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ESSAY

POST-BREXIT NORTHERN IRELAND – A SECTORAL SECURITY ANALYSIS

Réka Barba

ABSTRACT

This paper examines the impact of Brexit on Northern Ireland's fragile peace process through the analytical lens of sectoral security theory. Using the five sectors of security, the study shows that the United Kingdom's withdrawal from the European Union has resulted in a complex and interconnected series of insecurities rather than a single catastrophe. The article demonstrates how Brexit weakened political stability by threatening the constitutional foundations of the 1998 Good Friday Agreement, increased societal divisions along religious and national identity lines. The Northern Ireland Protocol and the Windsor Framework play an important role in addressing post-Brexit tensions, as does the observable association between political attitudes and religious identities.

Keywords*: Brexit, Northern Ireland, peace process, the Troubles, conflict, security studies*

INTRODUCTION

Conflicts, rioting, sectarianism – these keywords precisely summarise the turbulent era, also known as the Troubles, that lasted between 1968 and 1998 on the Irish island, mainly in Northern Ireland (NI). The Good Friday Agreement, which was meant to resolve the conflicts once and for all, marks the official end of the Troubles. Despite the long-standing historical hostility between the two nations, it appears that the Irish island has finally achieved a peaceful state. Or has it? Could the Troubles continue? These questions have a greater impact than ever as the 2020 Brexit took its toll not only on political, economic, and administrative levels but also deepened disagreements about national affiliation. This article focuses on the impact of Brexit on the Northern Irish peace process, specifically on the five sectors of security. Did changes, if there were any, move the United Kingdom, specifically, Northern Ireland, towards a positive or negative direction security-wise? All in all, how were they affected by the dramatic divorce from the European Union?

In this article, the sectoral security theory of the Copenhagen School of International Relations will be the core of my analysis regarding how Brexit has affected the Northern Irish peace process. With the use of the five sectors of security that Barry Buzan, Ole Wæver, and Jaap de Wilde specified in their 1998 book Security: A New Framework for Analysis, we can measure and compare the differences before and after Brexit and, consequently, conclude. These five sectors, i.e., military, political, economic, societal, and environmental, alongside official governmental statistics, will serve as the key data sources for this study, which intends to comprehensively examine the multidimensional dynamics and interdependencies across the aforementioned components.

SECTORS

Barry Buzan, Ole Wæver, and Jaap de Wilde named five sectors through which "the distinctive character and dynamics of security" could be examined and analysed. These five sectors are: military, political, economic, societal, and environmental. Their comprehensive and new framework for security studies rejected the traditionalist argument of limiting security to a certain sector, stating that

security is an aspect of politics that applies to an array of issues.[1] Their theory also provides a constructivist way of differentiating the concept of security from the process of politicisation (Buzan et al., 1998).

The impact of Brexit on the Northern Irish peace process can be measured and, thus, analysed. Statistics and official findings, e.g., case studies, offer an objective approach to learning whether the fragile peace between Northern Ireland and the Republic of Ireland could be threatened by the changes (or the lack of them) the departure has caused[2].

A Brief History of the Troubles

The Battle of the Bogside marked the start of the Troubles, a thirty-year conflict in Northern Ireland between unionists (mainly Protestant) and nationalists (mainly Catholic), ending with the Good Friday Agreement in 1998 after 3,532 deaths (Ó Dochartaigh, 2022). In 1969, the IRA split, leading to the formation of the Provisional IRA (PIRA), while loyalist paramilitaries like the UDA and UVF grew in strength. The PIRA's escalating violence was seen as defence by some nationalists but as terrorism by unionists (Imperial War Museums, 2023). Operation Banner, the longest British military deployment (1969-2007), began to support law enforcement during the Bogside events but evolved into a long-term military presence. While initially welcomed by nationalists, support waned after the introduction of internment without trial under the 1922 Special Powers Act (Hunter, 2020; McKenna, 2019). Operation Demetrius targeted suspected IRA members and political opponents (Operation Demetrius, 2013). Bloody Sunday (30 January 1972) saw British soldiers kill 13 unarmed protesters in Derry. The Widgery Tribunal largely exonerated the soldiers, but a 2010 report concluded none of the victims posed threats (Melaugh, 2010a; Hoyt et al., 2010). Sympathy for the IRA surged after the event. Though early ceasefires were attempted in 1972 through IRA-SDLP talks, these failed due to British-IRA mistrust (Melaugh, 2010b). Violence persisted through the 1970s-80s, including the 1979 assassination

[1] See more about sectoral approach of security: Friedmann-Marton 2015, Stepper 2015.

[2] See similar logic of using theoretic approaches: Nyilas 2023, Nyilas 2024, Nyilas 2025, Pongrácz-Rada 2023, Rada 2008, Rada 2009, Rada 2019, Rada 2023, Rada 2024, Rada 2025, Rada-Gyarmati 2024a, 2024b, Rada-Nyilas 2023, Rada-Nyilas 2024.

of Lord Mountbatten by the PIRA (Kennedy, 2020). The 1985 Anglo-Irish Agreement granted the Irish government a role in Northern Irish affairs, but it failed to reconcile the two communities. Still, it improved cooperation and curtailed PIRA activities (Morton, n.d.). In 1994, ceasefires were declared by both sides but collapsed due to Sinn Féin's exclusion from talks. A renewed IRA ceasefire in 1997 led to Sinn Féin's inclusion (Wallenfeldt, n.d.). The 1998 Good Friday Agreement formalised power-sharing and cross-border cooperation. Despite a deadly Real IRA bombing in Omagh, constitutional reforms and eventual IRA disarmament followed. In 2005, the IRA announced full disarmament and a shift to peaceful methods. By 2007, Sinn Féin and the DUP formed a power-sharing government, led by Ian Paisley and Martin McGuinness (Wallenfeldt, 2025).

Forty-seven Years in the EU

The UK joined the European Economic Community (EEC) in 1973 after extensive debate and opposition in Parliament (Into Europe). The 1992 Maastricht Treaty transformed the EEC into the European Union (EU), intensifying European integration.

The 2016 Brexit referendum, driven by concerns over immigration, sovereignty, and EU influence, resulted in a narrow 51.9% majority for Leave, with Scotland and Northern Ireland voting to remain (*Brexit Questions and Answers*, n.d.). The Leave and Remain preferences of the different voting areas are visualised below.

Leave	Region	Remain	Difference & Outcome
25,5%	Scotland	41,7%	16,2%
27,9%	London	41,7%	13,8%
27,7%	Northern Ireland	35%	7,3%
39,7%	South East	37%	2,7%
37,6%	Wales	34%	3,6%
40,3%	South West	36,3%	4%
37,5%	North West	32,4%	5,1%
42,7%	East	32,9%	9,8%
40,8%	Yorkshire and the Humber	29,9%	10,9%
40,2%	North East	29,1%	11,1%
43,6%	East Midlands	30,5%	13,1%
42,6%	West Midlands	29,3%	13,3%

Figure 1: Results of the EU referendum. Edited by the author

The Leave campaign was marked by fears of EU centralisation and the notion of a future European army, despite limited EU compe-

tence in defence (Keating, 2015). Article 50 of the TEU was triggered in 2017, initiating the withdrawal negotiations. Key issues and concerns in the first phase included citizens' rights, the financial settlement, and the Irish border (Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union, 2012). Theresa May's, then British Prime Minister, Chequers Plan attempted a middle ground, proposing a common rulebook and customs arrangements to prevent a hard border scenario in Ireland, but it failed to satisfy either side (Barnes, 2019). May's Withdrawal Agreement included a transition period, financial terms, and the controversial Irish backstop. The Withdrawal Agreement was signed by the EU27 but repeatedly rejected by the UK Parliament (Agreement on the Withdrawal…, 2018). May resigned in 2019 and was succeeded by Boris Johnson, who negotiated a revised Protocol (Protocol on Northern Ireland / Ireland) replacing the backstop with customs checks in the Irish Sea. Unlike Great Britain, Northern Ireland remained within the EU Single Market for goods, despite officially leaving the EU along with the rest of the UK. This special arrangement was designed to avoid a hard border on the island of Ireland and to protect the much-fought-for Good Friday Agreement. As a result, goods moving from Great Britain to Northern Ireland are subject to EU customs checks, effectively placing a regulatory border in the Irish Sea (López, 2024).

The UK officially left the EU on 31 January 2020. To resolve post-Brexit trade frictions, particularly in Northern Ireland, the Windsor Framework was introduced in 2023. The UK tried to unilaterally override the Withdrawal Agreement on multiple occasions, and it became a topic of dispute that was ultimately settled by the Windsor Framework of February 2023, by EC president Ursula von der Leyen and then UK Prime Minister Rishi Sunak. A set of joint solutions was implemented as part of the renewed protocol, including some new measures taken on the free movement of goods and customs, value-added tax (VAT), tariff rate quotas, medicine and state aids, agri-food, and pet travel. Given the lack of a physical border, because of the soft border deal, the EU is entitled to examine and assess the danger of products not remaining in Northern Ireland (López, 2024). If products happen to be crossing into Ireland, structural measures can be taken It was It included the "Stormont Brake" to allow the Northern Ireland Assembly, the country's devolved legislature, to abstain from certain EU laws (Creamer &

Hayward, 2023). Another document was drafted in the process, but the Political Declaration outlined future UK-EU relations was non-binding (Barnes, 2019), hence its role and importance remains questionable. While the Protocol preserved the open border on the island of Ireland, it effectively created an economic border within the UK. This arrangement remains politically contentious and poses a continued challenge to Northern Ireland's fragile peace and constitutional balance (Murphy, 2020).

THE MILITARY SECTOR

According to the Copenhagen School's sectoral security theory, the military sector represents the most traditional and historically dominant dimension of security. It addresses the ability of a state to defend its territory, sovereignty, and population against external or internal threats through armed force. In this sector, security threats are defined as existential, relating directly to survival, often stemming from armed aggression, invasion, terrorism, or the collapse of national defence capabilities (Buzan et al., 1998). However, the School's constructivist perspective broadens the understanding of such threats beyond mere material force, recognising that threats are socially constructed – emerging from how actors interpret military movements, policies, and postures.

In the case of Brexit, the UK's departure from the EU did not dismantle its primary military alliances (Csepregi-Dobrowiecki-D'Onofrio-Stepper, 2020) – most notably, NATO, which remains the cornerstone of its collective defence (Baranyi-Stepper, 2024a; Baranyi-Stepper, 2024b). Indeed, the UK reaffirmed its defence commitments in the 2017 Foreign Policy, Defence and Development paper, pledging continued cooperation with European partners despite exiting the Union. The document asserted that the UK would contribute its "policy tools and expertise, defence and security capabilities, global networks and influence" to support European and global peace (*Foreign Policy, Defence and Development a FUTURE PARTNERSHIP PAPER*, 2017). Thus, in theory, the UK's strategic posture remained robust and relatively unaffected by institutional withdrawal from the EU.

However, the consequences of Brexit were more palpable in Northern Ireland, where the post-referendum settlement introduced logistical complexities for UK military operations. Under the Northern Ireland Protocol, Northern Ireland retained alignment

with several EU Single Market and Customs Union rules to prevent a hard border with the Republic of Ireland. While politically crucial for maintaining peace, this regulatory distinction created practical friction for military operations. In 2021, concerns were raised by Ulster Unionist politicians about the requirement for customs declarations and NATO movement forms when transferring military equipment or personnel from Great Britain to Northern Ireland (McClafferty, 2021a). Such bureaucratic hurdles, they argued, disrupted the free movement of defence assets – a core principle of operational readiness – and symbolically undermined the region's integration within UK national security structures as well.

Though the Ministry of Defence later clarified that operational capacity would not be impeded and that customs declarations were not ultimately required, the episode revealed how technical regulatory changes can produce perceived or real threats to sovereignty in the military sense. The incident also demonstrated how security dilemmas, typically seen between rival states, can emerge within a state when internal regions interpret policy shifts as threats to identity, autonomy, or defence status. From a constructivist perspective, the mere perception of exclusion or diminished sovereignty can activate insecurity narratives, particularly in historically sensitive contexts like Northern Ireland.

Despite these challenges, the UK's overall military posture strengthened during the Brexit years. Between 2016 and 2021, defence expenditure rose from £35 billion to £42.4 billion, even as the nation grappled with COVID-19, domestic instability, and international commitments. The UK also rose from fifth to third in global defence spending rankings, reflecting a deliberate effort to consolidate its status as a top-tier military power (Giegerich et al., 2022). This was accompanied by the continued use of the TEPID-OIL framework (Training, Equipment, Personnel, Information, Doctrine, Organisation, Infrastructure, and Logistics) as a comprehensive model for assessing and strengthening armed forces (Ministry of Defence, 2024).

However, these improvements in spending were not matched by increases in personnel or material capacity. According to the UK Ministry of Defence, between 2016 and 2022, the number of full-time trained personnel in the Royal Navy, Royal Marines, Royal Air Force (RAF), and British Army declined by over 6%. Simultaneously, military equipment and formations decreased by 26.5%, a shortfall partly attributed to the UK's strategic decision to provide

extensive military aid to Ukraine during the Russian invasion (Ministry of Defence, 2024). These reductions raise questions about the sustainability of increased expenditure without corresponding manpower and challenge the assumption that spending alone ensures security.

Beyond material indicators, Brexit also triggered political volatility that bears directly on the military sector. While no immediate resurgence of paramilitary violence occurred, experts and Irish officials warned of the potential reactivation of dissident republican factions, particularly in the context of stalled power-sharing and border disputes (Creighton, 2019). In 2023, the political situation in Northern Ireland remained fragile, with repeated collapses of the devolved government and renewed protests against the Irish Sea border. From a sectoral security standpoint, such developments represent latent military threats – not through conventional warfare but through the reemergence of asymmetric, internal violence targeting state authority, symbolic infrastructure, or intercommunal peace.

In sum, the military sector post-Brexit did not face conventional, state-level threats but was affected through logistical disruption, personnel attrition, and political instability. Sectoral security theory helps illuminate how even regulatory frameworks or symbolic gestures, such as a perceived "border in the Irish Sea", can be securitised in contexts where historical trauma and intergroup tensions persist. While the UK retained its formal military strength, the Northern Irish case demonstrates how defence security can be complicated by sub-national dynamics, requiring not only strategic clarity but also careful political sensitivity to avoid inflaming dormant conflicts. The main features of interest regarding the UK's recent changes in the security of the military sector can be seen below.

	2016	2021	2022
Full-Time Trained Strength (Royal Navy/Royal Marine & Royal Air Force) and Full-Time Trade Trained Strength (British Army)	139,475	135,444	132,346
UK Armed Forces Equipment and Formations (Key Points)	6,226	5,632	4,581

All UK Forces Personnel	197,113	196,139	185,980
The UK's position in global defence expenditure rankings, according to IISS	5	3	n/a
UK Defence Expenditure	£35bn	£42,4bn	n/a

Table 1: Key Points of the UK Armed Forces Capabilities. Edited by the Author based on MoD statistics.

The Political Sector

In the framework of sectoral security theory, the political sector concerns threats to the sovereignty, legitimacy, and organisational stability of the state. According to Buzan, Wæver, and de Wilde (1998), political security refers to "the organisational stability of states, systems of government and the ideologies that give them legitimacy." In this view, the state is not only a material structure but a socially constructed one, whose legitimacy and authority depend on shared norms, identities, and institutional continuity. Security threats in the political sector, then, are not limited to direct attacks but may also arise from shifts in ideology, legal authority, or external frameworks that undermine the perceived legitimacy or functionality of governance. Brexit represents a textbook example of how a structural change. In this case, withdrawal from the EU can destabilise political security in a deeply divided society like Northern Ireland, where the peace process relies heavily on power-sharing and shared constitutional frameworks.

The 2016 referendum result fractured the territorial cohesion of the UK. While England and Wales voted to leave the European Union, Scotland and Northern Ireland voted to remain, highlighting stark geographic and political divides within the union. In Northern Ireland, this rupture was especially significant. As Murphy (2021) notes, Brexit constituted a "rupture in UK politics" and revealed the "limited knowledge and appreciation at the UK centre of highly politicised and contested issues with direct ramifications for different territories within the UK." These ramifications were particularly severe in Northern Ireland because the 1998 Belfast (Good Friday) Agreement had created a delicate balance between unionist and nationalist communities – one that relied heavily on shared EU membership as a neutral, overarching framework.

Thus, Brexit directly undermined the constitutional equilibrium established by the peace process.

Prime Minister Boris Johnson's narrative of "recaptured sovereignty" ran counter to the principles of the Belfast Agreement, which established a set of "territorial, cross-territorial, and cross-national institutions" (Murphy, 2021) designed to distribute power equitably and promote cooperation between the UK, Northern Ireland, and the Republic of Ireland. Brexit challenged this arrangement by removing the EU as a stabilising structure and replacing it with a binary framework that forced Northern Ireland into a zero-sum constitutional question. The result was a significant degree of political securitisation, as formerly political issues, like regulatory divergence or customs checks, became existential in the eyes of competing communities.

The referendum results also revealed how deeply the Brexit debate aligned with ethno-national identities in Northern Ireland. According to the Northern Ireland Life and Times (NILT) survey, 66% of unionists supported leaving the EU, while 90% of nationalists voted to remain (*Northern Ireland Life and Times Survey*, 2023). These figures illustrate how Brexit entrenched existing divisions, making political affiliation synonymous with constitutional identity. The Democratic Unionist Party (DUP), the largest unionist party, strongly supported Brexit, while nationalist parties such as Sinn Féin and the Social Democratic and Labour Party (SDLP) opposed it. This division was not merely ideological but deeply emotional and identity-based, raising the stakes of any post-Brexit settlement.

According to the survey of the Northern Ireland Life and Times (2023), political affiliation changed over the years, however, very slightly. Brexit did not significantly impact political affiliation in Northern Ireland. Below, the visual version of the NILT results can be seen.

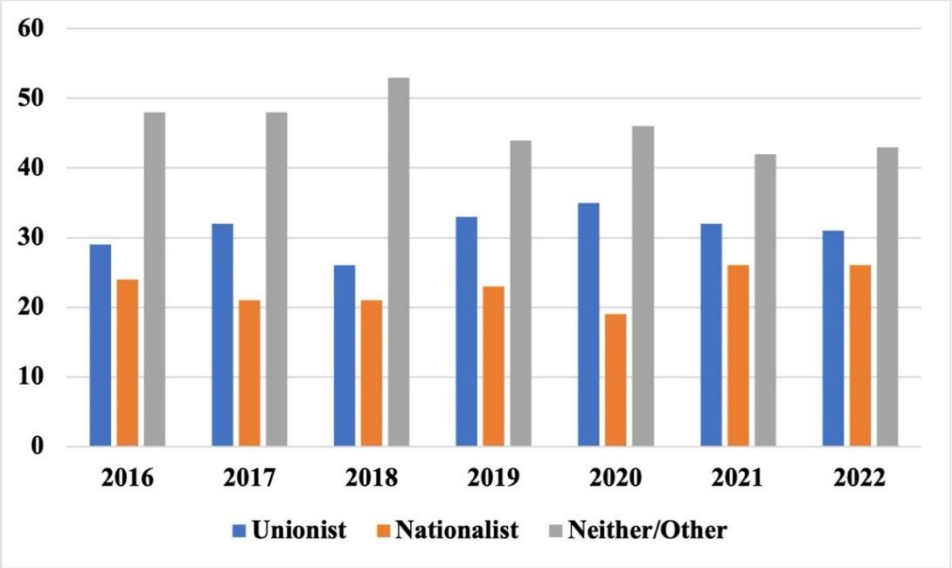

Figure 2: Political affiliation in %. Edited by the author

Theresa May's initial proposal to keep Northern Ireland aligned with the EU's Single Market and Customs Union while allowing the rest of the UK to leave was immediately rejected by the DUP, who viewed it as creating a constitutional rift between Northern Ireland and Great Britain. When May revised her proposal to place the entire UK in a Customs Union with Northern Ireland aligned with some Single Market rules, the plan again failed to gain approval – this time from both unionists and hardline Brexit supporters of her own party (Murphy, 2021). These repeated failures reflected a deeper issue: no version of Brexit could simultaneously satisfy unionist demands for integration with Great Britain and nationalist requests for continued cooperation (and potential reunification) with the Republic of Ireland.

Political instability followed quickly. The Northern Ireland Assembly, a core institution of the Good Friday Agreement, collapsed in 2017 due to unrelated disagreements over a domestic energy scheme, but it remained suspended during the crucial Brexit negotiation period. It was not restored until early 2020, meaning that for three years, arguably the most constitutionally consequential period in the post-Agreement era, Northern Ireland lacked a functioning government (Creamer & Hayward, 2023). This absence significantly hindered its ability to engage meaningfully with the Brexit process and contributed to widespread perceptions of democratic deficit and political marginalisation.

The resulting Northern Ireland Protocol, part of the Withdrawal Agreement, was intended to avoid a hard border on the island of Ireland by keeping Northern Ireland in the EU's regulatory area for goods. While effective in preserving north-south economic cooperation, the protocol created a new *de facto* border in the Irish Sea, triggering unionist outrage. The DUP and other loyalist parties interpreted the protocol as a betrayal of Northern Ireland's place in the UK, and their refusal to return to government unless the protocol was scrapped led to yet another suspension of the devolved institutions in 2022 (Agreement on the Withdrawal…, 2018; McClafferty, 2021b). While the protocol includes a consent mechanism allowing the Northern Ireland Assembly to vote every four or eight years on whether to continue with the arrangements, this process risks becoming a politically destabilising event each time it arises.

From a sectoral security perspective, the situation in Northern Ireland illustrates how political security can be destabilised not only by violence or regime change but also by governance breakdowns, constitutional ambiguity, and the collapse of mutual trust. Brexit did not create new institutions in Northern Ireland – it dismissed existing ones. The polarisation of party politics, the deepening mistrust between nationalist and unionist communities, and the repeated collapse of power-sharing mechanisms collectively demonstrate a severe degradation of political security. The removal of the EU as a common platform did not simply mark the end of a treaty, rather, it removed the neutral ground upon which a fragile peace had been built.

Although no widespread return to violence and extremism occurred, the post-Brexit political climate remains volatile. Tensions surrounding sovereignty, legitimacy, and governance, left unresolved, may eventually spill into the societal or military sectors. The UK government's repeated attempts to unilaterally override parts of the Withdrawal Agreement only deepened these tensions and damaged trust with both Brussels and Dublin (Creamer & Hayward, 2023). In short, the political sector in Northern Ireland has not collapsed, but it has become profoundly securitised, and its long-term stability now depends on a sustained, inclusive, and constitutional framework that respects the region's unique post-conflict sensitivities.

The Economic Sector

In sectoral security theory, the economic sector is concerned with the capacity of the state to maintain economic stability, secure access to vital resources, and ensure the functioning of markets and financial systems. It includes both internal and external economic threats, such as trade disruptions, inflation, dependency on external suppliers, or significant declines in productivity and employment (Buzan et al., 1998). A state's economic security is not defined merely by wealth, but by the sustainability of its economic infrastructure and the absence of existential threats to national welfare. In this regard, economic security is inherently linked to other sectors, particularly the political and societal domains, since economic stress can generate social unrest or delegitimise institutions.

Brexit introduced substantial uncertainty into the economic stability of Northern Ireland, largely due to its unique constitutional and geographic position between the UK and the EU. Unlike Great Britain, Northern Ireland remained in the EU Single Market for goods and aligned with the Union Customs Code, as stipulated in Articles 5-10 of the Northern Ireland Protocol (Agreement on the Withdrawal…, 2018). This arrangement was necessary to avoid a hard border with the Republic of Ireland and to uphold the Belfast Agreement, but it created economic divergence within the UK internal market, effectively establishing a customs border in the Irish Sea. As a result, goods moving from Great Britain to Northern Ireland became subject to customs checks, certifications, and regulatory controls, complicating supply chains and raising business costs (Creamer & Hayward, 2023).

This dual market position has had mixed consequences. On the one hand, Northern Ireland retained frictionless trade with the Republic of Ireland and the broader EU, which protected many sectors, particularly agriculture and manufacturing, from the more severe export disruptions experienced in Great Britain. On the other hand, trade from Great Britain into Northern Ireland, which accounts for more than 65% of Northern Ireland's imports, became more expensive and procedurally burdensome. These imports include a significant proportion of intermediary goods used in Northern Irish production processes. Thus, regulatory divergence and non-tariff barriers have raised input costs for businesses and contributed to inflationary pressures (Duparc-Portier & Figus, 2023).

Amongst other lines of reasoning, this tension prompted the introduction of the Windsor Framework in February 2023, agreed upon by the European Commission and the UK Government. The framework aimed to streamline the customs process through a "green lane/red lane" system, in which goods remaining within Northern Ireland would face minimal checks, while those at risk of moving into the EU would still be subject to full inspections. It also introduced enhanced IT-based systems for monitoring, improved data sharing, and regulatory cooperation between the UK and the EU. However, research suggests that while these changes will mitigate trade frictions, they will not entirely eliminate the structural disadvantages caused by the post-Brexit arrangements (Creamer & Hayward, 2023; Duparc-Portier & Figus, 2023).

One of the most significant mechanisms in the Northern Ireland Protocol is the "democratic consent mechanism", which mandates that the Northern Ireland Assembly vote periodically every four years (and eight years on different issues) on whether to continue applying Articles 5-10 of the Protocol. These articles govern the continued application of the EU Single Market and Customs Code in Northern Ireland. The first such vote is due before the end of 2024 (Agreement on the Withdrawal…, 2018). While intended to legitimise the settlement, this mechanism introduces economic uncertainty on a recurring basis. Businesses may hesitate to invest long-term if the regulatory environment is subject to fundamental renegotiation every few years.

Statistical indicators of Northern Ireland's economy since the 2016 referendum paint a complex picture. While GDP declined slightly in the immediate aftermath of Brexit, particularly during the 2020 COVID-19 pandemic, more recent figures show a modest recovery trend. According to the Northern Ireland Composite Economic Index (NICEI), an official quarterly measure of regional economic activity, economic output dropped in 2020 but began to recover from 2021 onward. (This shift can be seen below.) It is important to note that this contraction was not solely caused by Brexit; the global pandemic had a dramatic effect on economic activity worldwide. Nevertheless, Brexit exacerbated pre-existing structural weaknesses, especially in logistics, retail, and cross-border supply chains (*NI Composite Economic Index*, 2023).

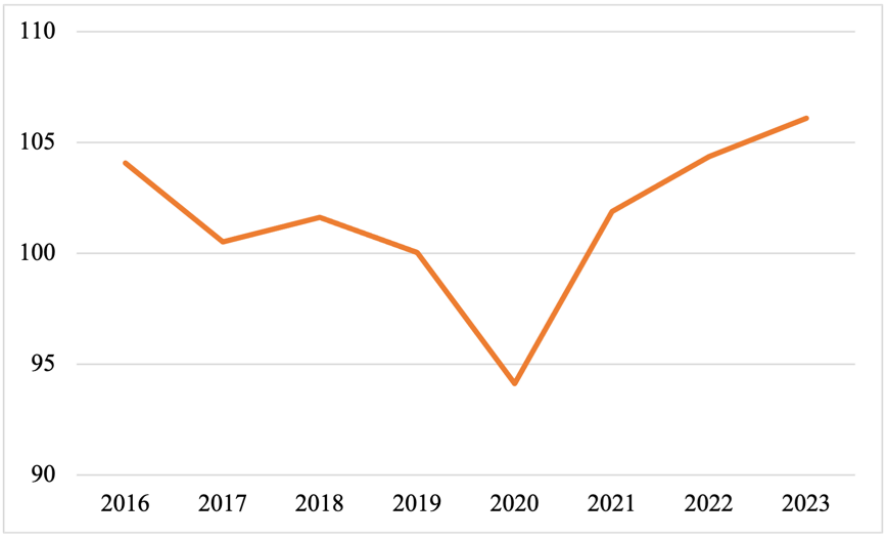

Figure 3: NICEI. Edited by the author

The sectors most affected by Brexit are those with high exposure to cross-border trade and UK-EU regulatory divergence, including agriculture, food production, and fisheries. According to Duparc-Portier and Figus (2023), these industries are particularly vulnerable to even minor increases in administrative or customs costs, due to tight margins and perishable goods. Meanwhile, services sectors, such as finance, legal, and digital industries, have been less directly affected, although uncertainty over regulatory standards still presents long-term risks. Retailers and wholesalers, who are among the largest importers of goods from Great Britain, have passed increased costs on to consumers, contributing to a rise in consumer prices and affecting household economic security.

Despite this, the country's dual access to both UK and EU markets has been cited as a potential strategic advantage if leveraged correctly. In theory, it positions Northern Ireland as a gateway for trade between the two blocs. However, this advantage remains largely unrealised, in part due to the political instability surrounding the Protocol and uncertainty over future regulatory alignment. Long-term capital investment has been slowed by continued debates over the legitimacy and permanence of the post-Brexit trading framework (Creamer & Hayward, 2023).

According to Article 26(2) of the Treaty on the Functioning of the European Union (TFEU), "The internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured." While this principle still applies to Northern Ireland in certain domains, the disjunction between regulatory alignment and constitutional identity

has led to a perceived democratic deficit, especially among unionists who feel that laws are being applied without proper representation. From a sectoral security perspective, this discontent manifests as an economic threat with political undertones, where economic rules are interpreted through the lens of legitimacy and sovereignty.

The UK Government has attempted to address post-Brexit economic instability with new legislation, such as the Benefits of Brexit Bill and the 2021 Internal Market Act, both aimed at asserting British regulatory autonomy. However, these moves have often clashed with the Protocol and sparked renewed tensions with the EU, threatening to unravel carefully negotiated economic arrangements. Furthermore, attempts to unilaterally override the Protocol have damaged investor confidence and increased the perception of the UK as an unstable regulatory environment (Creamer & Hayward, 2023; Burns et al., 2022).

In sum, the economic sector in Northern Ireland post-Brexit has not experienced collapse, but it has undergone measurable stress. From a sectoral security standpoint, this sector remains highly vulnerable to disruption, not only because of trade and regulatory complications, but because its functioning is intimately tied to political legitimacy and cross-border cooperation. While short-term mitigation efforts like the Windsor Framework offer relief, they do not resolve the core contradiction of Northern Ireland's status: simultaneously integrated with the EU in practice, but politically tied to a UK that is no longer part of the Union. This duality will continue to generate economic insecurity unless a more stable and accepted long-term settlement is achieved.

The Societal Sector

In the framework of sectoral security theory, the societal sector concerns threats to identity, culture, language, and the cohesion of social groups. According to Buzan, Wæver, and de Wilde (1998), societal security focuses on "the sustainability, within acceptable conditions for evolution, of traditional patterns of language, culture, and religious and national identity." Threats in this sector are not necessarily violent but are perceived as existential by the communities concerned, particularly when their sense of collective identity

is questioned, marginalised, or structurally undermined. In historically divided societies like Northern Ireland, where identity and constitutional belonging are historically contested, societal security is particularly fragile.

Preserving a collective identity through language, religion, culture, and customs serves as the basis for societal security. In Northern Ireland, identity is often defined in opposition to the "other" community, with nationalists identifying as Irish and mostly Catholic, while unionists identify as British and predominantly Protestant. Thus, identity politics in Northern Ireland are not only about cultural expression but also deeply interwoven with constitutional preference, governance, and community memory of conflict. Brexit reignited long-standing debates over these identities, not only politically but also at the societal level, raising concerns over cultural erosion, demographic change, and symbolic recognition.

The 2022 Identity and Language (Northern Ireland) Act aimed to settle some of the most debated questions regarding the impact of Brexit on identity, language use, and cultural belonging, especially within the nationalist community. According to the Act, art. 78J(1), the Irish language was recognised as an official language of Northern Ireland for the first time. This legislative shift was an effort to acknowledge the symbolic importance of language as an element of identity, particularly after fears among nationalists that the UK's exit from the EU might lead to the suppression or neglect of Irish cultural representation in official contexts (*Identity and Language [Northern Ireland] Act 2022*, 2022).

One of the most revealing insights into societal identity post-Brexit in Northern Ireland comes from examining the correlation between political attitudes and religious beliefs. According to survey data collected by the Northern Ireland Life and Times project, there is a strong and persistent link between religion and political identity. A majority of people identifying as unionists are Protestant, while nationalists are more likely to be Catholic. For example, in 2022, approximately 36% of the population either identified as Protestant or held no religious affiliation, while the proportion identifying as Catholic was slightly lower but more politically cohesive (*Northern Ireland Life and Times Survey*, 2023). Additionally, there is a growing proportion of individuals who report no strong religious affiliation, but this group is not necessarily politically neutral.

This division is further illuminated by data showing the explicit link between political affiliation and religion. For instance, unionist-leaning individuals almost universally identified with Protestantism or Protestant cultural traditions, whereas nationalist-identifying respondents overwhelmingly associated with Catholicism or Irish cultural identity. These correlations are not merely demographic – they directly influence electoral patterns, constitutional preferences, and responses to Brexit. (The statistics regarding this phenomenon can be seen below.) The 2016 Brexit referendum laid bare this divide: while 66% of unionists voted to leave the EU, approximately 90% of nationalists supported remaining (*Northern Ireland Life and Times Survey*, 2023). The disparity reflects deeper societal insecurities: unionists feared the loss of British sovereignty, while nationalists saw EU membership as a safeguard for cross-border cooperation and cultural plurality.

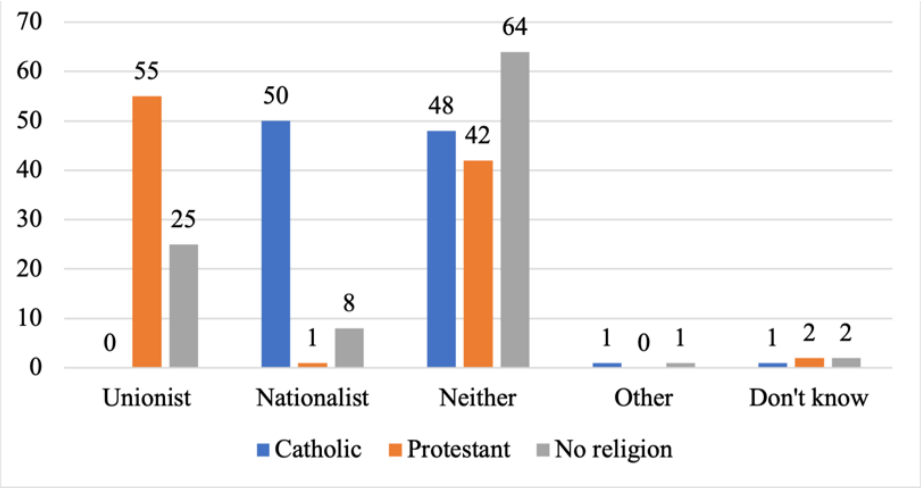

Figure 4: Political attitudes of different religions (in %). Edited by the author

Despite the enduring dominance of these two blocs, NILT surveys have also noted a modest but consistent rise in individuals identifying as "neither" unionist nor nationalist. In 2022, 38% of respondents selected "neither" when asked about their political community (*Northern Ireland Life and Times Survey*, 2023). While this trend suggests a possible generational or post-conflict shift toward depoliticised identity, the deepening of Brexit-related divisions appears to have re-polarised many citizens along traditional ethno-national lines.

Religious beliefs continue to correlate with political outcomes and cultural preferences. The 2021 Census showed that out of Northern Ireland's 1,836,600 residents over the age of three, 95.4% had English as their main language, while only 0.3% were native

Irish speakers. Nevertheless, 12.4% of residents claimed some ability in Irish, a figure significantly higher than the proportion of native speakers (*Main Statistics for Northern Ireland Statistical Bulletin - Language*, 2022). This linguistic capacity, combined with recent legislative efforts, points to a cultural revival that is heavily loaded with political meaning. For many nationalists, the use and recognition of the Irish language are seen as a marker of equality and cultural survival; for many unionists, it is perceived as a political assertion that challenges the British identity of the region.

From a sectoral security perspective, these tensions are significant. When identity, religion, or language is perceived to be under threat, whether through policy decisions, demographic shifts, or perceived symbolic exclusion, societal groups may react defensively, potentially escalating tensions or feeding into wider political instability. Brexit, by redefining the constitutional framework and removing the EU as a shared, neutral structure, has exacerbated identity-based insecurities.

In conclusion, the societal sector in Northern Ireland remains deeply vulnerable. Although recent legislation like the Identity and Language Act represents a step toward cultural recognition and equality, the broader context of Brexit has reactivated latent identity conflicts. The correlation between religious belief and political identity continues to define societal dynamics, and any shift in symbolic or legal status, however minor, can trigger broader security concerns. In this way, societal security in Northern Ireland is not only about language or culture, but about belonging, memory, and contested visions of the future.

The Environmental Sector

In sectoral security theory, the environmental sector concerns threats to ecological sustainability, including pollution, climate change, and the degradation of shared natural resources (Buzan et al., 1998). In Northern Ireland, Brexit disrupted the EU-based frameworks that had governed environmental cooperation across the Irish border. While the Northern Ireland Protocol preserves alignment with some EU regulations, divergence from Great Britain has introduced uncertainty in areas like waste management, water quality, and biodiversity protection (Gove, 2017).

Shared ecosystems, such as cross-border rivers and habitats, now face fragmented oversight, risking reduced enforcement and transparency. The newly established Office for Environmental Protection aims to fill the gap left by the European Commission, but its role in Northern Ireland remains limited and under-resourced (Creamer & Hayward, 2023). In climate policy, Northern Ireland lags behind UK-wide goals, and Brexit removed access to EU climate targets and funding mechanisms.

While not an immediate crisis, these developments represent slow-building environmental insecurity. Without sustained cooperation and legal clarity, Brexit could undermine Northern Ireland's and potentially the UK's capacity to protect shared ecosystems, posing long-term risks to public health, economic resilience, and cross-border stability.

Conclusion

This article has examined the impact of Brexit on Northern Ireland through the lens of sectoral security theory, as developed by Buzan, Wæver, and de Wilde (1998). By analysing the military, political, economic, societal, and environmental sectors, it becomes clear that Brexit has introduced not a single crisis, but a complex web of interrelated insecurities that collectively challenge the region's post-conflict stability.

In the military sector, while the UK retained its strategic defence alliances and global role, Northern Ireland encountered logistical complications due to its distinct regulatory position under the Northern Ireland Protocol. Delays and confusion over the movement of military equipment from Great Britain, alongside the risk of renewed dissident activity, revealed that military threats in the region are now more internal and perception-based than conventional. The sector is defined not by war, but by the re-emergence of politically fuelled tension and operational fragmentation.

The political sector emerged as the most disrupted. Brexit fundamentally challenged the constitutional architecture established by the 1998 Good Friday Agreement, removing the European Union as a shared neutral framework. The political identity divide (unionists supporting Leave and nationalists overwhelmingly voting Remain) became further entrenched. The repeated collapse of the Northern Ireland Assembly during key negotiation periods only

worsened this instability. With power-sharing repeatedly suspended and the legitimacy of the Protocol contested, the region's political security remains volatile, characterised by a breakdown in trust, representation, and constitutional consensus.

Economically, Northern Ireland's unique dual market access promised potential advantages, but in practice, Brexit has led to increased bureaucracy, customs checks, and higher costs for businesses importing from Great Britain. While trade with the EU remained relatively smooth, the uncertainty around the Northern Ireland Protocol, frequent political deadlock, and threats to override legal commitments have deterred long-term investment. The Windsor Framework provided some relief, but many structural issues, such as the consent mechanism's recurring uncertainty, persist.

The societal sector showed that identity and cultural belonging remain central to the region's security. Brexit reignited questions of national identity and re-securitised long-standing cultural tensions. Survey data confirmed the continued correlation between political affiliation and religious belief: unionism remains tied to Protestant identity, while nationalism correlates strongly with Catholicism. While a growing number of respondents now identify as politically neutral, the polarisation around Brexit has made societal boundaries more pronounced. Language legislation and the symbolic politics of flags, borders, and sovereignty continue to fuel identity-based insecurity.

Finally, in the environmental sector, Brexit has quietly disrupted long-standing cross-border ecological governance. Northern Ireland now risks divergence in standards and enforcement capacity, particularly in areas such as water quality, agricultural runoff, and waste management. The loss of the EU's regulatory umbrella and the limited jurisdiction of the UK's new Office for Environmental Protection have created uncertainty in how shared ecosystems will be managed going forward. Though not yet a source of acute crisis, the sector faces slow-building insecurity through oversight gaps and reduced binational cooperation.

Taken together, these findings demonstrate that Brexit has not triggered a return to large-scale violence, but it has deeply destabilised the frameworks that once upheld peace and stability in Northern Ireland. Each sector reveals distinct yet interconnected

vulnerabilities. Political fragmentation weakens economic confidence; economic uncertainty amplifies societal grievances; societal tensions undermine environmental cooperation; and logistical complexity limits military coordination. These insecurities are not isolated – they reinforce one another across sectors, eroding the institutional and psychological sense of security that underpinned the post-1998 order.

In conclusion, the post-Brexit landscape in Northern Ireland is defined by persistent uncertainty. Security today is less about immediate threats and more about fragile legitimacy, contested identity, and the absence of a stable, mutually agreed-upon framework for coexistence. Addressing these challenges requires not only legal and institutional responses but sustained political will, cross-community dialogue, and recognition of Northern Ireland's unique geopolitical and cultural position. Only by re-establishing trust across borders, identities, and governance structures can true security be restored in the wake of Brexit.

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ESSAY

NAVIGATING THE ENERGY SHIFT: RENEWABLE AMBITIONS AND REAL-WORLD CONSTRAINTS IN THE EU

Fanni Kiss

ABSTRACT

This paper examines the European Green Deal with a specific focus on renewable energy. Drawing on quantitative data from EU institutions, case studies, and document analysis, it investigates how EU member states have advanced the Green Deal's renewable energy goals amid overlapping crises such as the COVID-19 pandemic, the war in Ukraine, and escalating energy prices. Particular attention is given to Hungary's renewable energy ambitions and the alignment of its national strategies with EU-wide objectives. By identifying key drivers of success and persistent barriers, the research offers tailored policy recommendations grounded in exemplary European practices.

Keywords*: sustainability, renewable energy, Green Deal*

INTRODUCTION

The political context[1] that gave rise to the European Green Deal was influenced by the electoral green wave and growing climate concern (Biedenkopf et al, 2023). According to the European Commission (European Commission, 2019), "This Communication sets out a European Green Deal for the European Union and its citizens. It resets the Commission's commitment to tackling climate and environmental-related challenges which is this generation's defining task... The European Green Deal is a response to these challenges. It is a new growth strategy that aims to transform the EU into a fair and prosperous society... with no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use."

However, as crises—from COVID-19 to energy instability—have emerged, shifting priorities have complicated progress. With increasing concerns about energy security, competitiveness, and independence, can the Green Deal adapt without losing direction? Is it still the foundation for Europe's sustainable transition, or a lofty goal in uncertain times? Unveiled in 2019, the Green Deal aimed to make Europe the first carbon-neutral continent by 2050, while ensuring fairness and prosperity (European Commission, 2019), but recent events have tested its resilience (Acobuță et al, 2022, Farkas et al, 2022; Rada 2025). Russia's war in Ukraine exposed deep energy dependencies[2], while the COVID-19 pandemic diverted resources (Weise, 2023). Inflation and economic stagnation have revived concerns over the cost of green policies (Faro, 2024). Will short-term pressures derail long-term sustainability goals?

Internally, implementation varies across the 27 member states, each with distinct economic structures, political agendas, and starting points. Some have embraced the agenda, while others face political resistance, financial barriers, or fossil fuel dependencies. Do these differences reflect deeper structural inequalities, or flexibility within the EU framework? Is a unified approach viable, or must each nation forge its own path?

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[1] See more analysis about the political context of the EU: Nyilas 2023, Nyilas 2024, Nyilas 2025, Pongrácz-Rada 2023, Rada 2008, Rada 2009, Rada 2019, Rada 2023a,b,c, Rada 2024, Rada 2025, Rada-Gyarmati 2024a, 2024b, Rada-Nyilas 2023, Rada-Nyilas 2024, Rada-Medgyesy 2024

[2] Energy dependency and green solutions has been also on he agenda of NATO, (Stepper-Szálkai, 2015, Stepper 2016) and not just EU since 2014, and beceome more important after 2022.

Supplying clean, affordable, and secure energy

Is it possible for the EU to create a robust and fully integrated energy system that meets its economic and climate goals or will the shift to clean energy continue to be a patchwork of disparate national initiatives, susceptible to both internal political conflicts and external shocks? The Green Deal's success as well as Europe's future energy independence and global climate leadership will rest on the responses to these concerns. Through an analysis of national policies and the efficacy of EU-level initiatives, this chapter will examine the advancements made under this pillar, highlighting successful strategies and enduring obstacles.

At the heart of Europe's green revolution lies the question of energy, since energy production and consumption are the single most important sector in the fight against climate change, being responsible for over 75% of the EU's greenhouse gas emissions (European Urban Intiative, 2024.), as supported by the International Energy Agency (IEA). In the absence of a significant change in the production, distribution, and use of energy, the EU's ambitious climate goals—achieving carbon neutrality by 2050 and reducing net emissions by at least 55% by 2030—will remain unattainable (EEA, 2024). However, is the energy system transition in Europe occurring quickly enough? Will governments be prepared to undertake the difficult decisions required to wean themselves off of fossil fuels, or will the momentum be slowed by immediate political and economic concerns?

Three fundamental principles underpin the European Green Deal's vision for a clean energy transition: guaranteeing a reliable and affordably priced energy supply, developing a fully digitalized and integrated EU energy market, and emphasizing energy efficiency while rapidly expanding renewables (European Commission, 2024). Although these goals seem encouraging, how effectively are they being implemented? Is it possible for Europe to fully decarbonize its power sector while maintaining industrial competitiveness, stabilizing energy prices, and shielding the most vulnerable customers from energy poverty? The difficulties are immense. The EU's dependence on outside energy sources was made clear by the energy crisis brought on by Russia's invasion of Ukraine, which forced governments to make quick changes—sometimes at the expense of sustainability objectives. Have the EU's long-term goals

for clean energy been reinforced by these emergency measures, or have they led to the development of new dependencies that might postpone the green transition?

Large-scale investment and cross-border collaboration are essential components of this pillar. Scaling up renewable energy and incorporating new technologies requires upgraded infrastructure, interconnected grids, and a more efficient energy market. For instance, offshore wind energy offers a lot of unrealized potential, but are member states prepared to cooperate to use it? Though development is still unequal within the EU (IMF, 2025), decarbonizing the gas industry and encouraging intelligent integration across energy sectors are equally important. What causes certain nations to be at the forefront of energy innovation while others fall behind? How can national energy and climate plans (NECPs) influence this shift, and are they sufficiently ambitious to achieve the long-term objectives of the EU? Further, the shift necessitates a labor transformation in addition to technological and economic difficulties. To avoid economic displacement, sectors that have historically relied on fossil fuels, including coal and natural gas, will require retraining programs and just transition policies (European Commission, 2024).

POLICY CONTEXT

With early efforts like Germany's first feed-in tariff in 1991 (IEA, 2024), the European Union has a long history of trying to lower carbon emissions. With a pledge to boost renewables by 2010, the first regulation for energy production was adopted in 2001 (DIRECTIVE 2001/77/EC), and the first specific renewable increase objective was established in 1997 (COMMUNICATION of 26 November 1997). The Renewable Energy Directive is the most recent version of these carbon reduction goals. The Renewable Energy Directive (DIRECTIVE (EU) 2023/2413), also known as RED, set a binding target of 32% for the total share of energy from renewable sources in the EU's gross final energy consumption by 2030 and created a common framework for promoting energy from renewable sources within the EU. These goals were increased to 42.5% by 2030 in November 2023(European Commission, 2024), and new renewable plant licensing times were shortened. The most recent version of the Renewable Energy Directive (DIRECTIVE (EU)

2023/2413) is called RED III. All components of it must be put into effect by May 21, 2025.

Further, the European Green Deal's objective for Europe's economy and society to achieve climate neutrality by 2050 is codified in the European Climate Law (REGULATION (EU) 2021/1119). The law establishes the intermediate goal of lowering net greenhouse gas emissions from 1990 levels by at least 55% by 2030. The Commission also released the European Wind Power Action Plan in 2023 and a strategy devoted to offshore renewables in 2020 (EU Strategy to harness the potential of offshore renewable energy for a climate neutral future, 2020) in order to support the EU's renewable energy ambitions. Additionally, the Commission approved the EU Solar Energy Strategy, which lists the obstacles and difficulties still facing the solar energy industry and provides plans to remove them and hasten the adoption of solar technologies. Further, the European Commission approved the Critical Raw Materials Act and the Net Zero Industry Act, two proposals on important pillars of the EU's Green Deal Industrial Plan.

Moreover, in response to Russia's invasion of Ukraine and the energy price crisis, the European Commission adopted the REPowerEU Plan to reduce the EU's dependency on Russian fossil fuels, address security of energy supply and accelerate the transition to clean energy with a massive speed-up and scale-up in renewable energy.

Evaluation of progress towards the targets

The percentage of renewable energy in the EU's gross final energy consumption from 2010 to 2023 is shown in the figure below. In 2023, renewable energy sources made up 24.5% of the EU's gross final energy consumption, which was nearly three times more than the 9.6% proportion recorded in 2004 and also higher than the 23.0% share in 2022 (EEA, 2024). The EU's commitment to cutting greenhouse gas emissions, diversifying energy sources, and lowering dependency on fossil fuels is demonstrated by this upward trend. However, with aspirations of reaching 45%, the EU has set an ambitious goal to attain a 42.5% share of renewable energy by 2030 (Renewable Energy Directive) and the adoption of renewable energy in all member states must significantly accelerate in order to meet this target. IEA and Ember modeling indicates that the revised 42.5% target might be achieved if swift action is taken to

increase renewables and decrease energy use (EMBER, 2025). The surprisingly rapid uptake of solar photovoltaics and heat pumps is another reason for optimism.

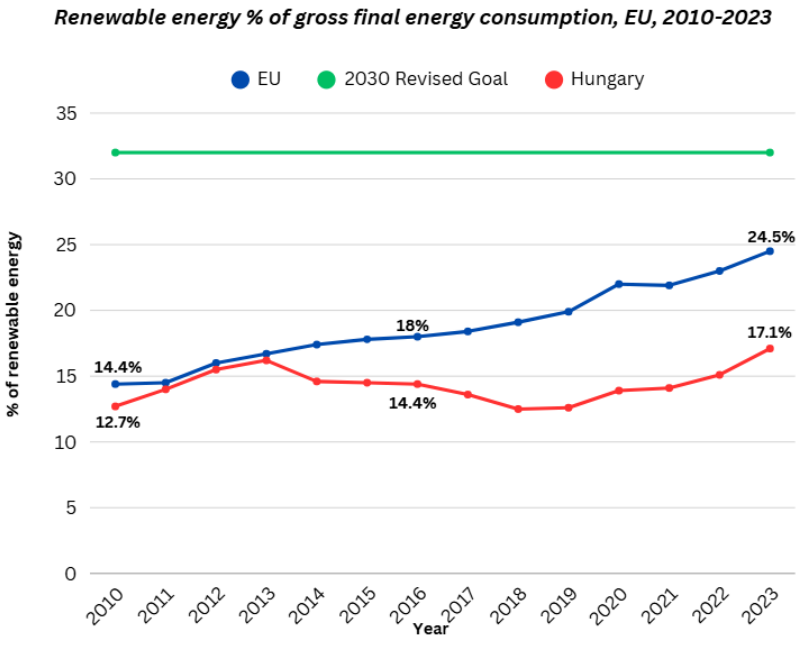

Figure 1: Renewable energy % of gross final energy consumption, EU, 2010- 2023, self-edited, data source: Eurostat (Eurostat, 2024)

With 66.4% of its total final energy consumption coming from renewable sources in 2023, Sweden led the EU member states, followed by Finland (50.8%) and Denmark (44.9%). These nations mostly relied on wind, hydro, and solid biofuels. Luxembourg, on the other hand, had the lowest percentage at 11.6%, followed by Belgium (14.7%), Malta (15.1%), and Ireland (15.3%), all of which had lower rates of renewable energy adoption (Renewables Now, 2022).

Sweden's impressive adoption of renewable energy is a result of a confluence of technological innovation, progressive policy, and an abundance of natural resources. Because of its many rivers and lakes, the nation has abundant hydroelectric resources, which offer a reliable supply of clean electricity. Sweden is a leader in this field because of its extensive forested lands, which also greatly contribute to its production of bioenergy. Beyond its inherent advantages, Sweden has accelerated its transition to clean energy through the implementation of ambitious legislation. By 2040, the nation wants

to produce all of its electricity from renewable sources (Sweden Sverige, 2024), indicating a sustained commitment to sustainability. Sweden's CO_2 taxing system (Government Offices of Sweden, 2024) is one successful strategy that has encouraged businesses and households to switch to more environmentally friendly energy sources. Investment in renewables has increased as a result of high carbon levies making fossil fuels less profitable. A further significant component in Sweden's leadership in renewable energy is technological innovation. By incorporating wind, solar, and biogas energy into smart grid systems that maximize efficiency, cities like Malmö are leading the way in climate-smart urban development (The Guardian, 2025).

Significant advancements in Sweden's renewable energy environment in 2024 have also strengthened the country's standing as a pioneer in sustainable energy. In 2024, hydro and nuclear power accounted for 38% and 29% of the nation's total electricity generation mix (Statista, 2025), respectively. Notably, in the latter quarter of the year, wind power surpassed nuclear energy for the first time, setting a new output record. Wind energy accounted for 35% of electricity output in December 2024, making it the greatest source. Up from 22% in 2023, wind power now accounts for 25% of Sweden's total electricity generation throughout the year (Reuters, 2025). In the Union, there are still difficulties in spite of these developments. In contrast to the double-digit gains observed in prior years, the growth of solar power installations in Europe dropped to 4% in 2024. Given the enormous challenges posed by outmoded power grids and diminished incentives for rooftop solar installations, this slowdown raises questions about the EU's ability to reach its 2030 renewable energy targets (Reuters, 2025). The percentage of renewable energy in each EU nation in 2023 is displayed on the map below. Countries with the largest percentage of renewable energy are shown by the darkest brown color, while those with the lowest percentage are represented by the lightest shade. With leaders like Sweden and Finland demonstrating notable accomplishments and nations like Luxembourg and Malta lagging behind in terms of renewable energy consumption, this graphic illustrates the disparities in the adoption of renewable energy among EU member states.

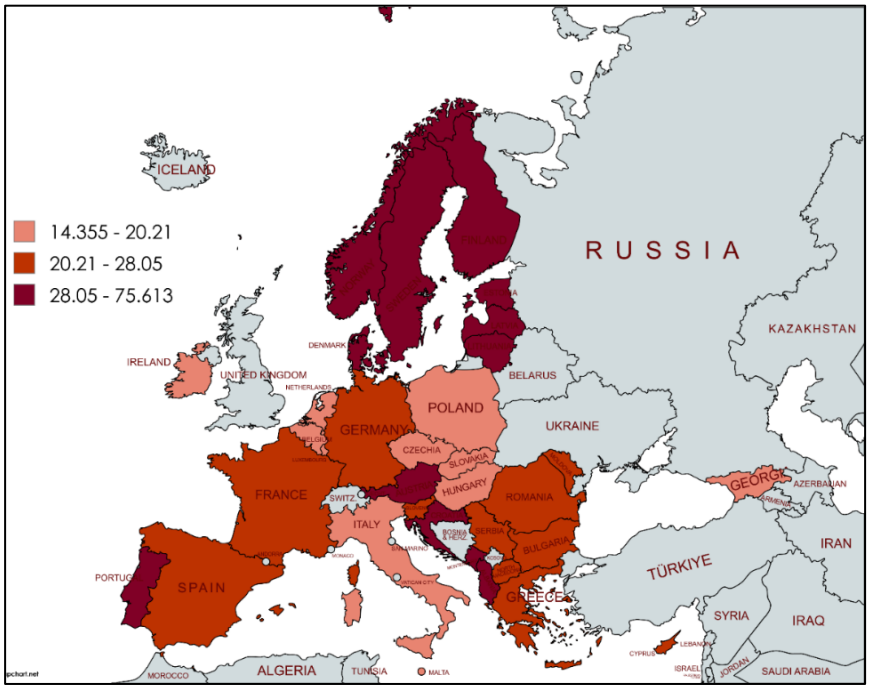

Figure 2: Renewable energy % of gross final energy consumption, EU, 2023, self-edited, data source: Eurostat (Eurostat, 2025)

Energy Poverty

Offering reasonably priced energy is one of the other primary goals of this pillar of the Green Deal. However, a complex issue known as energy poverty—caused by a combination of high energy bills, low income, and inefficient buildings—meant that more than 42 million individuals in Europe were unable to keep their houses warm enough in 2022 (Bioenergy International, 2023). In addition, over 7% of EU citizens had outstanding utility bills. Can the European Green Deal be successfully finalized in light of this pillar, then?

According to the figure below, more than 10% of EU citizens were unable to keep their homes sufficiently warm in 2014, indicating a very high percentage of energy poverty in the EU (Bouzarovski et al, 2020). By 2019, this rate had drastically decreased, and in 2020, it increased to some extent. However, there is a noticeable spike in 2022. The rate reached above 9 once more in that year, marking a notable rise from 6.9% in 2021. This is primarily because, as a result of the numerous crises that have befallen the EU in recent years, such as pandemics, wars, and supply chain tensions, an unprecedented convergence has arisen between the demands of maintaining EU competitiveness and social cohesion, guaranteeing supply security, and speeding up the energy transition (Eurostat, 2025).

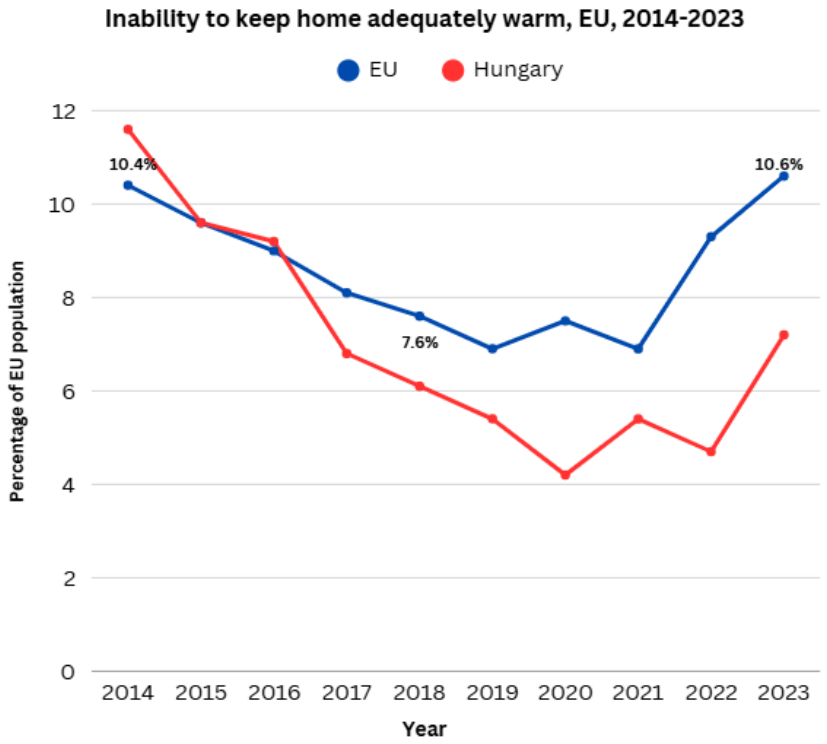

Figure 4: Inability to keep home adequately warm, EU, 2014- 2023, self-edited, source: Eurostat (Eurostat, 2025)

The European Union has acknowledged energy poverty as a significant issue and has implemented a number of measures to combat it. One such program is the Social Climate Fund (European Commission, 2025), which seeks to give disadvantaged households financial support so they can upgrade to cleaner, more energy-efficient equipment. The EU has also outlined efforts to lower carbon

emissions under the Fit for 55 climate package, including particular actions to lessen energy poverty by enhancing home energy efficiency and provide financial assistance for energy bills.

Overall, the European Union is faced with a challenging task: although it must complete the energy transition and achieve carbon neutrality by 2050, it also needs to protect the most vulnerable households and ensure that no one is left behind. In summary, one of the most significant battles of this century will be the struggle for the right to inexpensive energy, and the EU must implement a fair and socially decent energy transition (Magdalinski et al, 2021)

CHALLENGES IN IMPLEMENTATION

Market challenges

Gas and oil prices started to rise slowly in mid-2020 after experiencing a sharp drop during the first COVID-19 lockout in 2020. Due to a number of variables, including supply disruptions, increased global demand, and unfavorable weather, these prices did not revert to 2019 levels when the epidemic abated but instead kept growing (IEA, 2025). Russia's intention to cut gas exports to EU nations in 2021 and 2022 further worsened the energy situation by causing previously unheard-of price increases and instability. Electricity prices also increased due to the interconnectedness of energy markets, impacting both businesses and households (European Commission, 2025). There was widespread energy poverty as a result of many private consumers finding it difficult to pay their energy bills (European Parliament, 2022). The need for energy transition and emissions reductions became even more urgent as manufacturing prices skyrocketed in energy-intensive industries including steel, aluminum, cement, paper, and chemicals. Rising gasoline prices also had a significant influence on the transportation industry, which further expanded the economic impact. The severity of the EU's energy market situation is also confirmed by a 2022 research by the think tank Bruegel (McWilliams et al, 2022), which reaffirms that replacing Russian gas was particularly difficult due to the combination of high costs and limited supplies. Coal was viewed as a temporary substitute, but production capacities were constrained and its prices tripled in the second quarter of 2022. Due to inadequate pre-crisis investment, renewable energy sources like wind and solar were unable to fill the void, while unforeseen set-

backs like corrosion in French nuclear power facilities and low water levels from drought further diminished the dependability of nuclear and hydropower. The main substitute for Russian gas as a result was the importation of liquefied natural gas (LNG), albeit at a high price.

In response, the EU implemented emergency market stabilization measures, such as regulations to lower demand for power and redistribute surplus energy sector revenues to consumers. In order to lessen the impact of rising energy costs, governments around Europe implemented financial support programs. The total amount spent on crisis measures approached 2% of EU GDP, which is more than the 1.5% stimulus suggested during the 2008–2009 financial crisis. However, such short-term market interventions carry the risk of destabilizing the European energy market. Additionally, increased government debt from energy subsidies raises concerns about long-term fiscal sustainability, as these costs will eventually need to be recovered through higher taxes, further straining businesses and households. Inflation, exacerbated by high energy prices, adds another layer of economic pressure, reducing the affordability of energy and essential goods. Social and economic risks are becoming increasingly evident. Prolonged high energy prices heighten fears of social unrest, drawing parallels to France's "yellow vest" movement (Harvard Library, 2025), which emerged in response to high fuel prices and rising living costs. There are also concerns about the potential for bankruptcies, economic recession, and even threats to the integrity of the EU's internal market.

National vs. European

In response to the crisis, Member States took charge owing to the perceived threat level to supply security and the imminent consequences of price hikes. They made an effort to safeguard supply security in order to preserve their national strategic autonomy. Various national energy mixes and economic priorities have led to different responses. For example, securing new import agreements for gas supply and new infrastructure, specifically for LNG, increasing the use of existing coal power plants, delaying nuclear power plant closures, and planning new ones are on the list of actions taken by several European states, according to a frequently updated Bruegel overview (Sgaravatti et al, 2022). For example, in the first half of 2022, Member States battled with one another and occasionally with the Commission to get the best deals on imports

from the same nations. Competition in 'energy diplomacy' might have raised prices and precluded the best outcomes.

Divergent strategies used by Member States to lessen the impact of price increases also sparked heated discussions at the EU level. The discussion surrounding potential gas and electricity price caps was very contentious in the second half of 2022 (Wilson, 2022). For instance, the European Commission permitted Spain and Portugal to impose a gas price ceiling in April 2022 on the grounds that both nations had limited gas connections with the rest of the domestic market and imported their gas from nations other than Russia (European Commission, 2025). The internal market was indirectly impacted by the price limitation in Spain and Portugal, though, as a result of the increasing use of inexpensive gas for the manufacture of electricity, which was then exported to France at low costs. For its part, France limited the increase in regulated electricity costs and capped the price of gas for end users. Germany's price compensation measures of up to €200 billion, however, were the main source of concern. Given its key location in Europe and the resulting interconnection, this might have had a significant impact on the domestic energy market.

RECOMMENDATIONS

Hungary has emerged as a leader in the European Union for its tremendous advancements in renewable energy, especially solar electricity (European Commission, 2025). In 2024, solar energy produced 25% of the nation's electricity, according to a report by independent think tank Ember (Ember, 2025), demonstrating the industry's explosive growth. Significant initiatives like the €800 million, 1,044 MW Europe's largest solar park on the Hungarian-Romanian border (Energy World, 2025) and BMW's plan to construct Hungary's largest solar power plant in Debrecen (Hungary Today,2024) further solidify the nation's dedication to renewable energy. Households have also been pushed to embrace solar energy by government programs such as the Solar Energy Plus Programme (CEE, 2024), which offers financial assistance for the installation of solar panels and storage devices.

However, a significant component that has to be improved is infrastructure expansion. Hungary has been a leader in solar energy, but it has not yet fully utilized its geothermal and wind resources.

Geothermal energy offers extraordinary potential in the Carpathian Basin. The direct usage of this resource still has a lot of unrealized potential. Hungary has the potential to benefit from Sweden's success with district heating (REHVA, 2019), which uses bioenergy and waste-to-energy technologies, especially considering its abundant geothermal resources (Fälting et al, 2025). The use of geothermal energy has several benefits: it is locally accessible and has comparatively cheap operating costs; it will help Hungary become more energy independent; and it will maintain reasonable energy pricing. Adopting a diverse strategy to fulfill domestic demands, utilizing a wide range of technologies, and optimizing the potential of domestic alternative energy sources is a crucial advice for Hungary's energy future. It is anticipated that this plan will help the nation's green transformation and greatly enhance its energy sovereignty. Hungary can quicken its shift to a more sustainable and energy-secure future by fusing its advantages in solar energy with a more comprehensive, varied renewable energy plan. Promoting research and innovation are equally crucial. Hungary should encourage cooperation between the public and private sectors by increasing assistance for research and development in renewable energy. Community energy initiatives and public awareness campaigns, which have proven successful in Sweden (UNFCC, 2025), may also aid in including the public in the energy transition.

CONCLUSION

The goal of this research was to compare national implementation in the EU member states in order to assess its success with regards to the pillar of energy. The results show a bold but uneven transformation, with external crises constantly testing the EU's political will and policy coherence and ambition frequently surpassing capabilities.

The EU has unquestionably made strides in expanding renewable energy sources. Flagship nations like Sweden serve as examples of what may be achieved via sustained policy, long-term planning, and technical innovation investment. However, as Russia's war in Ukraine revealed, the EU is still extremely susceptible to geopolitical shocks, which highlighted the need for affordable and independent energy. Although the bloc's intention to speed decarbonization is signaled by the REPowerEU program, emergency measures, and the amended Renewable Energy Directive (RED

III), significant differences still exist. Especially for lower-income and energy-import-dependent nations, the dual challenges of making the transition to clean energy while maintaining social justice and energy security remain unresolved.

This study demonstrates, more broadly, that the Green Deal cannot be implemented as a "one-size-fits-all" strategy. It must develop into a dynamic framework that is both solid enough to maintain fundamental environmental goals and flexible enough to adjust to national conditions. Its comprehensive vision of a just, competitive, and climate-resilient Europe is its strongest point. Stronger enforcement measures, greater financial solidarity, more broad public involvement, and deeper policy cooperation are necessary to achieve this goal. The success of the Green Deal ultimately depends on public support and political leadership. In the upcoming years, national governments and EU institutions must endeavor to preserve the legitimacy of green policies in the eyes of the public, making sure that sustainability is viewed as a shared societal good rather than an elite endeavor. The EU has the capacity to lead the global shift toward a greener, more equitable society if it can successfully strike a balance between environmental ambition, social equality, and geopolitical resilience.

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ESSAY

ENERGY SECURITY OF HUNGARY AND CUBA, 2014-2024

Dorina Nagy

ABSTRACT

Energy Security is one of today's key issues, therefore it is no coincidence that the seventh United Nations Sustainable Development Goal deals with ensuring affordable, reliable, sustainable, and modern energy. Through the "Four As" framework, combined with secondary quantitative and qualitative data, my research demonstrates that Hungary and Cuba are still highly dependent on imported fossil fuels, although, some steps have been taken to contribute to an environmentally acceptable energy landscape. The main challenges include the economic crisis and frequent blackouts specifically in Cuba, as well as a shortage of professionals and money, because of limited foreign markets. As a result, enhanced partnerships, modernization projects, and further investments in renewable energy installations are essential adjustments for sustainable energy development.

Keywords*: energy import dependency, renewable energy initiatives*

INTRODUCTION

"The usual definition of energy security is clear: sufficient supplies at affordable prices" (Yergin, 2019, p. 226) – Daniel Yergin, Pulitzer Prize winner and author on energy, geopolitics, and the global economy.

The research goal is to examine the energy security of Hungary and Cuba from 2014 to 2024, while the overall objective is to draw attention to the importance of developing and maintaining energy security and to emphasize that this is an area of constant change and therefore worth looking at in its dynamics.

Since the annexation of Crimea in 2014, more serious questions have arisen about Russia's energy export reliability[1], and therefore energy security issues have come to the forefront.[2] Both states were dependent on the Soviet Union, and Hungary still imports a large portion of its natural gas, and crude oil from Russia. Also, 2014 is the year when oil prices dropped drastically on a global scale, contributing to an extreme crisis for Cuba's main energy supplier, Venezuela, leading to a decrease in crude oil exports.

In the past decade, both Hungary and Cuba have remained reliant on energy imports. Still, some steps have been taken to improve diversification and reduce their carbon footprint. Renewable energy initiatives can lead to many improvements, especially regarding the acceptability pillar, however, currently, both countries face challenges that make completing these projects more difficult.

During the research the following questions were examined:

1. What changes and trends have been observed in Hungary's and Cuba's energy security situation in the past ten years?

2. What opportunities and challenges do the development of renewable and alternative energy sources bring to Hungary and Cuba?

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[1] See more analysis about the politicsl context of the EU: Nyilas 2023, Nyilas 2024, Nyilas 2025, Pongrácz-Rada 2023, Rada 2008, Rada 2009, Rada 2019, Rada 2023a,b,c, Rada 2024, Rada 2025, Rada-Gyarmati 2024a, 2024b, Rada-Nyilas 2023, Rada-Nyilas 2024, Rada-Medgyesy 2024

[2] Energy is more and more an issues of security, so it is not surprising that NATO started to deal with sustainability around 2014 (Stepper-Szálkai, 2015; Stepper, 2016).

Cuba's Energy Landscape

In the 1990s, the dissolution of the Soviet Union with ending the trade ties caused a severe economic crisis in Cuba. During the "Special Period" (Arrastía-Avila & Glidden, 2017, pp. 74–76) the island's GDP fell by 22% (1990: $28.65 billion, 1993: $22.37 billion) (World Bank, n.d.). Consequently, the main task was to revitalize its energy sector. Additionally, the United States enforced its trade embargo, tying foreign trade opportunities with other countries. During this period, citizens' everyday life was characterized by using bicycles as a fossil-free replacement, experiencing 20-hour blackouts, restrictions on available bread per person, food shortages, and health issues (Cuba 101, n.d.).

The 2005 Energy Revolution in Cuba was the next significant milestone. The inability of the power grid to reliably supply electricity was a major source of the energy crisis, which the Energy Revolution campaign sought to solve. The solution involved the decentralization of the production of electricity, so they quickly installed distributed generation (DG) plants which were small-scale power plants made up of diesel and fuel oil generator sets (Arrastía-Avila & Glidden, 2017; Levinson & Knight, 2024).

The Convenio Integral de Cooperación - signed by Hugo Chávez and Fidel Castro in 2000, contains that Venezuela will export 53,000 barrels of oil per day to Cuba, which was one third of Cuba's energy consumption, however for Venezuela this was only a very small percentage of their annual output. Part of the agreement, in exchange, Cuba sent assistance in the areas of science, technology, sports, education, and healthcare. However, a new agreement was signed by Hugo Chávez and Fidel Castro in April 2005, expanding the healthcare workers to 30,000 (Erikson, 2005). Although Venezuela has had to face an economic collapse since 2014, one year after Hugo Chávez passed away in 2013, which has also had a negative influence on the two countries' international trade relations. The global price of oil fell by 70% between 2014 and 2016 (World Bank, 2018), which forced Venezuela to reduce oil exports to Cuba, resulting in electricity shortages on the island and to reduce import dependency. As a result, in 2014 the Cuban government introduced future energy policy goals for 2030, which included developing renewable energy sources, particularly biomass, wind, and solar energy.

Regarding its energy sources and infrastructure Cuba imports its oil mainly from Venezuela. Net energy import was 62.8% of 2022's total energy supply. It was in 2010 the highest in the examined period (377,014 TJ), however, after the economic crisis in Venezuela – that also caused energy shortages in Cuba – the percentage of imports and exports decreased each year (International Energy Agency, n.d.). Moreover, also seen in the following figure, it is challenging for Cuba to reduce its reliance on fossil fuels and adjust to global energy trends toward sustainability.

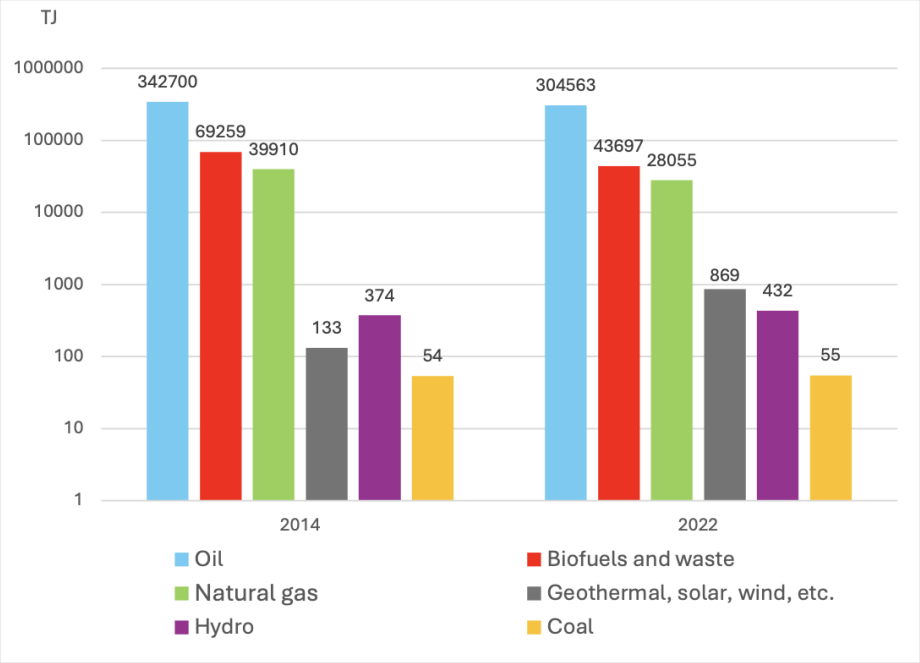

Figure 1. Total energy supply, comparing 2014 with 2022. Source of data: International Energy Agency. (n.d.). Cuba: Country profile. https://www.iea.org/countries/cuba. Edited by the Author 2025.

Electricity generation is dominated by oil, accumulating 13,032 GWh in 2022, however, it was the highest in 2019 (17,359 GWh) within our investigated period. Natural gas was the same year 1,946 GWh, biofuels 276 GWh, and wind, solar and, hydro together 361 GWh. However, it is worth noting that solar PV increased drastically since 2013 (International Energy Agency, n.d.), as that year marked the opening of the first solar farm in Cantarrana and the Santa Teresa plant at Guantanamo. Furthermore, in the region of Cienfuegos, the government constructed a manufacturing facility that has produced 14,000 photovoltaic solar panels (Kolopic, 2016).

When examining the notable activities during the past few years we can see that Cuba demonstrated a positive approach to improve its energy sector, and comply with global standards, through the

approval of the Paris Agreement in 2015, which had been adopted globally one year before, under the United Nations Framework Convention on Climate Change (Granma, 2016) and in 2017 Cuba also set a new project for the Havana Energy biomass plant, investing more than $186 million, to generate renewables from sugarcane bagasse, and diversify its energy mix (New Energy, 2017). In the past years, the island also focused on developing foreign partnerships with traditional partners Russia and Venezuela and with India, the Indian-based International Solar Alliance, and China through renewable energy projects (Silverman-Roati, Whittle, Webb, & Fralick, 2024) and within the Latin American region, Mexico is featuring as an old – new partner (Familiar Avalos, 2018).

HUNGARY'S ENERGY LANDSCAPE

During the Cold War, Hungary was under the influence of the Soviet Union, which has left lasting marks: its energy landscape is mainly dominated by import dependency, especially crude oil and natural gas from Russia. In 2020 energy import dependency was 56.6%. This indicator was the lowest at the beginning of 2010 at 50.1% and the peak was 69.7% in 2019 (Hungarian Central Statistical Office, 2022). Besides fossil fuels, Hungary's energy mix includes a high share of nuclear energy (International Energy Agency, n.d.).

Hungary's historical overview of its energy landscape is mostly shaped by joining international organizations (such as the Organisation for Economic Co-operation and Development and the International Energy Agency) in the last almost three decades. Hungary became a member of the European Union in 2004, which marked the beginning of a change in the strategy planning phase, focusing on that its energy strategies are in line with the EU guidelines (Farkas et al 2023; Rada 2025).

Regarding the country's energy sources and infrastructure, in 2023 total energy supply included 32.309% of oil, 30.756% natural gas, 3.822% coal, 18.1% nuclear energy, geothermal 3.976%, hydro 0.083% and 10.953% biofuels and waste. Compared to 2014 statistics, there was a rise of 11,867 TJ, from 949,529 TJ to 961,396 TJ. Concerning total final energy consumption, as seen in the figure below, in 2014 oil products were the highest with 249,717 TJ followed by natural gas with 230,183 TJ, mainly due to the imports.

Crude oil, coal, heat, electricity, geothermal, solar, wind and other small-scale renewables, and biofuels and waste were a total of 261,745 TJ. Five years later, all the sources increased, which highlights Hungary's rising dependence on imported fuels (International Energy Agency, n.d.).

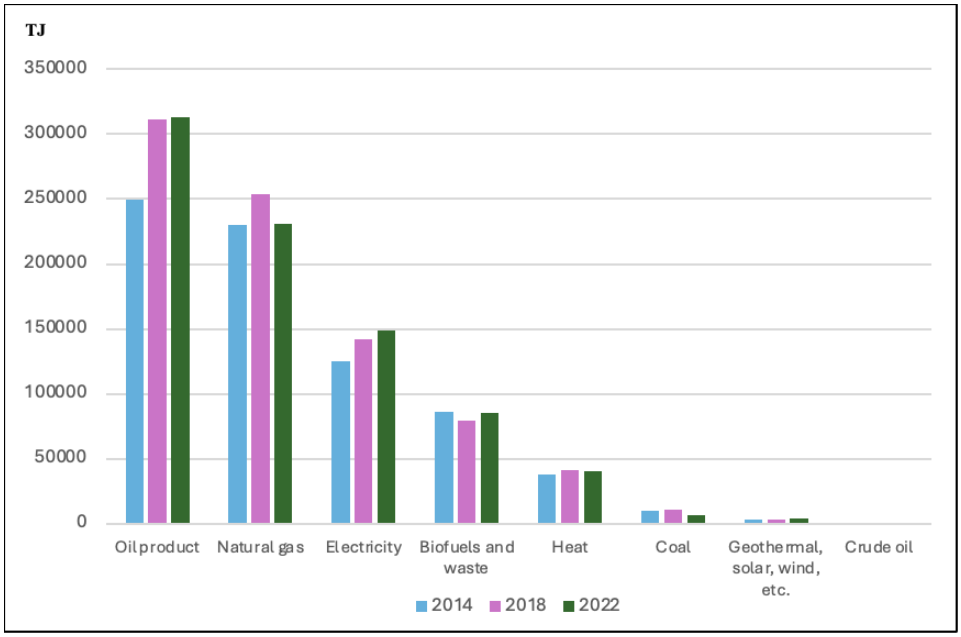

Figure 2. Total final consumption. Source of data: International Energy Agency. (n.d.). Hungary: Country Overview. https://www.iea.org/countries/hungary. Edited by the Author 2025.

During the last ten years, there has been an emphasis on improving energy security by expanding the amount of renewable energy, especially by implementing future energy policies and investments. The Paks Nuclear Power Plant (NPP) consists of four reactors, with a capacity of 2000 MW, however, there are future goals for 2030 to extend it with two new reactors. The second generating plant is the Mátra coal power plant, providing 950 MW. The plan to further develop nuclear energy demonstrates Hungary's readiness for stable, low-emission energy, however, reliance on nuclear power also brings risks, particularly if nuclear waste is not managed effectively, furthermore, in the future if anything happens to the NPP, it will affect a significant percentage of Hungary's energy sources. As bioenergy and solar energy are the main renewable energy sources, between 2019 and 2021, several new solar plants were established, encompassing the Paks Solar Park, 20.6 MW, Kapuvár Solar Park, 25 MW, and Kaba Solar Park, 43 MW. However, regarding wind farms, only a few reach 20 MW, from which

the Ács wind farm possesses the largest ability, generating 74 MW (Aenert, 2024).

Although, besides the future initiatives there are also some challenges, such as the dependence on crude oil, reflected by the high percentage of import, particularly from Russia. Hungary imported on average 420,57 thousand tonnes of crude oil from Russia between 2008 and 2023 (Trading Economics, n.d.) and the shortage of energy professionals in the country, which slows down the successful implementation of construction projects – such as Paks II (Ministry of Innovation and Technology, 2022).

Renewable Energy Initiatives

In case of Cuba, the energy policy of 2030 aims to reduce import dependency, improve energy efficiency and energy security, and mitigate global climate change through a reduction of greenhouse gases. In December 2012, Raúl Castro – between 2011 and 2021 Cuba's president – signed Presidential Decree No. 3 stating the establishment of a Governmental Commission responsible for the development of the policy proposals for the advancement of renewable energy sources on the island. The energy policy was presented at the meeting of the Council of Ministers in 2014. The project, as part of the Nationally Determined Contribution (NDC) under the Paris Agreement, suggests that by 2030 Cuba will generate approximately 30,000 GWh of electricity, of which 24% (7,200 GWh) will be from renewables (Arrastía-Avila & Glidden, 2017).

As a comparison, in 2022 total electricity generation was 15,615 GWh, with a 4% share of renewables (hydro, biofuels, wind, and solar) generating 637 GWh, meaning that in the upcoming years, the amount of the total electricity generation must double, and the renewables must increase tenfold (International Energy Agency, n.d.).

Also, in 2019, Cuba modified its constitution to encourage foreign investment for economic development required to move toward a more sustainable future with greater reliance on renewables, thereby mitigating climate change, reducing local pollution, and prompting greater resilience compared to the current fossil-fuel-fired power generation system (Silverman-Roati, Whittle, Webb, Fralick, & Harmer, 2024). Despite Cuba's willingness to contribute to global environmental improvements, various external influences, such as the lack of foreign markets, the U.S. embargo, and

outdated infrastructure, make this pathway more challenging. In October 2024, these issues lead to the collapse of the power grid system twice within two days, leaving 10 million citizens without electricity. The crisis started on 18 October, with the malfunctioning of the Antonio Guiteras power plant. During this period of 'energy emergency' Prime Minister Manuel Marrero Cruz closed schools, workplaces, and non-essential industries to conserve energy (Green, 2024).

In Hungary's case, the country had developed future renewable energy strategies since 2011, emphasizing both mid-term and long-term goals. Firstly, the National Energy Strategy (NES) published in the Official Gazette focusing on 2030. Secondly, the National Clean Development Strategy (NCDS) established on 10 September 2021 setting targets for the period from 2020 until 2050. Thirdly, the National Energy and Climate Plan (NECP) introduced in 2020, containing key targets to achieve total decarbonization by 2050 (European Commission, 2023; Government of Hungary, 2021; Hungarian Official Gazette, 2011). However, to implement these strategies regular adjustments are required.

According to the IEA country report of 2022, the NES and NECP focus on energy independence, and taking steps toward cleaner, smarter, and more affordable energy. The future targets include reducing greenhouse gas emissions by 40% compared to 1990 levels, producing 90% of the domestic electricity from carbon-neutral sources, installing 6.5 GW of solar PV by 2030 and ten years later increasing this to 12 GW, installing 40,000 household solar panels, 1 million smart meters (in 2022 this was 100,000) and 1000 MW of storage capacity by 2026 which will contribute to the goal of ensuring that the share of renewable energy sources from the final energy consumption increases to 21%. In order to achieve the target of net-zero carbon emission, the project of implementing two new reactors at the Paks NPP by 2030 and ensuring that the Mátra lignite-fired plant is ready for hydrogen or carbon capture utilization and storage (CCUS) technology would be crucial. Furthermore, in addition to focusing on solar energy, investments in wind and geothermal energy constructions would lead to achieving the 21% goal more effectively.

The NCDS emphasizes full carbon neutrality, based on the Climate Protection Law of 2020. The strategy is built upon three scenarios based on the change in greenhouse gas emissions over the

years. First, the "business-as-usual" scenario states that emissions would only decrease a small portion, and by 2050 it would be around 8.4 million tonnes of CO_2 equivalent. Second, in the "late action" scenario emissions will decrease slowly until 2045, and in the last five years, the reduction would be faster. Third, in the "early action" scenario emissions would decrease rapidly until 2030, followed by a more linear decline during the next two decades (International Energy Agency, 2022).

The above-mentioned policies are also in line with the goals written down in the EU Green Deal report. It is important to note, that if Hungary accomplishes the goals outlined in the NES, NCDS, and NECP it will significantly contribute to national and the European Union efforts to develop a more secure and sustainable energy landscape.

Analysis based on the 'Four As'

For this chapter, the reader will gain insight into a comparative analysis of Cuba and Hungary's energy security based on the "Four As"; *availability, accessibility, affordability, and acceptability* (Kruyt, van Vuuren, de Vries, & Groenenberg, 2009).

Availability

Cuba faces lots of challenges regarding availability, however, it is also trying to survive by working on a more sustainable future. Cuba's electricity generation is mainly dominated by imported fossil fuels (in 2022, 48% of the fossil fuels were imported), moreover, the ageing infrastructure together with the current economic crisis causes frequent blackouts on the island. The year-on-year inflation was in 2021, 77%, in 2022, it decreased to 39%, and in August 2024, it was 30.12%. Decreasing exports have rendered conditions worse. To address these challenges, Cuba is focusing on renewable energy initiatives and moving toward a more sustainable future (Silverman-Roati et al., 2024; Trading Economics, 2024).

Hungary's energy security policies (NES, NCDS, NECP) are focusing on increasing availability, mainly through the development of nuclear reactors, and the net-zero emission carbon plan for 2050. However, Hungary remains heavily dependent on imported oil and natural gas from Russia, with an import dependency rate of 87% in 2020 (International Energy Agency, n.d.).

Accessibility

In response to restricted foreign partnership opportunities, and limited accessibility to secure energy resources and technology, the island is focusing on the development of solar PV parks, aiming to implement 2,012 MW through 92 new facilities, generating 3,400 GWh in order to increase energy independence (Angulo Leiva, 2024).

Hungary faces some challenges regarding the accessibility of energy security, especially heavy reliance on energy imports, because of geopolitical and infrastructural factors. However, in 2024 the government allocated 160 billion Hungarian forints for "building new substations, expanding existing ones and developing transmission lines" (Szőke, 2024) thereby, providing long-term energy security.

Affordability

The Cuban government declared at the beginning of 2024 that, due to growing economic problems, the price of a liter of gasoline would rise from 25 to 132 pesos (Latin America Advisor, 2024). This represents a more than fivefold increase. In 2024, in Cuba, the minimum monthly salary is 2100 Cuban peso (CUP), and on 28 October 2024, the price of gasoline per liter even increased to 156 Cuban Peso per liter (Global Petrol Prices, 2024; Jiménez, 2024), meaning that the price of one liter of gasoline costs 7.4% of the minimum monthly wage. Without outside assistance or investment, energy prices may become a greater burden for Cuba's economy, negatively impacting citizens' everyday lives, which will lead to increased dissatisfaction and immigration. In order to make foreign money to purchase fuel on international markets, Mr. Regueiro added that the government would also open 29 additional gas stations that would only accept US dollars as payment (Atkinson, 2024).

In 2021, the Hungarian government established a decree, about implementing a price cap of 480 HUF per liter for euro-super 95 gasoline and diesel. The price-cap was planned to last for a three-month period starting on 15 November, although it was extended multiple times, lasting for more than a year, until 6 December 2022 (Berezvai & Helfrich, 2024). Despite the decrease of inflation to 3.4% in August 2024 (Hungarian Central Statistical Office, 2024), many households still have difficulties in paying for the cost of energy. Besides gasoline, there are also government regulations for

natural gas and electricity if households consume below a certain threshold.

Acceptability

Cuba's energy security acceptability is mainly impacted by renewable energy projects, such as the plan to install 2,012 MW of solar PV. The aim is to reduce the dependency on imports, decrease greenhouse gas emissions, and enhance domestic energy generation (Angulo Leiva, 2024). Not only will the future initiatives rise sustainability, but they will also ensure the acceptance of energy sources from a social and environmental point of view. However, there are also several challenges, causing significant delays in the projects, such as the lack of financial aid, economic recession, and ageing infrastructure.

Hungary is also improving the acceptability from an environmental point of view by implementing policies such as the NES, NECP, NCDS, or the grid modernization project, which aims to increase renewable energy production while reducing environmental risks.

Aspects	**Cuba**	**Hungary**
Availability	Reliant on imported fossil fuels, old infrastructure, frequent blackouts, but trying to move toward renewable energy initiatives	Dependent on imported oil, but future energy policies focusing on net-zero emission and nuclear power development
Accessibility	Limited accessibility due to lack of foreign partnerships	Heavy reliance on imported energy
Affordability	Increasing prices	Government decree about implementing price-caps
Acceptability	Seeking for future solutions to make energy sources environmentally and socially acceptable, however, delays are expected in these projects	NES, NECP, NCDS, and the grid modernization projects aiming to increase renewable energy production

Table 1. Comparative table based on the "Four As". Edited by the author 2024.

CONCLUSION

In conclusion, Hungary and Cuba have remained reliant on imported fossil fuels and face challenges in connection with financing, providing the right expertise, and extreme weather conditions.

However, they have taken steps to reduce greenhouse gas emissions, mitigate climate change, and diversify the energy mix in terms of future policies and renewable installations. These renewable energy initiatives, furthermore, can lead to improved acceptability of energy security from an environmental and social point of view as well and by the beginning of 2050, after accomplishing the mid-term and long-term goals, we would see if these countries overcame geopolitical, economic, and infrastructure obstacles in order to take full advantage of renewable energy and move toward sustainability.

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ESSAY

PRIVATE MILITARY COMPANIES AND MODERN WARFARE: THE CHANGING ROLE OF STATES AND CORPORATIONS IN CONFLICTS

M. Péter Takács

ABSTRACT

PMCs have undergone significant transformations in recent decades and are now indispensable actors in modern wars and conflicts. The use of PMCs arises from several factors, including budgetary constraints, the inadequacies of traditional military forces, and the protection of geopolitical interests. This paper examines the development of PMCs, their role in international conflicts, and the evolving relationship between states and the private sector. Special attention is given to the legal and ethical issues raised by the operations of PMCs, as well as their impact on international law and the global political order. The theoretical and practical approaches presented in the analysis help in understanding how PMCs shape the future of warfare and the challenges they pose in terms of state sovereignty and international law.

Keywords: *PMCs, modern warfare, ethics, geopolitics*

INTRODUCTION[1][2]

The role of Private Military Companies (PMCs) has undergone significant changes in recent decades, particularly in terms of adapting to the new types of challenges in modern warfare. Alongside traditional state militaries, private sector military and security services have become increasingly essential in managing conflicts. The changing global security environment, political instability, and strict budgetary constraints have provided nations with the opportunity to use external resources capable of effectively responding to military needs while reducing direct state obligations. This trend has led to the growing involvement of PMCs and other private security companies, operating in areas where states often cannot or do not wish to intervene directly (Avant 2005: 1-3.; Leander 2010: 20-25.).

Globally, PMCs have created new challenges and opportunities not only in military operations but also in international law and the economy. In addition to traditional wars, PMCs have found their place in "proxy wars" and asymmetric conflicts, where war has not only a military but also an economic and political dimension. The use of such private actors allows states to avoid direct military intervention while preserving their geopolitical interests. Therefore, PMCs have become not just military actors but also economic, political, and legal players, playing an important role in the new dynamics of modern warfare (Singer 2003: 49-52.; Chesterman & Lehnardt 2007: 3-8.).

The impact of private armies is felt not only at the level of specific conflicts but also in the global economy and the international political order. The use of PMCs is increasingly becoming part of international political decision-making mechanisms, as private

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companies have the opportunity to directly influence the battlefield while profiting from the war economy. The economic and political influence of these actors presents new challenges for international law and global governance, particularly in light of the fact that private armies often do not adhere to international humanitarian law and cannot be clearly held accountable for war crimes (Percy 2007: 222-225; Krahmann 2010: 114-118.).

PMCs, operating outside the responsibility of nation-states, raise questions about state sovereignty, legal accountability, and the ethics of war. The outsourcing of military services to the private sector not only alters the power dynamics between state authorities and corporations but also sparks new discussions on the legitimacy of war and the use of military force, as well as the responsibility of the international community (Cockayne, 2008: 191-194. Scahill 2007: 10-15.).

Thus, private armies play a role in a new, complex warfare structure that encompasses not only military but also economic and political dimensions. As a result of changes in the global political and economic order, the role of PMCs can shape not only the wars of the future but also influence the development of new types of international relations. The future of warfare will increasingly take shape through cooperation and power-sharing between the state and the private sector, where issues of responsibility and legitimacy will be crucial in maintaining global security (Schreier & Caparini, 2005: 6-10.).

The Development and Role of Private Military Companies in Modern Warfare

Private military companies, such as Blackwater (now Academi) and DynCorp, began to gain significant importance in the late 1990s and early 2000s, particularly in relation to the wars in Iraq and Afghanistan. During these conflicts, private military companies not only provided logistical and security support but also took on significant military roles, supplementing — and in many cases replacing — the operations of traditional armed forces. The involvement of PMCs in modern military operations reflects the new challenges arising from the asymmetric, global nature of 21st-century warfare, which contrasts with traditional national armies (Singer 2003:119-123.; Scahill 2007: 25-32.).

The operation of private military companies is closely intertwined with the growing economic significance of the military-industrial complex. During the post-Cold War transformations of the 1990s, particularly with the intensification of international conflicts worldwide, the costs of warfare and the financial burdens of maintaining a military increasingly shifted to the private sector. As a result, PMCs were able to respond quickly to changing conflict situations, while offering an attractive alternative to states, as the expansion of national armed forces often brought political and economic difficulties (Avant 2005: 45-49.; Isenberg 2009: 7-12.).

In modern warfare, PMCs not only provide military and security services but are increasingly involved in the war economy as well. They operate in areas where traditional armies are either unable or unwilling to engage, such as the protection of local resources, infrastructure development, or maintaining the security of critical facilities. The role of PMCs, therefore, has become increasingly complex, and it is inextricably linked to geopolitical interests and economic profit-making, while also emerging as a new type of tool for military and political decision-makers (Leander 2005: 807-810., Schreier & Caparini 2005: 17-22.).

The Role of the State and Its Relationship with the Private Sector

The growing role of private military companies (PMCs) can be attributed not only to economic and military factors but also to the fundamental transformation of the relationship between nation-states and the private sector. The use of PMCs provides states with the opportunity to mobilize military resources without directly increasing the size or budget of traditional armed forces. Such external services—particularly for nations that lack sufficient military capacity—offer an efficient alternative that can supplement state armies. Therefore, the private sector not only offers a cost-effective solution but also provides states with the opportunity to avoid direct military intervention while maintaining influence and pursuing their interests in international conflicts (Avant 2005:16-20.; Leander, 2005: 806-809.).

In addition, the role of PMCs carries significant political and diplomatic risks. The use of private military companies allows a state to avoid direct political responsibility while actively engaging in wartime activities. States employing private organizations can

thus remain somewhat distant from accountability for war crimes and compliance with international legal obligations. Such "proxy wars" raise new political dilemmas, generating serious legal and ethical debates regarding the issue of responsibility between state and private actors (Chesterman & Lehnardt 2007: 3-6.; Percy 2007:222-225.).

Private Military Companies (PMCs) in Conflict Zones

The role of Private Military Companies (PMCs) has undergone significant changes in recent decades, particularly due to the emergence of new types of challenges in modern warfare. The transformation of international conflict dynamics, changes in the global geopolitical environment, and the declining capacities of traditional armed forces have all contributed to the increasing importance of private military service providers in conflict zones (Avant 2005:35-38.). PMCs not only carry out military tasks but have also become economic and political actors, exerting a significant impact on global security and international law (Singer 2003: 49-54).

In conflict zones, PMCs perform a wide range of tasks, with military services at their core. In addition to traditional warfare, where state armies intervene directly, PMCs often participate in so-called "proxy wars" and asymmetric conflicts. In these situations, states may avoid direct military involvement but still seek to achieve important political objectives. Private military companies are often able to carry out tasks that states are either unwilling or unable to perform (Kinsey 2006: 18.).

One of the most important roles of PMCs in war zones is providing military consultancy. These services are particularly valuable in regions where conflicts escalate rapidly, and state forces lack the training and experience needed to respond effectively to threats. PMCs are typically composed of highly skilled individuals capable of training local military forces, introducing modern warfare techniques and tactics, and ensuring the logistical and operational efficiency of armies (Isenberg 2009: 35-36.). Moreover, PMCs can also carry out direct military interventions when necessary, especially in situations requiring rapid response.

Another key role of PMCs is providing security services, particularly in crisis zones where traditional state forces are unable to

ensure adequate security. PMCs take on responsibilities such as protecting diplomatic missions and international organizations, as well as providing security for various companies, institutions, and international aid organizations operating in conflict areas. These defence services include ensuring safe travel, deploying armed security units, and protecting civilian infrastructure (Schreier & Caparini, 2005).

Reasons for the Use of PMCs

There are several reasons for the employment of Private Military Companies (PMCs), which justify their growing role from economic, military, and political perspectives. One of the most important factors is cost-effectiveness. Maintaining and modernizing state armed forces is extremely expensive, especially in countries facing economic difficulties. PMCs offer an opportunity for states to carry out military and security tasks at a lower cost. The use of private companies allows for quicker responses and more flexible operations, without placing excessive strain on state budgets (Singer, 2003).

Expertise and flexibility are also key factors in the use of PMCs. Private military companies employ highly trained professionals who are not only experienced in traditional military tasks but are also proficient in special operations. In rapidly changing conflict situations, these experts are able to make swift decisions and carry out missions that may be too slow or bureaucratically complex for conventional state armies. The deployment of PMCs enables states to adapt more flexibly to local environments and respond quickly to the dynamics of conflict (Avant, 2005).

Legal and Ethical Issues

The use of Private Military Companies (PMCs) raises numerous legal and ethical concerns, particularly in relation to international law and the ethics of warfare. Since PMCs are private entities, they are not always subject to the same legal frameworks as traditional state armed forces. Their activities often create a legal grey area, as not all countries have adequate legislation to regulate or oversee the operations of PMCs (Chesterman & Lehnardt, 2007).

Military operations carried out by PMCs sometimes fail to comply with the rules of international humanitarian law, and holding

them accountable for war crimes or violations can be difficult. Because private military companies often do not fall directly under the authority of any international body, their oversight and accountability pose complex challenges (Percy, 2007). One of the main ethical dilemmas in employing PMCs is that military interventions are frequently driven by economic or political interests rather than humanitarian objectives. The profit motive of PMCs and their integration into the war economy raise questions about the justice and legitimacy of warfare (Singer, 2003).

The operation of PMCs has many legal and ethical dimensions that fundamentally affect the international community and the global security system. One of the primary issues is the legal status of PMCs, which is often ambiguous. Since these private military companies do not fall squarely under the jurisdiction of a single nation-state, their activities raise a host of legal questions. PMC personnel do not always comply with international humanitarian law, which governs the rules of warfare and the protection of civilians. As a result, such companies may provide opportunities for the commission of war crimes and human rights abuses, for which they are often not held accountable (Avant, 2005).

Moreover, the activities of PMCs are built on controversial economic foundations, as armed conflicts are frequently managed in a profit-oriented manner, with humanitarian and ethical principles often sidelined. The presence of private actors on the battlefield and the growing ties between states and private companies have sparked significant debate over how armed conflicts should be handled in the future. Therefore, the international legal regulation of PMCs and their role are shaping both the theoretical and practical aspects of warfare in the years to come.

Private Military Companies (PMCs) and Modern Warfare: The Wagner Group

In recent decades, private military companies (PMCs) have become increasingly prominent in global conflicts, particularly in modern asymmetric wars and geopolitical struggles. One of the most notable and controversial of these entities is the Wagner Group, which has emerged as a complex example of the multifaceted roles PMCs can play, intertwining military operations with international law, geopolitical interests, and economic motivations.

Formation and Evolution of the Wagner Group

The Wagner Group is a Russian private military company that gained widespread recognition in the mid-2010s. The organization is reportedly named after Dmitry Utkin, a former Russian military intelligence officer whose call sign was "Wagner" (Avant, 2005). Although private military companies are technically illegal in Russia under Article 359 of the Russian Criminal Code, extensive ties between Wagner and Russian military and intelligence structures have been widely reported. In June 2023, Russian President Vladimir Putin publicly confirmed these connections, stating that "maintenance of the entire Wagner Group was fully provided for by the state" (BBC News, 2023).

Yevgeny Prigozhin, a Russian oligarch with close ties to President Putin, has been identified as a key figure behind the Wagner Group. Prigozhin's background includes ownership of large catering enterprises (earning him the nickname “Putin’s chef”) and the Internet Research Agency, known for its role in Russian disinformation campaigns and online influence operations (Polyakova & Meserole, 2019). His association with Wagner has been critical in securing financial and political backing for the group’s diverse operations across Africa, the Middle East, and Ukraine (Sukhankin, 2020).

Operational Engagements and Geopolitical Implications

The Wagner Group has played a prominent role in several international conflict zones, often acting in alignment with the strategic geopolitical interests of the Russian Federation. One of its earliest and most well-documented involvements was in eastern Ukraine during the 2014 conflict in the Donbas region. Wagner operatives supported pro-Russian separatists, enabling Russia to exert military influence while maintaining a level of plausible deniability. This covert support strategy allowed Moscow to avoid direct attribution for military actions that violated international norms (Spearin, 2018; Sukhankin, 2019).

In Syria, Wagner's presence became more visible from 2015 onwards, when Russia began its military intervention in support of

Bashar al-Assad's regime. Wagner personnel were deployed to assist Syrian government forces in key military operations, playing a vital role in Russia's effort to reassert itself as a dominant player in the Middle East. This intervention also helped secure strategic military bases and economic interests, including access to oil and gas infrastructure (Martínez & Engvall, 2021).

The group's activities in Libya began around 2018, when it provided military support to General Khalifa Haftar's Libyan National Army in its offensive against the UN-recognized Government of National Accord in Tripoli. Wagner's operations in Libya coincided with Russia's broader objectives of gaining influence over the country's energy resources and securing a strategic foothold in North Africa (Wezeman et al., 2020).

In the Central African Republic (CAR), Wagner has offered security and military training services to the government of President Faustin-Archange Touadéra. Russian support via Wagner has extended to the protection of high-level officials and key infrastructure. In exchange, entities linked to Wagner reportedly obtained rights to extract minerals such as gold and diamonds, indicating a strong link between military presence and resource exploitation (International Crisis Group, 2021; Stronski, 2022).

Most recently, Wagner has become active in Mali, following the withdrawal of several Western forces from the region. Their arrival has been associated with accusations of grave human rights abuses. According to various human rights organizations and UN reports, Wagner-linked operatives have allegedly participated in massacres and abuses committed jointly with Malian government forces, further destabilizing the already fragile Sahel region (UN Human Rights Office, 2023; Bouhlel, 2022).

Legal and Ethical Challenges

The operations of the Wagner Group highlight several significant legal and ethical dilemmas that are increasingly associated with private military companies (PMCs). One of the most pressing issues is the legal ambiguity surrounding their status. Unlike traditional state armed forces, PMCs often operate in a legal grey zone, as they are not consistently regulated by domestic or international legal frameworks. This lack of clarity makes it difficult to hold such actors accountable, particularly in cases where they are

suspected of violating international humanitarian law or committing war crimes (Percy, 2007; Cockayne, 2008).

Another major concern involves the recurring allegations of human rights abuses committed by Wagner personnel in various operational theatres. For instance, in Mali, reports from international observers and human rights organizations have implicated Wagner operatives, alongside local forces, in atrocities against civilians. These incidents underscore the risks associated with deploying private forces in environments with limited oversight, where accountability mechanisms are often weak or non-existent (UN Human Rights Office, 2023; Bouhlel, 2022.)

Moreover, the economic motivations behind PMC activities raise further ethical challenges. In countries such as the Central African Republic, Wagner has not only provided military support but also secured lucrative mining rights in exchange for its services. This blending of military engagement with profit-seeking behaviour creates a conflict between economic incentives and humanitarian principles. In some cases, such arrangements may even contribute to the prolongation of conflicts, as private actors benefit from ongoing instability and resource exploitation (Stronski, 2022; International Crisis Group, 2021).

Ultimately, the Wagner Group exemplifies the complex and often problematic nature of PMCs in contemporary warfare. Their actions reveal the blurred boundaries between state and private interests, where military operations are driven not only by strategic objectives but also by geopolitical ambitions and commercial gain. This reality underscores the urgent need for the development of robust international legal frameworks to govern the conduct of private military actors. Such regulations must aim to ensure transparency, legal accountability, and respect for international humanitarian standards in all conflict settings (Avant, 2005; Dunigan, 2011).

Geopolitical Implications

The role of private military companies (PMCs) carries significant consequences not only in war zones but also within the broader global geopolitical landscape. As non-state actors, PMCs can conduct military operations without triggering immediate diplomatic

consequences for the states that employ them. This allows governments to pursue strategic objectives while maintaining plausible deniability and avoiding the political costs associated with official military deployments. Such an approach is particularly advantageous when traditional diplomatic and military tools prove inadequate. PMCs, by substituting for regular forces, can enable covert or indirect involvement in foreign conflicts (Singer, 2003; Kinsey, 2006).

For the international community, regulating PMC operations is essential to prevent violations of international law and to maintain global security. The proliferation of PMCs could contribute to a reconfiguration of the international order, wherein private actors become powerful agents of military intervention. Without proper legal and institutional oversight, these companies risk undermining state sovereignty and the international legal norms that govern the use of force (Avant, 2005; Percy, 2007). Therefore, both national governments and international organizations such as the United Nations must establish enforceable frameworks that define the responsibilities and limits of PMCs operating in conflict zones.

The growing use of PMCs has fundamentally altered the dynamics of warfare. These companies often provide fast, flexible, and cost-effective military solutions, particularly in environments where national armies are overstretched or lack specific capabilities. However, this operational utility comes with significant legal, ethical, and geopolitical risks. The accountability of PMC personnel remains a major issue, especially in cases of alleged human rights abuses or breaches of international humanitarian law. Moreover, the involvement of private entities in armed conflict challenges the traditional understanding of state-centric warfare and complicates peacebuilding efforts (Leander, 2005; Dunigan, 2011).

Thus, the responsibility falls on both states and international institutions to create and enforce robust regulatory mechanisms for PMCs. Without adequate oversight, the privatization of military force could exacerbate future conflicts, weaken international norms, and increase instability in fragile regions. Ensuring transparency, accountability, and legal clarity is therefore a critical step in managing the evolving nature of modern warfare.

Economic and Political Dimensions: The Role of Private Military Companies in Global Markets

The operations of private military companies (PMCs) have ushered in a new era in the management of global conflicts, extending beyond traditional military and political dimensions to encompass significant economic implications. International corporations, especially those in the energy and industrial sectors, increasingly rely on PMCs to secure critical resources and maintain their operations in volatile regions where local governments often lack the capacity to provide adequate security. Consequently, PMCs have become integral actors in the war economy, as their involvement supports not only military objectives but also the protection of vital economic infrastructure during conflicts (Singer, 2008; Leander, 2013).

By maintaining an active presence in global markets, PMCs exert considerable influence over international economic policy and security arrangements. Multinational corporations, functioning outside the conventional mechanisms of state control, can leverage private military forces to assert and safeguard their political and economic interests in strategic areas. For companies involved in oil extraction, mining, and other resource-intensive industries, the deployment of PMCs serves multiple purposes: beyond physical protection, it facilitates negotiations with local authorities, secures territorial defence rights, and ensures the continuity of their business operations under precarious conditions (Avant, 2005; Chesterman & Lehnardt, 2007).

The Technological Arsenal of the Private Military Sector in the 21st Century

Private Military Companies (PMCs) today are increasingly relying on advanced technologies to provide more effective services. These technologies span various domains—from weapons systems to communication, cybersecurity, logistics, and medical support.

One of the most critical areas is the use of tactical equipment and weapons systems. PMCs typically possess modern personal firearms such as M4 carbines, AK variants, and sniper rifles like the Barrett M82. They also deploy heavy machine guns, including models like the PKM or M240. In recent years, drones and unmanned ground vehicles (UGVs) have taken on greater importance,

serving both reconnaissance and strike functions. PMCs frequently utilize armoured vehicles, including MRAPs or modified Toyota Land Cruiser models.

Efficient communication and electronic systems are also essential for modern PMCs. They use encrypted radio communication devices such as the Harris Falcon III or Motorola APX systems to ensure secure data transmission. In addition, they employ advanced intelligence and surveillance tools, including night vision and thermal imaging systems (e.g., FLIR, AN/PVS-31). Cybersecurity has become an increasingly important aspect of PMC operations, as digital warfare and hacking can offer strategic advantages.

PMC training methods have also modernized, thanks to new simulation technologies. Virtual and augmented reality (VR and AR) allow for realistic combat scenario modelling, enabling personnel to acquire necessary skills faster and more effectively. They also utilize laser-based training systems, such as MILES, which facilitate realistic exercises without risk.

Last but not least, medical and logistical support technologies within PMCs are continuously evolving. Telemedicine and AI-powered wound assessment systems allow injured personnel to receive rapid and effective care on the battlefield. Mobile field hospitals, modular medical stations, and drone-based supply deliveries (e.g., using Zipline systems) ensure continuous resupply and healthcare access, even in remote areas.

PMCs are increasingly integrating advanced technologies across tactical, intelligence, training, and logistical operations. These innovations not only enhance operational efficiency but also provide a significant advantage in modern warfare.

The Transformation of Modern Warfare Dimensions in the Practice of Private Military Companies

The role of drone warfare in the operations of Private Military Companies (PMCs) has fundamentally transformed in recent years and, due to technological advancements, is expected to become even more dominant in the future. The evolution of unmanned aerial vehicles (UAVs), the spread of artificial intelligence and autonomous systems, and the decreasing costs of acquisition and operation all contribute to enabling PMCs to conduct military operations more

efficiently, swiftly, and with reduced human risk (Singer, 2008; Gettinger, 2019). Drone technology allows for real-time intelligence gathering, precision strikes, and the rapid and secure execution of logistical tasks—all while minimizing the need for physical presence on the battlefield.

One of the greatest advantages of drones is their ability to significantly reduce the exposure of personnel to danger. They can be remotely operated or function autonomously, keeping military staff out of direct combat. This is particularly beneficial in environments where traditional military presence is politically or strategically undesirable (Williams, 2020). Real-time reconnaissance capabilities enable quicker, more informed decision-making, giving PMCs a tactical edge. The types of drones used by PMCs span a wide range—from reconnaissance devices such as the Black Hornet Nano or DJI Matrice, to strike drones like the Bayraktar TB2 or Switchblade loitering munitions, and even to logistics drones such as those developed by Zipline (Scharre, 2018). This diversity enables the integrated execution of operations in which intelligence, combat, and supply tasks occur within a single, well-coordinated system.

The development of drone technology is closely linked to other modern forms of warfare, including cyber warfare, hybrid warfare, proxy conflicts, and information warfare. In the cyber warfare context, drones are not merely physical tools but also serve as digital operational platforms. Advanced systems can gather electronic intelligence, intercept communications, and in some cases, even disrupt or breach enemy networks (Clarke & Knake, 2012). With the integration of artificial intelligence, future drones may be able to autonomously detect cyber threats and initiate immediate responses, blending physical and digital theatres of war into a unified domain.

In hybrid warfare, drones play a particularly crucial role, as they are capable of executing covert, targeted actions that may not be classified as overt military acts. As such, drones can be used for military pressure or shows of force in politically sensitive situations without directly implicating the sponsoring state or client (Mumford, 2013). In this context, proxy warfare takes on new meaning. PMCs often act as extended arms of states or organizations that prefer not to openly assume a military role in a given conflict. Drones in the hands of such companies become tools for targeted

strikes and strategic influence while obscuring political accountability (Avant & de Nevers, 2011).

Information warfare is also increasingly intertwined with drones, particularly through the capture and dissemination of audiovisual material. PMCs can produce video and photographic content that may be used as propaganda or to influence public opinion and international responses in real time (Rid, 2020.) The effectiveness of targeted disinformation campaigns and psychological operations is greatly enhanced when supported by authentic—or seemingly authentic—drone footage. With artificial intelligence-driven deepfake technologies and real-time media manipulation, drones are becoming active participants in the information battlefield.

Drone warfare is no longer just a supplementary tool in the operations of PMCs but has become a core strategic component. Through the integration of physical, digital, and informational operations, drone usage opens a new dimension of modern warfare, where cost-efficiency, flexibility, and speed become decisive factors. For PMCs, this means they can execute more complex, multi-layered operations with fewer resources, while still ensuring that their clients retain political and military manoeuvrability. Future battlefields will increasingly be decided in invisible spaces—in the skies, across networks, and within the information domain—where drones operate not just as tools, but as autonomous entities of warfare.

The Legal Status and Regulatory Dilemmas of Private Military Companies (PMCs) in the Context of Global Security

The activities and regulation of Private Military Companies (PMCs) have long been a contentious issue at the international law level. PMCs are playing an increasingly significant role in modern wars and conflicts, yet their legal frameworks are often ambiguous. As they do not fall directly under any single international jurisdiction, their activities raise numerous questions for the international community, particularly regarding human rights, laws of war, and political accountability. As a result, there have been various attempts to regulate their operations, but these have often been more recommendations than binding legal frameworks.

The United Nations (UN) and other international organizations have been striving for decades to provide a framework for PMC operations. In 2001, the UN issued the "Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights" recommending states and private companies to regulate their activities (UNHRC, 2008). In 2011, the UN Security Council adopted Resolution 1973, which included measures aimed at clarifying the legal status and responsibilities of PMCs, primarily to prevent human rights abuses and violations of international humanitarian law (UN Security Council, 2011). Additionally, the Geneva Conventions and their Additional Protocols include relevant provisions regarding mercenaries and combatants, but they do not offer a comprehensive legal classification for PMCs (ICRC, 1949). The Montreal Convention (1984), while not specifically designed for PMCs, addresses the responsibilities of individuals and companies during military operations and sets out principles potentially applicable to private military actors (Montreal Convention, 1984). Similarly, the African Union's Mandatory Code of Conduct for Private Security Companies (2009) seeks to clarify the legal status and operational standards of private military and security companies, particularly within Africa where PMCs have a significant presence (African Union, 2009).

National regulations present a varied landscape. The United States controls PMC operations through multiple frameworks: the International Traffic in Arms Regulations (ITAR) governs the export of military equipment, while Army Regulation 715-9 provides specific guidelines for private military companies (U.S. Department of State, 2020; U.S. Army, 2017). The United Kingdom and other states also have legislative measures aimed at regulating private military and security companies operating in conflict zones (UK Ministry of Defence, 2010). Major powers and international organizations—such as the UN, NATO, and the EU—play key roles in the oversight of PMCs. The UN's various agencies continuously work to develop legal and ethical norms and assist member states in supervising PMC activities (UNDPKO, 2018). NATO, a significant PMC user in politically sensitive missions, seeks compliance with international legal norms through coordination and operational oversight but lacks direct legislative authority (NATO, 2016). The European Union pursues transparency and accountability in PMC operations within its Common Foreign and Security

Policy (CFSP), employing sanctions against companies that violate international law and promoting human rights considerations (European Commission, 2021).

However, major powers such as the United States, Russia, and China, often use PMCs strategically, complicating efforts to establish unified international regulations. Political and economic interests frequently hinder the development of comprehensive legal norms, despite the pressing need for cooperation to maintain global security (Avant, 2005; Kinsey, 2006).

In conclusion, although various initiatives exist to regulate PMCs under international law, the system remains fragmented and lacks universal binding force. Moving forward, establishing a comprehensive international legal framework that governs the global operations of PMCs is essential. Achieving this will require enhanced cooperation among major powers, alongside coordinated efforts by the UN, NATO, and the EU.

The Global Role of Private Military Companies: Countries, Interests, and Impacts

Private Military Companies (PMCs) play a significant role in military and security operations worldwide, particularly in countries where active conflicts are taking place or where governments are unable to provide adequate military and security presence. The tasks of these companies include supporting combat operations, providing security services, and participating in international humanitarian and military missions. Numerous such companies operate in different regions of the world, and the following highlights some of the most well-known ones and their activities.

The United States is home to the most prominent and largest private military companies, which play a major role not only in U.S. but also in international military operations. The most famous of these is Blackwater, later rebranded as Academi, which gained notoriety during the Iraq War and subsequently participated in operations in Libya, Somalia, and Afghanistan (Scahill, 2007; Singer, 2008). DynCorp International is another key American PMC, heavily involved in Iraq and Afghanistan, as well as in Colombia and Somalia (Avant, 2005). Triple Canopy is also significant, with operations in the Middle East and Africa (Leander, 2005).

The United Kingdom is another important player in the private military company market. G4S (Global Security Services) operates in the UK and abroad, providing security services alongside law enforcement and military support tasks (Isenberg, 2009). Aegis Defence Services, a British company, has delivered defense and security operations in Iraq, Afghanistan, Libya, and Somalia (Percy, 2007).

In Russia, the most prominent PMC is the Wagner Group, which is believed to have direct ties to the Russian government and has been actively involved in several geopolitical and military conflicts. Wagner's operations have extended to Ukraine, Syria, Libya, and the Central African Republic, where it serves to protect Russian strategic interests (Galeotti, 2019; Harding, 2021).

South Africa has also been home to influential PMCs. Executive Outcomes was a pioneering company operating in Angola and Sierra Leone, known for its role in post-conflict stabilization (Chesterman, 2007). Sandline International, another South African firm, was active in Sierra Leone and Papua New Guinea, often stirring international debate due to its involvement in politically sensitive operations (Singer, 2008).

Several African countries host PMCs that contribute to conflict management and security provision. The UK-based Olive Group has offered security services in Iraq, Afghanistan, and Syria, often operating alongside coalition forces (Leander, 2005). The activities of companies like Executive Outcomes and Sandline International have frequently intersected with economic and political interests, sparking controversy at the international level (Avant, 2005).

The Middle East remains a critical theater for PMC activity, especially in Iraq and Syria. The British Olive Group, for instance, played a role in supporting American and coalition forces with military and security operations in these regions (Percy, 2007).

In summary, private military companies are influential actors in the global military and security market. Their operations are vital for many local governments, especially where state military forces are insufficient. However, the involvement of PMCs often raises complex legal and ethical issues, including concerns over violations of international law and human rights (Singer, 2008; Chesterman, 2007).

PMCs and the Future of Warfare

In the future of warfare, the role of Private Military Companies (PMCs) is expected to expand further as technological advancements offer new opportunities for them. Cyberattacks, the use of drones, and intelligence operations could allow private military companies to play a role in new types of conflicts. Alongside traditional armed forces, the use of PMCs is increasingly becoming integrated into modern warfare, as they are able to respond quickly and flexibly to new types of threats. The future of war and military operations may, therefore, bring about a form of global warfare in which the private sector becomes a key player (Singer, 2008; Avant, 2016).

Conclusion

The use of Private Military Companies (PMCs) in modern warfare clearly reflects the transformation of military, economic, and political power dynamics, offering new challenges and opportunities for both the public and private sectors. The growing demand for military services outside traditional armed forces suggests that future conflicts will increasingly involve direct intervention from not only state actors but also private players. The economic and military role of PMCs in international conflicts is becoming more significant, while legal and ethical issues surrounding such companies continue to arise. One of the key questions in the future of warfare will be how the international community is able to regulate and control the activities of private military companies, and how these companies will shape the functioning of international law and the geopolitical order (Avant, 2005; Kinsey, 2006).

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ESSAY

CHINA'S TECHNOLOGICAL ADVANCEMENTS – RESHAPING THE WORLD ORDER AND CHALLENGING U.S. DOMINANCE

Viktória Tujner

ABSTRACT

As China transformed from the world's factory into one of the world's leading tech powers, concerns about its rise began spreading worldwide, especially in Western countries. With the help of advanced technology, such as artificial intelligence or 5G infrastructure, Beijing is challenging traditional power structures and redefining the world order. This shift is not only technological, but also geopolitical. This article explores the geopolitical implications of China's technological rise. The goal is to understand how technological expansion plays a central role in China's broader ambition to reshape the current world order and what this means for U.S. hegemony, global alliances, and the future of a free and open internet.

Keywords: *China, technology, geopolitics*

INTRODUCTION

The use of Private Military Companies (PMCs) in modern warfare clearly reflects the transformation of military, economic, and political power dynamics, offering new challenges and opportunities for both the public and private sectors. The growing demand for military services outside traditional armed forces suggests that future conflicts will increasingly involve direct intervention from not only state actors but also private players. The economic and military role of PMCs in international conflicts is becoming more significant, while legal and ethical issues surrounding such companies continue to arise. One of the key questions in the future of warfare will be how the international community is able to regulate and control the activities of private military companies, and how these companies will shape the functioning of international law and the geopolitical order (Avant, 2005; Kinsey, 2006).

As China transformed from the world's factory into one of the world's leading tech powers, concerns about its rise began spreading worldwide, especially in Western countries. China is not only catching up with the West but is actively shaping the digital future, following its own rules. With the help of advanced technology, such as artificial intelligence or 5G infrastructure, Beijing is challenging traditional power structures and redefining the world order. This shift is not only technological, but also geopolitical. Through ambitious state-led initiatives, China is positioning itself at the centre of global innovation.

What makes this transformation particularly significant is the way China is exporting its model abroad, offering countries in the Global South access to affordable, high-quality digital infrastructure (Heeks et al., 2024a; Xi, 2024). While Western governments warn of "digital authoritarianism" (Cheney, 2019; Gravett, 2020), developing nations seem to welcome Chinese alternatives, as it simply provides value for money. This creates a growing divide not only in technology but also in internet governance and related global norms.

This article explores the geopolitical implications of China's technological rise by examining four key areas. First, it explores China's global tech initiatives, revealing its long-term visions and plans. The second part presents the global expansion of Chinese technologies, where the practical results of these initiatives can be observed. The third section examines the most recent developments

in the escalating rivalry, particularly Western reactions, with a focus on the United States. Finally, the article outlines possible future scenarios for global digital order, taking into account the possibility of a fragmented internet landscape.

The goal is to understand how technological expansion plays a central role in China's broader ambition to reshape the current world order and what this means for U.S. hegemony, global alliances, and the future of a free and open internet.

Chinese Visions Related to Technology

If we want to understand China's current geopolitical strategy, we need to look back as far as the "century of humiliation" (Kaufman, 2009). This period began with the Opium Wars, when British and other colonial powers – and later Japan – compelled China to open its markets to foreign influence. The century-long period of foreign domination – which came to an end with the founding of the People's Republic of China in 1949 – left a deep imprint on Chinese society and continues to influence the thinking of its leadership today. One of China's most comprehensive future-oriented visions, the "great rejuvenation of the Chinese nation", seeks to restore the power and influence of China's ancient civilization from before the century of humiliation, now adapted to 21st century realities (Loh, 2021). This concept has long played a central role in the Chinese Communist Party's political agenda. Technological development is seen as one of the key pillars of this plan.

Due to scope limitations, this article does not attempt to comprehensively map out China's long-term strategic visions. Instead, it focuses on those concepts and programs that are closely tied to technology and development. The two most important of these initiatives are Made in China 2025 and China Standards 2035.

The former was announced ten years ago by the current General Secretary, Xi Jinping, with the stated goal that by 2025, China should become a global leader in the production of high-tech goods such as information technologies, robotics, biomedicine and advanced aviation equipment (The State Council of the People's Republic China, 2015; Wübbeke et al., 2016; Zenglein & Holzmann, 2019). Another key objective of Made in China 2025 is to reduce dependence on foreign technologies. Closely linked to this is the China Standards 2035 program, which is not only about manufacturing but also about shaping industrial standards in critical areas

such as 5G, artificial intelligence, and quantum computing (Wu, 2022; Xinhua, 2021). China aims to reach a level where it can not only manufacture and innovate, but also define global standards, thereby influencing the trajectory of digital development (Hillman, 2021).

It is clear that China's goal is to achieve technological leadership. In order to ensure that the technologies it develops are widely adopted and exported across the globe, China uses the Digital Silk Road, a sub-initiative within the broader Belt and Road Initiative, as a key framework (Shiu, 2020). The BRI is a vast foreign policy and economic effort focused on infrastructure development (McBride et al., 2023). Through the construction of digital infrastructure such as undersea cables, land-based networks, and satellite services, China is gaining significant influence across all layers of physical infrastructure globally.

Western Concerns

This process has triggered serious concerns among Western countries, particularly from the United States and its allies. The nature of these concerns will be explained later. First, however, it is worth clarifying how digital order – the global network that spans the Earth – is connected to the question of world order.

The digital infrastructure systems built across the three aforementioned layers (sea, land and outer space) form the basis of the global internet. As its name suggests, the internet (inter-network) consists of countless smaller networks and the devices that connect them. Over the decades, these networks have become increasingly accessible and widespread, forming what we know today as the World Wide Web. Just like in the system of international relations, there is no single "world power" dominating this complex and interdependent structure. It functions through the cooperation and rule-making of numerous smaller actors. In this sense, the internet exists in its current form because actors agree on certain rules and protocols and operate the necessary systems accordingly. It also means that if one actor chooses not to comply, they can modify the rules or change access to certain networks.

The physical infrastructure behind the internet (such as undersea cables, data centres or 5G towers) is typically controlled by specific actors, such as companies or states (Freyburg et al., 2023; Winseck, 2017). Since these actors have substantial influence over how

the networks are operated, they theoretically have the capacity to change the rules, which in the long run may affect access, data flows, and the overall structure of the global internet (Nye, 2010). These developments highlight a shifting digital power balance that goes beyond economics, raising strategic and political implications – topics explored in the following sections.

According to a report published by the Australian Strategic Policy Institute (Leung et al., 2024), China leads in research performance across various advanced ICT technologies, indicating that it is already a major player in both the operation and development of the infrastructures described above. Based on this, it can be argued that the goals outlined in Made in China 2025 and China Standards 2035 are achievable for China and present a real competitive challenge to the technologically advanced Western countries (Atkinson, 2024).

Global Initiatives and their Implications

The previously mentioned BRI project helps facilitate the global export of Chinese products, allowing other countries to benefit from China's own "development experience" (Shiu, 2020). Domestically, the BRI is a political initiative closely tied to the vision of realizing the "Chinese Dream." At the same time, it also serves as a foreign policy tool aimed at creating a more China-friendly international environment: one that allows Beijing to develop according to its own rules and expand its sphere of influence (Clarke, 2017:7). Exporting advanced but affordable technologies to developing regions offers a practical way to achieve this, strengthening economic ties that may later evolve into political influence. But how exactly does this process unfold?

While most major infrastructure and technology projects are connected to the BRI framework and its digital extension, the Digital Silk Road, not all are officially labelled as such (He, 2024; Oliveira et al., 2020). Still, the scale of investment is extremely high, reaching hundreds of billions of dollars, and possibly more when loosely associated projects are also considered (McBride et al., 2023; Steil, 2022). These projects often follow a similar pattern: China provides funding, mostly in the form of loans, and Chinese companies carry out the work. As a result, firms like Huawei, ZTE, and the major Chinese telecom operators (China Telecom, China Mobile, and China Unicom) are expanding their global presence

(ASPI, 2021; He, 2024). By building digital infrastructure abroad, these companies are increasing their influence in foreign markets and helping spread Chinese technologies and standards.

This process not only gives China a growing economic role in these regions but also helps the country to shape how digital infrastructure is built and governed. Over time, this may increase other countries' reliance on Chinese systems and approaches, creating long-term influence in areas that are strategically important to China. These efforts are not limited to the Global South, but also appear in developed countries across the Global North (American Enterprise Institute, n.d.; ASPI, 2021). The opinion on Chinese technology however, is largely divided in different regions.

The Potential Threat of Chinese Technology

The reception of Chinese technologies largely depends on whether the recipient states perceive them as "authoritarian tools." In Western democracies, there is growing concern that alongside Chinese systems, Chinese values and a fundamentally different worldview might also be transmitted, either directly or indirectly (Sloss, 2023). Before analysing how the United States or the European Union respond to this challenge, it is important to examine the mechanisms through which China, or any other state with similar capabilities, may exert influence through the different layers of digital infrastructure.

As mentioned before, the power of infrastructure ownership is undeniable. The actors who control the layers of our digital infrastructure make the rules and can have a large impact on the data flow.

Figure 1. The Chinese technology stack (Heeks et al., 2024b)

As seen on figure 1, China is able to export all these different layers, offering the whole package to the recipient countries. Starting from the top, we see increasingly essential elements that make the internet work. The article will highlight the most important Chinese technologies found on multiple levels.

Controlling Services and Platforms

The first layer users interact with it are the services and different applications, used for entertainment, communication, e-commerce and many more. Even these simple platforms can influence the behaviour and opinion of users. Some Chinese apps were crafted with the principle of censorship by design in mind. The WeChat application is the perfect example (Kurlantzick, 2023). It is often referred to as a super app, integrating a wide variety of services into one single platform. WeChat can be used for chatting with friends, buying tickets, transferring money or sharing images on your feed. The possibilities seem endless, but it has strict limitations. As the app has embedded censorship mechanisms, users cannot search or access politically sensitive content, such as information or references to the 1989 Tiananmen Square massacre

(McDonell, 2019). Content moderation obviously aligns closely with the Chinese Communist Party narratives (Ensafi et al., 2015).

These super apps are also useful for gathering personal information and monitoring the population, having access to payment data or search history from one single source. Furthermore, the censorship serves as a tool for authoritarian regimes to shape public narratives by blocking certain type of content. It is important to note that other popular platforms like Google or Meta also collect and use user data, but the difference lies in how that data is regulated and to whom it is accessible. In China's case, legal frameworks require companies to cooperate closely with state authorities (Creemers et al., 2018).

Systematic Surveillance Technologies

Still in the first layer we see Smart City technologies. Chinese firms are heavily involved in building these systems in many regions of the world (ASPI, 2021). The concept of Smart Cities is characterised by automation and AI-powered solutions, making cities safer and functioning efficiently (Hillman & McCalpin, 2019; Huawei Enterprise Indonesia, 2020). To achieve this, extensive surveillance camera systems and centralised monitoring platforms need to be installed.

While such tools are introduced as innovations to improve public security, they also enable mass surveillance and therefore limit civil liberties in states with weak democratic functions. Huawei, one of the most known large Chinese companies is building Smart Cities not only in Africa (for example in Nairobi, capital city of Kenya) but also in developed nations of Europe (Heeks et al., 2024b; Jili, 2020, 2022). In Belgrade, Serbia an extensive surveillance system was also introduced in recent years (Bjeloš, 2021).

These systems not only serve as a tool for the local regimes, but for Beijing as well. There is a documented case of data collection in Addis Ababa, Ethiopia where the headquarter of the African Union is located. In the building, a Huawei surveillance system was installed. Every night, data (meaning camera footage) was automatically sent to a server in Shanghai (Kadiri & Tilouine, 2018). This case serves as a warning for every external actor working with Chinese companies on similar projects.

National and International Telecom Infrastructure

At the core of digital ecosystems, we have the telecommunications infrastructure, which serves as the physical backbone of the internet. If this layer is absent, no other services work. Huawei and ZTE, both Chinese companies are global leaders in providing 4G and 5G networks. The former built around 70% of all African 4G systems (Hruby, 2021; Mackinnon, 2023). As discussed earlier, many of these projects were also financed by Chinese loans, creating strategic dependencies (Steil, 2022). States that rely on Chinese infrastructure may find it difficult to diversify in the future or to resist political pressure from Beijing, especially with high amounts of debt.

Moreover, in moments of crisis, such as political protests or contested elections, governments have used their control over networks to restrict internet access and avoid users sharing information about what is happening. Countless examples are documented of internet shutdowns all around the world, meaning that this is a tool often used by authoritarian states (Bhalla & McCool, 2021; Mogul, 2023). A telecommunications system built with Chinese assistance may make such actions easier to execute, as China itself has extensive experience with censorship and monitoring online content.

Exporting the Governance Model: The Chinese Internet as Blueprint

At the bottom we can find the governance layer, which determines the way every other layer works. It is decided here, what rules the game is played by on national and – because of the interdependencies – also on international levels. Through standard-setting in international organizations, bilateral agreements and capacity-building programs, China promotes a model of "cyber sovereignty" (Karmazin, 2023). According to this concept, states should exercise full control over the internet within their borders (State Council Information Office, 2010). The Chinese model, often referred to as the "Great Firewall of China" (Ensafi et al., 2015) exemplifies this approach and could serve as the basis for an "alternative version" of the internet.

Finally, it is important to note that none of the technologies exported can be seen as "authoritarian" themselves (however this debate may be worth examining in future research), but rather it will be the actors who use and control it will decide what kind of system to build from it.

In conclusion, the implications of each layer suggest that China is not merely offering digital infrastructure as a commercial or developmental product. Rather, it is facilitating the creation of alternative digital ecosystems, which may differ significantly from the open, global internet model traditionally promoted by liberal democracies. If Chinese companies are able to finance, build, operate and control the entire telecom infrastructure, in theory they are able to establish their own system of networks, their own internet, an alternative to the web as we know it. Now it is a real possibility for countries with weak democratic institutions, or authoritarian tendencies to obtain a ready-made system that makes it possible for them to create and operate a network on their own terms.

This shift represents a significant challenge to the long-standing technological dominance of the West. Whereas for decades, global connectivity was shaped primarily by Western firms and institutions, China now offers a competing model, both technically and ideologically. The key question, therefore, is not simply whether China is connecting the world, but whether it is actively reshaping the global internet in its own image.

Recent Developments and Reactions

The threats outlined earlier have not gone unnoticed by other global players, particularly democratic ones such as the United States, Australia, the United Kingdom, and the European Union (Brown, 2024; Bryan-Low et al., 2019). The United States has taken a firm stance against the global expansion of Chinese technology, introducing sanctions and openly encouraging other countries to follow suit (U.S. Department of State, 2020). The second Trump presidency marks another turning point in the history of Sino-American relations, which – following an intense period of "tariff war" – now appear to have settled into a more stable, if tense, phase. The European Union, however, finds itself at a crossroads, lacking a unified position on how to respond to the China challenge

(Cieślik, 2024; Hamilton, 2025; Morselli, 2025). While some member states have banned Chinese suppliers like Huawei, others continue to pursue active business partnerships with these companies.

In the following section, the article examines the exact concerns raised by the actors mentioned and presents the key developments and reactions as of June 2025.

U.S. Reactions

Since President Trump began his second term, several measures have been taken to curb the global spread of Chinese technologies. It is important to note that this does not represent a significant departure from the Biden administration's approach, as export restrictions targeting China were also in place during his presidency. Trump is, in fact, continuing to implement his original vision, which has been present in American China policy since his first term (Biden, 2022; Trump, 2017).

In the early months of Trump's second presidency, the media primarily focused on the renewed tariff war with China. The two powers engaged in a tit-for-tat escalation until a seemingly final agreement was reached. As of the time of writing, this trade war (which has effectively been ongoing since 2016) has entered a new phase: Beijing and Washington have agreed to continue the export of rare earth elements from China, in exchange for a reduction in previously imposed tariffs, which had reached as high as 145%, and the rollback of some retaliatory measures (Mason et al., 2025). While it is still too early to declare an end to the trade war, this agreement suggests that China clearly views its export capacity to the United States as a strategic priority, and is willing to compromise in order to preserve it. Nevertheless, the extremely complex system of overlapping tariffs remains a major obstacle for Chinese exports. One immediate consequence of the trade war is that while imports to the U.S. have declined, Chinese products are now arriving in much larger volumes in Europe (SL, 2025).

During this period, two Chinese applications have also raised serious concerns among American officials. The first is TikTok, owned by the Chinese company ByteDance. The app, which has taken the world by storm since 2016, now has approximately 170 million users in the US according to most articles (Duffy, 2025; Jamali & Gerken, 2025), however, the exact number cannot be verified from official sources. It is viewed as a national security threat

due to fears that the Chinese government could gain access to user data collected through the platform. There is also concern that the algorithm could be manipulated to influence American users' thinking or political opinions (Liu, 2024).

As it was previously explained, people interact most directly with the application layer of digital systems. What they see and the type of information they access inevitably affects their behaviour and worldview, whether they are aware of it or not. In this context, American fears are not groundless. However, it does raise the question of how digital freedom is affected when the only acceptable future owner of TikTok must be an American company.

Another major flashpoint is the AI race. A recent example is the DeepSeek app, developed by a Chinese startup of the same name. Upon its release, the app quickly climbed to the top of the App Store charts (Ng et al., 2025). The United States is paying close attention to these kinds of developments, as artificial intelligence has become one of the most sensitive and strategic areas of technological rivalry between the two powers.

This is where the issue of semiconductors and chips comes into play. Despite American sanctions, there is growing concern that Chinese firms may still be acquiring advanced chips through complex networks of shadow companies and third-party intermediaries (Allen, 2025). These chips are crucial for developing such advanced AI systems, as DeepSeek. The Biden administration already tightened export restrictions to limit access to high-end GPUs and AI accelerators, but we have yet to see how Trump will navigate this race.

His return to office suggests a likely continuation, or even intensification of these efforts. Based on his previous term, we can expect stricter export controls, stronger pressure on allies to follow suit and potentially more aggressive moves targeting Chinese firms operating abroad.

THE EU AT CROSSROADS

Among EU member states, there is no unified stance on how to manage the growing dependence on China. The current economic situation, combined with the unpredictability of Trump's second presidency and overall U.S. relations, demands that some countries maintain or even deepen cooperation with China and Chinese firms. Certain states – such as Hungary, Greece, and Croatia – still

do not perceive this trend as a threat (RFE/RL, 2024; Wisnugroho, 2025).

Others, however, argue that EU member states committed to democratic values cannot afford to form closer ties with a country viewed as authoritarian and frequently accused of human rights violations. According to this perspective, so-called "digital authoritarian" technologies, such as facial recognition surveillance systems should not be allowed to enter Europe. These concerns appear to have intensified only recently, as many EU countries are still engaged in extensive cooperation with companies like Huawei and other Chinese tech giants, including in the previously discussed Smart City projects. These firms are present not only in telecommunications and transportation, but also in research and development sectors across Europe (ASPI, 2021).

The most recent lobbying scandal in the European Parliament is also tied to Huawei. In spring 2025, it was revealed that representatives of Huawei had offered various high-value gifts to MEPs in exchange for voting in favour of the company's interests or speaking publicly in its support (Genovese, 2025; Morselli, 2025). This incident highlights how Chinese presence and at times, corruption may influence EU policymaking and strategic direction.

The European Union is thus at a crossroads: should economic interests take precedence over belonging to the Western alliance and defending strong democratic values? Or should the EU align itself more closely with the United States by excluding Chinese technologies from the development and operation of critical systems such as 5G networks? If it chooses not to do so, the data of European citizens could potentially be exposed to significant risks.

If Chinese companies are allowed to continue building Smart City projects in European cities, member states may be indirectly supporting the spread of Chinese-style, surveillance-based digital authoritarian models within the EU. Of course, it is important to stress once again that the actual use of such systems depends on the actors operating them. In democratic states with strong human rights protections, it is unlikely that smart technologies would be used for systematic surveillance or the targeting of political opposition. Still, certain tendencies within Europe suggest that not all governments would reject this possibility outright. Cooperation with China and the adoption of Chinese technologies could facilitate such developments, especially if the companies that built the

infrastructure retain a role in the system and gain access to sensitive personal data.

COUNTERARGUMENT

While many concerns surrounding Chinese digital expansion are framed in terms of privacy and freedom rights, it is essential to acknowledge that these debates are deeply intertwined with questions of competition and economic interests. China's rapid emergence as a provider of affordable, high-quality technologies ranging from 5G infrastructure and AI systems to undersea cables and cloud services has undeniably disrupted the global market. In regions where Western technology has become either unaffordable or unavailable, Chinese alternatives fill the void (Mackinnon, 2023). This raises an important counterargument: are the criticisms of Chinese technology genuinely about protecting civil liberties, or are they more about protecting economic dominance?

Europe's own struggles in maintaining a competitive edge in the telecommunications sector highlight this tension (Lee-Makiyama & Lozano, 2024). With no major global players left in the field, the European Union finds itself in a difficult position, caught between upholding democratic values and maintaining global economic relevance. This points to a broader truth: the issue is not the technology itself, but how it is used and by whom.

CONCLUSION: THE NEW DIGITAL AND GLOBAL ORDER

Purchasing Chinese technology does not automatically turn a country authoritarian. But it does open possibilities, especially for weak or illiberal democracies, to adopt more controlling and surveillance-based governance models. Therefore, the line between efficient governance and authoritarian control can become dangerously thin.

As we can see, digital dependency is inevitable in an interconnected world. The internet is not a single, unified entity, but more similar to a patchwork of infrastructures, standards and governance models controlled by various states and private actors. However, if one power acquires the ability to shape or even dominate this structure, we may be witnessing the formation of an alterna-

tive web: a network governed by different rules, values and expectations. Looking ahead, several future scenarios are possible. One is a digital hegemony, where one actor controls much of the global internet infrastructure. Another is a bipolar world, with competing American- and Chinese-led digital spheres and states have to "pick a side" or will be pressured to do so. A third option is multipolarity, a more fragmented system where states and firms selectively adopt technologies and governance models to suit their interests, leveraging both Western and Chinese tech.

What links all these scenarios to broader questions of global order is the value of information. From social media algorithms and data centres to 5G towers and satellites, these tools form the foundation of our daily lives. In the digital age, whoever controls access to information also controls people's opinions, behaviours and ultimately, political outcomes. Users are voters, voters elect governments and governments define the trajectory of international relations. The idea of the internet as a neutral, open space is a powerful one, but it is increasingly difficult to sustain in reality. The ownership of infrastructure matters, and so do the rules governing it (Winseck, 2017).

It is also important to acknowledge once again, that digital control is not exclusive to China. Western companies such as Meta or Apple have long faced criticism for opaque data practices and invasive advertising models (McGuigan et al., 2023). The difference lies in how governments choose to respond, how they protect their citizens' rights and whether they use these technologies to empower users or to undermine them. In this sense, the central issue is not the technology provider, but the political framework into which the technology is embedded. What matters is the kind of regulation we allow: whether it prioritizes control and censorship, or instead supports transparency, accessibility of knowledge and the free flow of information.

Finally, the role of the Global South – where China appears to be most active – should not be underestimated. These countries are not merely passive recipients of digital infrastructure, but increasingly active participants in shaping digital governance, creating a vast market of novice internet users. Their choice of technology will likely be driven by affordability and quality, though shared political values may also influence these decisions. Whatever path they

choose will help determine whether the emerging global digital order reflects freedom or control.

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