTAINABLE DEV. 1-25 (2025).

⁶¹ Moghani & Loni, *supra* note 24, at 1-20.

4. Conclusion

This article has shown that energy law acts as an important tool for enhancing energy independence and national defense. Well-developed legal frameworks greatly affect the growth of renewable energy, the strength of energy infrastructure, and the stability of energy systems in a country. Energy law also addresses regulatory obstacles, reconciles policies, and promotes innovation, which not only makes a country less dependent on external sources of energy, but also expands its ability to fight geopolitical and market-borne threats. The authors would argue that countries with inclusive and dynamic energy legislation perform well in terms of their degrees of energy diversification, infrastructural resilience, and security preparedness. Significant gaps remain, particularly in incorporating emerging technologies into existing systems and aligning legal frameworks with the rapid growth of the energy market. Simultaneously, as much as national strategies toward achieving energy independence are essential, they should be balanced with international cooperation towards harmonization of energy issues and commitments to climate crisis.

Another point of contention is that, due to the energy transition, energy law is changing to address these needs, although regulatory inconsistency, problems with governance, and market volatility are still major challenges. These results highlight the necessity for further studies aimed at the optimization of legal instruments that facilitate innovation, enhance resilience, and harmonize national and global interests. Finally, energy law is not just a regulatory tool; it is rather a strategic instrument that governs the path towards energy independence and national security. As a consequence, integrated and progressive think-ahead legal systems enable countries to develop sustainable and secure energy futures in complex geopolitical landscapes.

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