Contents list available at CBIORE journal website

Journal of Emerging Science and Engineering

Journal homepage: https://journal.cbiore.id/index.php/jese/index

Research Article

Risk management in the energy sector: Challenges, strategies, and regulatory frameworks in Western Balkans as Albania case study

Eva Hyna[a*] and Eli Vyshka[b]

[a]*Faculty of Agribusiness and Economic, Agriculture University of Tirana, Albania*

[b]*Faculty of Professional Studies, Aleksander Moisiu University, Durres, Albania*

Abstract. The energy sector, characterized by substantial capital investments, long-term projects, volatile commodity prices, and increasing environmental concerns, faces a complex and evolving landscape of risks (Kaarle Parikka, 2024). This article examines the key challenges in effective risk management within this critical sector, ranging from operational disruptions and geopolitical instability to the impacts of the energy transition and climate change. It explores diverse risk management strategies employed by energy companies, including advanced forecasting techniques, hedging instruments, diversification, and robust emergency response plans. Furthermore, the paper analyzes the crucial role of regulatory frameworks at national and international levels in shaping risk management practices and promoting resilience across the energy value chain in Western Balkans having Albania as case study. By synthesizing current trends and best practices, this article provides valuable insights for energy stakeholders seeking to navigate uncertainty and ensure sustainable and secure energy supply.

Keywords: Energy sector, risk management, energy policy, renewable energy, regulation, Western Balkans, energy security, DE carbonization

Received: 16th Sept 2025; Revised: 6th Oct 2025; Accepted: 8th Nov 2025; Available online: 20th Nov 2025

1. Introduction

The Western Balkans, a region undergoing significant economic and political transitions, faces complex challenges and emerging opportunities in its energy sector. Characterized by aging infrastructure, reliance on a narrow set of energy sources, and continued aspirations for European Union (EU) integration, the region requires robust and forward-looking risk management practices. This need has become increasingly urgent as Western Balkan countries work to align with EU energy policies, particularly those concerning renewable energy expansion and stricter environmental standards (European Parliament Research Service, 2025). Effective risk management is therefore essential not only for ensuring energy security and operational efficiency but also for attracting foreign investment and supporting long-term sustainable development (Western Balkans Investment Framework, n.d.).This article examines the key risk management challenges across the Western Balkan energy sector, with Albania serving as the central case study. It assesses the strategies currently employed and the regulatory frameworks under development, offering insights on how resilience and sustainability can be strengthened at both national and regional levels (The Vienna Institute for International Economic Studies, 2023). Albania's experience illustrates these dynamics particularly well; highlighting both notable progress and persistent gaps in navigating the region's evolving energy risk landscape (CEE Bankwatch Network, n.d.).As part of this broader regional context, Albania presents a compelling case. Its heavy reliance on hydropower makes it simultaneously a regional frontrunner in renewable electricity and one of Europe's most climate-vulnerable energy systems. Seasonal rainfall variability, recurrent droughts, and broader climate-driven hydrological fluctuations regularly disrupt electricity generation, increasing dependence on imports and exposing the country to regional market volatility. Ongoing efforts to diversify the energy mix, modernize critical infrastructure, and strengthen regulatory frameworks therefore provide valuable lessons for enhancing energy system resilience across the Western Balkans (The Vienna Institute for International Economic Studies, 2023).

2. Key Challenges in Risk Management within the Energy Sector of the Western Balkans

The chart below visualizes insights from the PwC 2024 Global Risk Survey regarding key energy-related challenges. The percentages represent the prominence of each issue among respondents: Energy Price Volatility is 65 %; Decarbonization Commitments is 50%; Energy Efficiency is 37%; Renewable Energy Adoption is 19%. This highlights that energy price volatility is the most pressing concern, followed by decarbonization efforts, while renewable energy adoption lags behind in priority.

* Corresponding author
Email: evahyna@yahoo.com (E Hyna)

https://doi.org/10.61435/jese.2025.e46
ISSN: 2252-4940/© 2025.The Author(s). Published by CBIORE

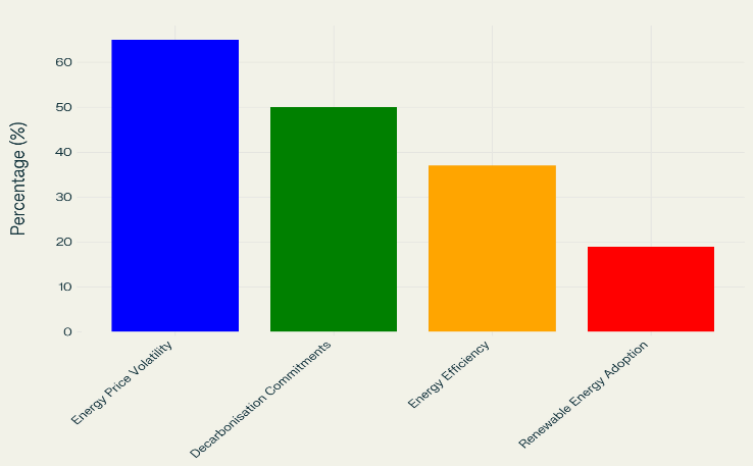

Figure 1: Base Energy Insights from PwC 2024 Global Risk Survey.

2.1 Operational Risks

2.1.1 Aging Infrastructure and Technological Deficiencies:

A significant challenge across the Western Balkans, including Albania, is the prevalence of outdated energy infrastructure, leading to increased risks of equipment failures, transmission losses, and operational disruptions (Ana-Maria Boromisa, 2025). Decades of underinvestment and geopolitical instability have hindered modernization efforts, making power grids and pipelines more vulnerable (Dan Staniaszek, *et. al.* 2016). In Albania, for instance, the reliance on hydropower, while a significant renewable resource, is susceptible to drought conditions and requires well-maintained dams and transmission lines, many of which are aging (*Albania energy situation*. 2025)

2.1.2 Natural Hazards and Climate Change Impacts:

The Western Balkans is a region predisposed to various natural hazards, including earthquakes, floods, and extreme weather events, which pose significant operational risks to energy infrastructure. (United Nations Development Programme. 2023). Climate change is exacerbating these risks, with more frequent and intense heatwaves affecting thermal power plant efficiency and prolonged droughts impacting hydropower generation (European Environment Agency. 2022). Albania's coastal regions are particularly vulnerable to sea-level rise, potentially affecting energy infrastructure located near the coast (European Environment Agency. 2019).

2.1.3 Health, Safety, and Environmental (HSE) Risks:

Ensuring adequate HSE standards in energy operations, from mining and drilling (where applicable in the region) to power generation and distribution, remains a challenge (Kohtas. (n.d.). EU deforestation regulation). Weak enforcement of regulations and insufficient investment in safety measures can lead to accidents and environmental damage (Ministria e Infrastrukturës dhe Energjisë. 2017). Albania, with its growing focus on renewable energy projects, needs to ensure that these developments adhere to high HSE standards throughout their lifecycle (Markets and Markets. (n.d.). Energy harvesting market).

2.2 Financial Risks

2.2.1 Commodity Price Volatility and Market Liberalization:

As the Western Balkan countries gradually liberalize their energy markets and become more integrated with regional and European markets, they become increasingly exposed to commodity price volatility (Energy market report). Fluctuations in global oil, gas, and electricity prices can significantly impact the profitability of energy companies and the affordability of energy for consumers (Albania energy information, 2025). Albania, while having a significant share of domestically produced hydropower, is still influenced by regional electricity prices and potential future gas market integration (European Parliament Research Service. 2022)

2.2.2 Project Finance and Investment Risks:

Attracting investment for modernizing energy infrastructure and developing new projects, particularly in renewable energy, can be challenging due to perceived political and economic risks in the region (Balkan Energy. Forecasting and energy insights). Securing financing for large-scale projects often depends on stable regulatory frameworks and transparent governance (Lloyds Bank Trade. Albania investment climate). Albania's efforts to attract foreign direct investment in its renewable energy sector are contingent on mitigating these perceived risks (Sead Turčalo, 2020, Energy security in Southeast Europe).

2.2.3 Currency Exchange Rate Risks:

For countries like Albania that may rely on imports of energy or equipment and have debts denominated in foreign currencies, fluctuations in exchange rates can pose significant financial risks. The volatility of local currencies against the Euro or other major

currencies can impact project costs and debt servicing (Dogjani, L. (2024). Albania and regional energy security of supply. CSDG Albania).

2.3 Geopolitical and Security Risks

2.3.1 Regional Political Instability and Interdependencies:

The Western Balkans has a history of political instability and unresolved inter-state issues, which can disrupt energy supply chains and hinder regional energy cooperation (European Commission. Critical infrastructure and cybersecurity in the energy sector). Dependence on energy imports from neighboring countries or through transit routes exposes the region to political tensions and potential supply disruptions. Albania's energy security is linked to regional stability and the smooth functioning of cross-border energy infrastructure (FEUT. 2019).

2.3.2 Cybersecurity Threats to Energy Infrastructure:

As energy systems become increasingly digitalized and interconnected, they become more vulnerable to cyberattacks (Blue Europe. 2024). Protecting critical energy infrastructure, including power grids and control systems, from cyber threats is a growing concern in the Western Balkans. Albania needs to strengthen its cybersecurity capabilities in the energy sector to safeguard its operations (European Climate Initiative. 2024).

2.4 Environmental and Climate Change Risks

2.4.1 Environmental Pollution and Degradation:

Energy production and consumption in the Western Balkans have historically contributed to environmental pollution, including air and water pollution. The population of the Western Balkans is exposed to the most polluted air in Europe, often four times higher than the limits set by EU guidelines (Western Balkans Investment Framework. (n.d.). The human and financial costs on health are huge. As difficult as it is to produce or access reliable and comprehensive data on this, premature deaths due to emissions in the Western Balkans amounted to 1,250 in 2016 (including 570 in Serbia); cases of bronchitis due to coal plant emissions are reported to be 2,023 among children and 8,516 among adults, with a public health expenditure of €3.6 billion per year in the region (Deloitte. (n.d.). Scenario planning for the future energy sector). Aging thermal power plants and inadequate waste management practices pose environmental risks. Albania, with its focus on hydropower, needs to manage the environmental impacts of dam construction and operation.

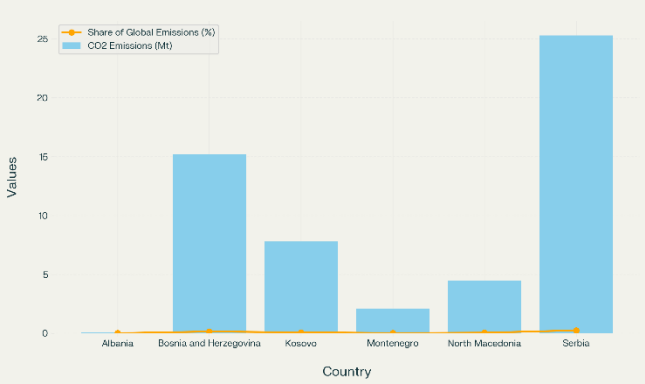

Figure 2. Analyses of CO2 Emissions and Share of Global Emissions from Power Generation in Western Balkan Countries (2024)

2.4.2 Transition Risks to a Low-Carbon Economy:

The global shift towards a low-carbon economy presents both opportunities and risks for the Western Balkans Countries heavily reliant on coal or other fossil fuels may face stranded asset risks and the need for significant investments in renewable energy and energy efficiency. Albania, with its high share of renewables (primarily hydropower), may face challenges in diversifying its energy mix and ensuring grid stability with increasing intermittent renewable sources (Ministry of Infrastructure and Energy. 2023)

3. Risk Management Strategies in the Energy Sector of the Western Balkans

3.1 Risk Identification and Assessment:

3.1.1 Development of Comprehensive Risk Registers:

Energy companies and regulatory bodies in the Western Balkans need to develop and maintain comprehensive risk registers that identify and assess a wide range of potential risks specific to the regional context. This should involve both qualitative and quantitative assessments, considering the probability and impact of various risks. In Albania, this process should account for the country's specific

reliance on hydropower and its vulnerability to climate change. Massively fluctuating hydropower generation means that despite the addition of hundreds of megawatts in new plants in recent years, the country has to import electricity most years, as shown on the graph below.

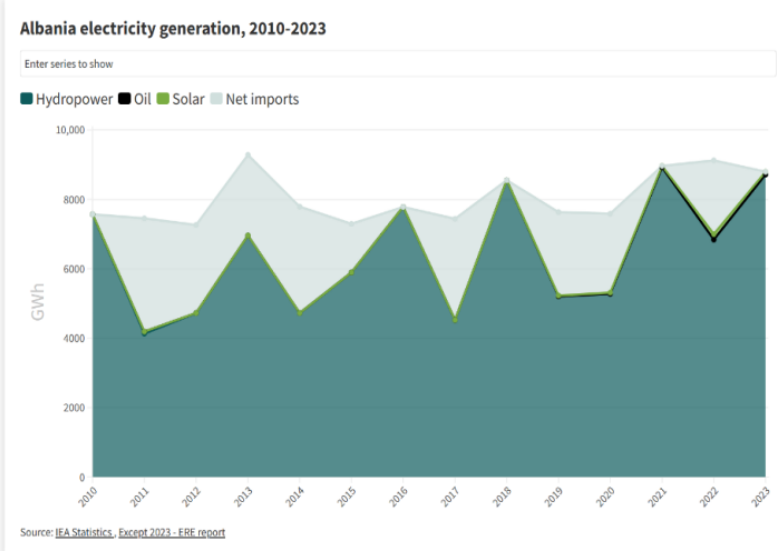

Figure 3. Albania electricity generation 2010 – 2023

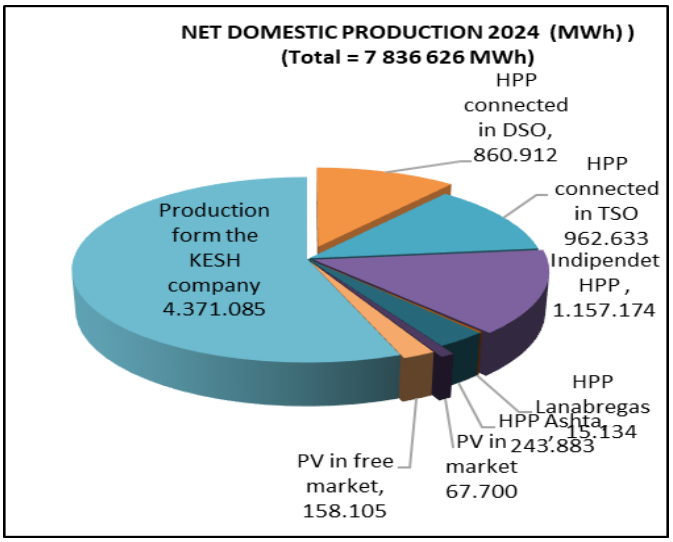

Figure 4. Net domestic productions in Albanian during 2024

3.1.2 Scenario Planning for Energy Security and Transition:

Utilizing scenario planning techniques to analyze different future energy scenarios, including potential supply disruptions, price fluctuations, and the pace of energy transition, is crucial (Verbund. 2025). This can help Western Balkan countries, including Albania, to develop robust strategies for ensuring energy security and adapting to the evolving energy landscape.

3.1.3 Integration of Climate Risk Assessment into Energy Planning:

Given the significant impacts of climate change on the region, integrating climate risk assessments into all aspects of energy planning, from infrastructure development to operational decisions, is essential. Albania needs to explicitly consider climate change projections in its hydropower management and the development of other renewable energy sources (World Bank. (n.d.). Public-private partnership country profile: Albania). Albania has committed to prepare its first National Energy and Climate Plan during the year 2020, approved with the Decision of Council of Ministers No. 872 of 29.12.2021 “On the approval of the National Energy and Climate Plan 2020 – 2030” that complements the Energy Strategy, which draws up an integrated policy framework to steer decarbonization efforts until 2030 and beyond.

3.2 Risk Mitigation and Control:

3.2.1 Investing in Infrastructure Modernization and Diversification:

Upgrading aging energy infrastructure and diversifying the energy mix, including increasing the share of renewable energy sources beyond hydropower, can significantly reduce operational and energy security risks. Albania's ongoing efforts to diversify its renewable energy portfolio, including solar and wind, are crucial in this regard.

3.2.2 Implementing Robust Safety and Environmental Management Systems:

Adopting and enforcing international HSE standards and implementing comprehensive safety and environmental management systems are vital for mitigating operational and environmental risks. There is a need in Albania to strengthen its regulatory oversight and ensure that energy companies adhere to these standards (Joint Research Centre. 2024).

3.2.3 Utilizing Financial Hedging Instruments and Insurance:

As energy markets liberalize, Western Balkan countries and energy companies should explore the use of financial hedging instruments to manage commodity price volatility. Adequate insurance coverage is also essential to protect against potential losses from operational accidents and natural disasters.

3.2.4 Enhancing Cybersecurity Measures:

Strengthening cybersecurity infrastructure and implementing robust security protocols are crucial for protecting critical energy systems from cyber threats. This requires investment in technology, training of personnel, and information sharing among energy stakeholders in the Western Balkans, including Albania.

3.3 Risk Transfer and Sharing:

3.3.1 Public-Private Partnerships (PPPs) for Energy Projects:

Utilizing PPPs can help share the financial and operational risks associated with large-scale energy infrastructure projects. This can be a viable option for Albania and other Western Balkan countries to attract investment and expertise while sharing risks (Law No. 102/2015, For the natural gas sector)

3.3.2 Regional Energy Cooperation and Risk Pooling:

Enhanced regional cooperation in the energy sector can help pool resources and share risks related to energy supply and security. Interconnection of energy grids and joint emergency response mechanisms can improve the resilience of the entire region. Albania's participation in regional energy initiatives is important for its energy security.

3.4 Governance and Organizational Culture:

3.4.1 Strengthening Regulatory Governance and Transparency:

Establishing clear, stable, and transparent regulatory frameworks is essential for attracting investment and fostering effective risk management. Independent regulatory bodies with adequate resources and authority are crucial. Albania needs to continue strengthening its energy regulatory framework to align with EU standards and promote investor confidence. Albania is at a turning point in how it organizes and operates its energy production and how it improves energy efficient consumption in response to technological innovation, climate change and globalization. Key to achieving this goal is the decarbonization of the sector. All these developments are leading to significant shifts in labor demand. New developments will require new competences and skills in the local labor market and changes to some existing occupational profiles.

3.4.2 Implementing a Strong Risk Management Culture:

Promoting a risk-aware culture within energy organizations, where risk identification and mitigation are integral to decision-making at all levels, is vital this requires training, communication, and leadership commitment.

3.4.3 Stakeholder Engagement and Communication:

Engaging with all relevant involved parties, including local communities, environmental groups, and international partners, is crucial for building trust and ensuring the social license to operate for energy projects. Transparent communication about potential risks and mitigation measures is essential.

3.5 Adapting to Emerging Risks:

3.5.1 Strategies for Managing the Energy Transition:

Western Balkan countries, including Albania, need to develop comprehensive strategies to manage the transition to a low-carbon energy system, addressing the risks of stranded assets and ensuring a just transition for affected communities This includes investing in renewable energy, energy efficiency, and grid modernization (Law No. 43/2015, For the power sector)

3.5.2 Enhancing Resilience to Climate Change Impacts:

Implementing measures to enhance the resilience of energy infrastructure to the impacts of climate change, such as strengthening infrastructure against extreme weather events and diversifying water sources for cooling thermal power plants, is crucial. For Albania, this means adapting hydropower operations to changing hydrological patterns and protecting coastal energy infrastructure.

3.5.3 Fostering Innovation and Technological Adaptation:

Encouraging innovation and the adoption of new technologies, such as smart grids and energy storage solutions, can enhance the efficiency and resilience of the energy system. Albania needs to create an enabling environment for the adoption of these technologies.

4. Regulatory Frameworks Shaping Risk Management in the Energy Sector of the Western Balkans

4.1 Alignment with EU Energy Acquis and Directives:

A significant driver of regulatory development in the Western Balkans is the aspiration for EU membership, which requires alignment with the EU's energy acquis. This includes directives on renewable energy, energy efficiency, environmental protection, and market liberalization, all of which have implications for risk management. Albania has made important progress in transposing EU energy legislation, which influences its risk management frameworks.

4.2 National Energy Laws and Regulatory Bodies:

Each Western Balkan country, including Albania, has its own national energy laws and regulatory bodies responsible for overseeing the sector and setting rules related to safety, environmental protection, and market operations. The effectiveness and independence of these regulatory bodies are crucial for ensuring robust risk management. Albania's Energy Regulatory Authority (ERE) plays a key role in shaping risk management practices through its regulations and enforcement.

4.3 Environmental Regulations and Permitting Processes:

Stricter environmental regulations and rigorous permitting processes are increasingly shaping risk management in the energy sector. These regulations aim to mitigate the environmental risks associated with energy production and consumption. Albania's environmental regulations impact the development of new energy projects, including hydropower and other renewables. The National Strategy of Energy, NECP 2020-2030, Mitigation Action Plan, as an integrated part of the National Climate Change National Plan for the Mitigation of GHG, and the Strategy of Transport have defined objectives and targets on increasing the security of supply by investments in the power sector, gas penetration in the Albanian market, increasing the share of RES and Energy efficiency followed by a reduction of GHG emissions.

4.4 Safety Standards and Occupational Health Regulations:

Regulations related to safety standards and occupational health is crucial for mitigating operational risks and ensuring the well-being of workers in the energy sector. These regulations often align with international best practices. Albania has regulations in place to ensure safety in energy operations, but effective enforcement is key.

4.5 Regulations on Cybersecurity for Critical Infrastructure:

Recognizing the growing threat of cyberattacks, regulatory frameworks are being developed to enhance the cybersecurity of critical energy infrastructure. These regulations often require energy companies to implement specific security measures and report incidents. Albania is in the process of strengthening its legal framework for cybersecurity in critical sectors, including energy.

4.6 Market Regulations and Transparency Requirements:

As energy markets liberalize, regulations are needed to ensure fair competition, prevent market manipulation, and promote transparency. These regulations can impact financial risk management for energy companies. Albania's efforts to develop a functioning electricity market are accompanied by regulations aimed at ensuring market integrity.

4.7 Challenges in Regulatory Implementation and Enforcement:

A significant challenge in the Western Balkans is often the effective implementation and enforcement of energy regulations. Weak institutional capacity, corruption, and political interference can hinder the effectiveness of regulatory frameworks. Strengthening the rule of law and ensuring the independence of regulatory bodies are crucial for improving enforcement in Albania and the wider region.

5. Conclusions

Risk management in the energy sector of the Western Balkans presents a complex interplay of operational, financial, geopolitical, environmental, and strategic challenges, further amplified by the region's specific context of aging infrastructure, climate vulnerabilities, and EU integration aspirations. Albania, as a case study, exemplifies these challenges and the ongoing efforts to develop and implement effective risk management strategies. While progress has been made in aligning regulatory frameworks with EU standards and promoting renewable energy development, significant work remains in strengthening institutional capacity, enhancing infrastructure resilience, and fostering a strong risk management culture. Addressing these challenges and effectively implementing robust risk management strategies are crucial for ensuring a secure, sustainable, and prosperous energy future for Albania and the entire Western Balkans region. Continued regional cooperation, strong governance, and sustained investment will be essential in navigating the evolving energy risk landscape and achieving long-term energy security and sustainability.

Author Contributions:

Eva Hyna: Conceptualization, methodology, formal analysis, writing—original draft, project administration. Eli Vyshka: supervision, resources, writing—review and editing, validation. All authors have read and agreed to the published version of the manuscript.

Funding: The author(s) received no financial support for the research, authorship, and/or publication of this article.

Conflicts of Interest: The authors declare no conflict of interest.

References

Ana-Maria Boromisa, *Transition to clean energy must clear economic and geopolitical hurdles,* Per Concordiam. Journal of European Security and Defense (n.d.). *Energy challenges in the Western Balkans*. 19 feb. 2025; https://perconcordiam.com/energy-challenges-in-the-western-balkans/

Balkan Energy. (n.d.). *Forecasting and energy insights*. https://www.balkanenergy.com/forecasting

Blue Europe. (2024). *Pollution in the Western Balkans: An overview*. https://www.blue-europe.eu/analysis-en/full-reports/pollution-in-the-western-balkans-part-1-an-overview/

CEE Bankwatch. Network (n.d.). *Energy sector in Albania*. https://bankwatch.org/beyond-fossil-fuels/energy-sector-in-albania

Dan Staniaszek, Filippos Anagnostopoulos, Maarten De Groote, Oliver Rapf, *Safeguarding energy security in South-East Europe with investment in demand-side infrastructure - The case for energy efficiency in buildings* Buildings Performance Institute Europe. (2016). https://www.bpie.eu/wp-content/uploads/2016/09/Safeguarding-energy-security-in-South-East-Europe-with-investment-in-demand-side-infrastructure.pdf

Deloitte. (n.d.). *Scenario planning for the future energy sector*. https://www2.deloitte.com/us/en/pages/consulting/articles/scenario-planning-future-energy-sector.html

Dogjani, L. (2024). *Albania and regional energy security of supply*. CSDG Albania. https://csdgalbania.org/wp-content/uploads/2024/12/ALBANIA-AND-REGIONAL-ENERGY-SECURITY-OF-SUPPLY-LAERT-DOGJANI.pdf

Enerdata. (n.d.). *Albania energy information*. Country Energy Report, April 2025, https://www.enerdata.net/estore/country-profiles/albania.html

Energypedia. (n.d.). *Albania energy situation*. 6 January 2025. https://energypedia.info/wiki/Albania_Energy_Situation

European Climate Initiative. (2024). *Mapping renewable energy sources: Potential, challenges and opportunities in Albania*. https://www.euki.de/wp-content/uploads/2024/10/Mapping-Renewable-Energy-Sources-potential-challenges-and-opportunities-in-Albania.pdf

European Commission. (n.d.). *Critical infrastructure and cybersecurity in the energy sector*. https://energy.ec.europa.eu/topics/energy-security/critical-infrastructure-and-cybersecurity_en

European Environment Agency. (2019). *An assessment of climate change vulnerability, risk and adaptation in Albania's power sector*. https://climate-adapt.eea.europa.eu/en/metadata/publications/an-assessment-of-climate-change-vulnerability-risk-and-adaptation-in-albania2019s-power-sector

European Environment Agency. (2022). *The impact of climate change on the European energy system*. Climate-ADAPT. https://climate-adapt.eea.europa.eu/en/metadata/publications/the-impact-of-climate-change-on-the-european-energy-system-2022

European Parliament Research Service. (2022). *Energy security in the Western Balkans* (Study No. 702561). https://www.europarl.europa.eu/RegData/etudes/STUD/2022/702561/EXPO_STU(2022)702561_EN.pdf

European Parliament Research Service. (2025). *Energy transition and security in the Western Balkans* (Briefing No. 769552). https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/769552/EPRS_BRI(2025)769552_EN.pdf

FEUT. (2019). *Blueprint for cybersecurity capacity building*. https://1future.feut.edu.al/wp-content/uploads/2024/10/Blueprint_cyber_122019.pdf

Joint Research Centre. (2024). *Green transition in the Western Balkans requires stronger focus on sustainable innovation*. https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/green-transition-western-balkans-requires-stronger-focus-sustainable-innovation-2024-12-19_en

Kaarle Parikka *8 common issues in energy and utilities sector*. Falcony. (n.d.). 17september 2024 https://blog.falcony.io/en/8-common-issues-in-energy-and-utilities-sector

Kohtas. (n.d.). *EU deforestation regulation*. https://kohtas.com/eu-deforestation-regulation.html

Lloyds Bank Trade. (n.d.). *Albania investment climate*. https://www.lloydsbanktrade.com/en/market-potential/albania/investment
Markets and Markets. (n.d.). *Energy harvesting market*. https://www.marketsandmarkets.com/Market-Reports/energy-harvesting-market-734.html
Ministria e Infrastrukturës dhe Energjisë. (2017). *Broshura: Energjitë e rinovueshme*. https://infrastruktura.gov.al/wp-content/uploads/2017/12/Broshura_Energjite_e_Rinovueshme.pdf
Ministry of Infrastructure and Energy. (2023). *The National Energy and Climate Plan (NECP)*. https://konsultimipublik.gov.al/documents/RENJK_810_The-National-Energy-and-Climate-Plan-(NECP).pdf
Report Linker. (n.d.). *Energy market report. Energy Industry 2025: Trends, Analysis and Statistics* https://www.reportlinker.com/market-report/Energy/6349/Energy
Sead Turčalo, *Energy security in Southeast Europe*. (2020), Energy Geopolitics in the Balkans. Friedrich-Ebert-Stiftung (FES). Sarajevo, Bosnia and Herzegovina https://library.fes.de/pdf-files/bueros/sarajevo/16148.pdf
Shahrbanou Tadjbakhsh, Nera Monir Divan, Elena Danilova-Cross, Envesa Hodžic-Kovač, Erik Kjaergaard, Aida Hadžić-Hurem, Jeremy Wetterwald, Diane Douglas, Armin Sirčo, Denis Nushi. (2023). Human Development Report *Risk-proofing the Western Balkans*: - *Empowering People to Prevent Disasters*. United Nations Development Programme. UNDP https://hdr.undp.org/system/files/documents/riskproofingthewesternbalkans.pdf
The Vienna Institute for International Economic Studies. (2023). *The energy transition in the Western Balkans: The status quo, major challenges and how to overcome them*. https://wiiw.ac.at/the-energy-transition-in-the-western-balkans-the-status-quo-major-challenges-and-how-to-overcome-them-dlp-6896.pdf
Verbund. (2025). *Health, safety and environmental protection policy for contractors* (Albanian version). https://www.verbund.com/media/4jqptu1o/20250310_health_safety_and_environmental_protection_policy_for_contractors-albanian_version.pdf
Western Balkans Investment Framework. (n.d.). *Home*. https://www.wbif.eu/
World Bank. (n.d.). *Public-private partnership country profile: Albania*. https://ppp.worldbank.org/public-private-partnership/country-profile-albania

Legislation & EU Directives

Law No. 102/2015, *For the natural gas sector* (Albania).
Law No. 43/2015, *For the power sector* (Albania).
Regulation (EU) 2019/941 of the European Parliament and of the Council on risk-preparedness in the electricity sector.
Council Directive 2008/114/EC on the identification and designation of European critical infrastructures.
Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions.
Directive (EU) 2022/2555 of the European Parliament and of the Council on measures for a high common level of cybersecurity (NIS2 Directive).
Directive (EU) 2022/2557 of the European Parliament and of the Council on the resilience of critical entities (CER Directive).
EU Energy Community Secretariat. (2023). *Annual implementation report 2023*.

Academic Sources

McInerney, J. (2011). *Biogas technology on Uzi Island: A feasibility study*. Zanzibar.
Nazemzadegan, M., & Ghasempour, R. (2019). Evaluating the materials used for hydrogen production based on photoelectrochemical technology. *International Journal of Renewable Energy Development, 8*(2), 169–178. https://doi.org/10.14710/ijred.8.2.169-178
Rajorhia, U., Kumar, A., & Sharma, R. (2012). *Utilisation of farm waste in biogas production*. http://www.landmarkgoc.com/biogas_project.html

.