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# Politics in the energy-security nexus: an epistemic governance approach to the zero-carbon energy transition in Finland, Estonia, and Norway

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## ABSTRACT

To reduce the energy sector's CO<sub>2</sub> emissions, sustainability transitions are essential but may have unexpected national security consequences. We investigate policymaking around energy transitions and national security, combining sociology with sustainability transitions thinking to analyse 73 policy documents issued between 2006 and 2023 in Estonia, Finland, and Norway and investigate how zero-carbon energy and security issues have co-evolved with, strengthened, or undermined one another by analysing the rhetoric in official national strategy documents. With an epistemic governance framework, we identify the discourses that contextualise, justify, and explain policymaking in the energy–security nexus. We find that sustainable energy transitions are strengthened by connections to national security when alternative energy niches have matured but undermined for the same reason when fossil fuels are viewed as more robust sources of security. We detect policy intervention points aiming to indicate how transitions are enabled. Estonia and Finland evince strategic directions to destabilise the regime while supporting niches, whereas Norway focuses on continued oil and gas production. Whereas all are in principle in favour of sustainability transitions, they define transitions differently: Estonia values national sovereignty, Finland preparedness and the economy, and Norway sustainable development and economic security tied to hydrocarbons.

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## 1. Introduction

Modern society depends on uninterrupted energy flows; nearly all economic processes require energy to function (Löschel, Moslener, and Rübhelke 2010), and the need for decarbonised energy has become indisputable. Energy efficiency and energy security have become increasingly important on policymaking agendas, especially after geopolitical disruptions to energy flows, such as the Russian – Ukrainian gas disputes in 2006 and 2009 (Goldthau 2008) and the 2022 Russian invasion of Ukraine, which dramatically reshaped the European energy sector. In addition, crises induced by natural catastrophes, such as the Fukushima nuclear accident in 2011, have quickened the pace of energy transitions (Loorbach and Verbong 2012). Cyber-attacks and human and software malfunctions can also cause major damage to energy services (World Energy Council 2019). Therefore, it is worth exploring how governments have dealt with security concerns in the context of zero-carbon energy transitions between 2006 and the events in 2022 that elevated security on energy policy agendas across Europe.

We rely on two theoretical concepts: epistemic governance and sustainability transitions. Epistemic governance offers an account of how vast societal changes

are advanced under myriad interconnecting interests. For example, energy transitions are not only impacted by technological solutions or key actors' decisions but also by actors' perceptions of a given situation and the rhetorical strategies they employ to justify their political choices. Politicians aim to persuade their peers and citizens of a given reality and the responses that are required (Alasuutari and Qadir 2014, 2019) to enable sustainability transitions without jeopardising national security. Thus, we seek an answer to the following question: How have zero-carbon energy and security issues co-evolved with, strengthened, or undermined one another in national policy strategies of Estonia, Finland, and Norway between 2006 and 2023?

We study policy documents from a 17-year period in three small Northern European countries: Estonia, Finland, and Norway. Despite transnational efforts (IPCC 2022) and strong domestic commitments to significantly lower emissions, these countries still produce and use fossil fuels. In 2020, 39.5% of Estonian energy production came from oil shale (Statistics Estonia 2021), while 14% of Finnish energy production was from fossil fuels (OSF 2021). Although Norwegian hydropower enables almost fully decarbonised electricity, Norway supplies 2%–3% percent of global oil and gas (IEA 2022a). Why have these

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highly developed and seemingly pro-climate countries yet to fully decarbonise their energy systems? We respond that framings of national security influence progress in zero-carbon energy transitions. We analyse national political discourses in government policy strategy documents to identify the rhetorical tactics by which politicians justify their arguments and decisions around energy transitions. We study how these documents articulate and envision the connections between energy, climate, and security issues and their normative underpinnings when trying to convince audiences in the energy–security nexus.

That nexus refers to the connections between the energy and security sectors: that is, the social, technological, political, economic, and geopolitical features present in contemporary policymaking regarding zero-carbon energy transitions. It ‘reflects a combination of two different perspectives on energy: environmental and geopolitical’ (Kuzemko 2013, 3). In that nexus, energy and security are treated as positively related, covering both energy security and climate targets with increasing state intervention, and leading to the increased influence of geopolitics in the energy sector (Kuzemko 2013).

This paper addresses energy as part of sustainability transitions and ‘socio-technical systems’ as socially constructed (Geels 2020; Geels et al. 2017). Transitions involve a complex group of actors with differing beliefs and values, societal statuses, and interests. They are fundamentally disruptive and contested, ‘not only about the market diffusion of new technologies but also about changes in user practices, cultural discourses, and broader political struggles’ (Geels et al. 2017, 464). Due to complexity, uncertainty (Hoppmann, Huenteler, and Girod 2014), and differing objectives, transitions are only feasible via cooperative negotiations and trade-offs between stakeholders. They are directional, pursuing visions and pathways for change (e.g. Yang, Schot, and Truffer 2021) and emphasising an important role for states in guiding transitions via politics and policy (Johnstone and Newell 2018). Research on public policy in sustainability transitions has increased (e.g. Kern and Rogge 2018; Kern, Rogge, and Howlett 2019), but studies on how policies are framed, envisioned, and justified – that is, socially constructed – in national policymaking are rare. Bijker (1995, 273) states that ‘the technical is socially constructed, and the social is technically constructed’, calling attention to the technological bearings that are closely connected with social aspects. Geels (2020) argues for more social constructivist theory in transitions literature, as transitions cannot be separated from their cultural and social aspects and impacts. Sociological theorisation evaluates this contextuality of transitions and ongoing reconstruction by the myriad actors involved (Markard, Raven, and Truffer 2012).

Our contributions to the sustainability transition literature are to investigate the partly unexpected security connections of energy transitions and to demonstrate how political culture and language operate as significant influencing factors (Geels et al. 2017; Victor 2015). We analyse political rhetoric in comparison with the policy intervention points identified in the sustainability transitions literature as enabling transitions to materialise (Kanger, Sovacool, and Noorköiv 2020). Additionally, we test the epistemic governance framework in a novel way with transition studies.

This paper is structured as follows. Section 2 presents a brief overview of literature on states in governing energy transitions and previous research on rhetorics in sustainability transitions studies. Section 3 presents the analytical framework, while Section 4 contextualises the case countries. In Section 5 research approach and method are described, followed by Section 6 where we present our analysis. Section 7 discusses the results and Section 8 concludes.

## 2. Conceptual foundations of sustainability transitions research

### 2.1. States governing sustainable energy transitions

Critical constructivist thinking about security focuses on how power is integral to the social world and how security is perceived in several cultural sources (Peoples and Vaughan-Williams 2021). We understand state capacity in the energy–security nexus to cover, for instance, energy security, defence, security of critical infrastructure, and geopolitics, all of which are subject to political debate. Security and the securitisation of fossil fuel-based energy (policy) have been widely researched (Siddi 2018; Wilson 2019), with increasing attention to the security of renewable energy sources (Szulecki and Kuszniir 2018; Blondeel et al. 2021; Kivimaa and Sivonen 2021), including critical materials for energy transition technologies (Lee et al. 2020) and linkages between right-wing populism and energy transitions (Lockwood 2018; Žuk and Szulecki 2020). Research also suggests less severe consequences of transitions if problems are addressed proactively, with renewable energy sources reducing large energy conflicts (Scholten et al. 2020) and increasing fairness (McCauley et al. 2019).

Transitions have been described as long-term socio-technical system shifts (Grin and Schot 2010). According to the multi-level perspective, which is often used to investigate transitions, transitions involve the dynamic interplay of three levels: the landscape putting pressure on regimes, a socio-technical regime that is a rather stable entity of rules that only change slowly due to, for instance, path dependency,

and niches as protected spaces where new disruptive innovations are developed that may later overturn the regime (Geels 2004). Geels and Schot (2007) describe the differing pathways in which these dynamics may play out.

The energy sector has long been researched as part of sustainability transitions, a key area in empirical transitions research (Loorbach and Verbong 2012). Early interest on policymaking in (energy) transition research was low, but such research has since blossomed (Rogge, Kern, and Howlett 2017). Johnstone and Newell (2018) draw attention to states' roles in global energy networks, where their coercive power can be demonstrated through foreign policy measures and even war to alleviate their own pressure to provide sufficient energy. Those authors note that the military sector, like other 'non-environmental' policy sectors, has not been included in theorisations of transitions, despite having a significant impact. Johnstone and McLeish (2022) recently demonstrated the role that the world wars played in the formation of today's global hydrocarbon-based energy system.

Public policy plays important roles in transitions, as states and public actors have the capacity to accelerate innovations and/or destabilise current systems by, for example, withdrawing state support (Kivimaa and Kern 2016). One important stream of research has examined policy mixes – the interacting policy goals, strategies, instruments and processes (Kanger, Sovacool, and Noorköiv 2020; Rogge and Reichardt 2016) – as bridging sectors to enable comprehensive system change (Kivimaa and Mickwitz 2011). This stream has dominated, perhaps at the expense of research on the politics of transitions, although the need to understand those politics has been recognised (e.g. Kern and Rogge 2018).

Building on previous research, Kanger, Sovacool, and Noorköiv (2020) propose six policy intervention points to develop cross-sectoral understandings of policies in transitions: 1) stimulate different niches, 2) accelerate those niches, 3) destabilise the existing regime, 4) address the broader repercussions of regime destabilisation, 5) provide co-ordination to multi-regime interaction and 6) tilt the landscape. We apply these points to our empirical setting to determine if they can be recognised as 'facilitating transformative systems change' (Kanger, Sovacool, and Noorköiv 2020, 8). We apply the policy intervention points to the energy–security discourses identified to assess whether those discourses respond to those enabling points, which can be situated between means (policy instruments) and goals (system change).

## 2.2. Discourse and rhetoric in sustainability transitions research

As sustainability transitions require social change (Geels et al. 2017; Köhler et al. 2019), the epistemic

governance approach enables studying the rhetoric and framing of governing actors (those behind the policy documents) and how they try to influence their audiences. Actors aim to present their interests as the interests of the whole to validate actions like investing in national security or innovations. Previous research has shown that politicians manage uncertainty and threat by using 'sociotechnical imaginaries', which 'though never strictly determinative of policy outcomes, are powerful cultural resources that help shape social responses to innovation' (Jasanoff and Kim 2013, 190). Framing energy policy to match a government's fundamental goals is a central element and often includes aspects of national security (Scrase and Ockwell 2010). Government actors are recognised as leading actors in transitions, although actors can be difficult to pinpoint due to shifting, overlapping positions (Fischer and Newig 2016).

Several studies have investigated how power deploys discourse and rhetoric in sustainability transitions (e.g. Isoaho and Karhunmaa 2019). Scrase and Ockwell (2010) point out the messiness of policymaking, suggesting a 'discourse perspective' and rejecting any assumption of neutral policy language. They show how energy policy was successfully constructed to address fundamental government priorities like economic growth and national security with an emphasis on technocratic and nationalistic policies.

In a Foucauldian interpretation of exercising power via knowledge production and communication, power is a dynamic concept, and knowledge is 'produced, shaped and constituted by the exercise of power' (Avelino and Rotmans 2009, 558). Avelino (2021) emphasises the contested nature of power in social changes and directs attention towards discourse and knowledge development exercises by, for instance, defining 'transition'. Indeed, the political processes of zero-carbon transitions must be studied as they are: profoundly value-laden and debated phenomena (Avelino et al. 2016; Geels et al. 2017; Roberts et al. 2018), where decision-makers have publicly declared a direction towards emissions-free energy systems. Understanding the processes that move towards this goal is important, because in those processes lie the outcomes of decision-making (Isoaho and Markard 2020).

## 3. Analytical framework: epistemic governance and six policy intervention points

Epistemic governance is an analytical-methodological tool to study societal changes (Alasuutari and Qadir 2019). It is influenced by Foucault's thinking on governmentality and power and adopts a methodology based on discourse analysis. It focuses on how actors work on people's beliefs by further developing thinking around the 'rules of the game' and paying

attention to perceptions and justifications. As the framework is meant ‘to open up processes of change’ (Alasuutari and Qadir 2019, V), it is well suited for our purposes. Political power operates publicly, and the perceptions of those operating that power play a significant role. The epistemic governance framework allows attention to be directed to actors who seek to reclaim power, instead of merely elites or experts. As the conditions of governance are deeply global, with myriad power holders, such as governmental and non-governmental organisations (Boli and Thomas 1999; Meyer et al. 1997), closer scrutiny of how power is embedded in the social world is vital (Alasuutari and Qadir 2019). Using the framework, researchers have investigated how cross-national comparisons are used as a tool for governance to align people with similar perspectives to achieve desired policy goals (Vähä-Savo 2020) and how reference group comparisons in national policymaking during crises are significant by synchronising national policies with the global context (Ferrer, Alasuutari, and Tervonen-Gonçalves 2019).

In this paper, we analyse how the energy–security nexus is discussed by focusing on three objects of epistemic work (Alasuutari and Qadir 2014, 2019). We first examine the ontology of the environment to identify how the world is depicted to justify actors’ approach to the phenomena. The subtle techniques constructing reality that any actor can use are often quite unseen, reinforcing their effectiveness. This is linked to how transition studies reveal how perceptions about shifting landscape pressures are formed (Ghosh et al. 2021). The second objective is to work on people’s comprehensions of who they identify with and the communities to which they belong. Again connecting to transition studies, this refers to potentially shifting regime alliances and the formation of new actor coalitions around expanding energy niches and in the multi-regime energy–security nexus (Kanger, Sovacool, and Noorköiv 2020). We aim to determine who actors identify with in the energy–security nexus while also paying attention to those who go unmentioned, even when they might be expected to be noted. The aim is to recognise who ‘we’ are and who the ‘others’ may be. Nationalism is a good example of these kinds of actor identifications, as it is often a subtle but significant aspect in seeking social change. The third object of epistemic work is related to people’s norms and ideals in the nexus that help understand policymaking principles. Energy transitions require vast public support and funding; thus, perceptions of norms are significant and affected by the perceived ‘broader repercussions’ of transitions (cf. Kanger, Sovacool, and Noorköiv 2020). Actors appeal to the norms and ideals they expect the others to value and depict what will follow if those values are honoured, thus aiming to guide the ‘correct’ action.

After identifying the objects for epistemic work, we compare them in relation to the six policy intervention points in section 2.1 (Kanger, Sovacool, and Noorköiv 2020). These have been recognised in the literature as possible enablers of sustainability transitions amid calls for more studies on the relevant actors’ motivations and capabilities. We analyse the six points as part of the epistemic work the incumbent actors undertake when trying to convince their audiences of the right thing to do, in terms of the energy–security nexus, regarding unfolding energy transitions.

Of the six points, we regard the last three as particularly important to that nexus. The broader repercussions of regime destabilisation (point 4) may, for example, increase or decrease security threats. Related to more positive outcomes, Kanger, Sovacool, and Noorköiv (2020) argue for the need to decrease the negative socio-economic impacts of transitions (e.g. through financial aid or workers re-training) and to initiate social deliberation regarding system change. Co-ordination of multi-regime interaction (point 5) relates to active efforts to acknowledge system interlinkages between, for example, energy and security and address them as the transition proceeds. Tilting the landscape (point 6) may result in broad global or regional changes that affect the overall security landscape.

With these points in mind, we thus analyse not the normative assumptions of how things should be done to further energy transitions, but how transitions are perceived in the rhetoric of incumbent policymakers in light of the normative policy intervention points from the literature.

#### 4. Empirical context

The three countries studied differ in important ways. In this section, we present the context for each (see Table 1). Estonia is unique among European Union (EU) member states because its oil shale reserves have ensured almost complete energy independence while creating the largest carbon footprint among all International Energy Agency (IEA) countries (IEA 2019). Its conflict-laden history with the Soviet Union and Russia has greatly influenced its energy policy (Kama 2016; Kivimaa and Sivonen 2021): It first sought energy independence and then synchronisation with European energy markets. Estonia’s main energy policy goals are security of supply, energy independence, and competitive energy prices (Ministry of Economic Affairs and Communications 2017). Oil shale phase-out is key to Estonia’s energy transition, and discussions of its future have gone on since Estonia regained independence from Russia in 1991 (Sillak and Kanger 2020), with current plans to cease production by 2035 (IEA 2021). During the last three decades, Estonia has oriented itself towards the

**Table 1.** Population, energy exports and imports, share of renewable energy, and reliance on Russian fossil fuels.

Country (Population)	Total primary energy supply (TPES) or Total final consumption (TFC)	Main exports/imports	RES share of energy consumption in 2020 (EEA 2022)	Reliance on Russian fossil fuel imports in 2020 (IEA 2022b)
Estonia (1.3 million)	TPES: Oil shale, natural gas, bioenergy and waste, oil, wind, coal and peat, hydro, electricity (IEA 2019)	oil shale export, biofuel imports (IEA 2019)	30.8%	16,0%
Finland (5.5 million)	TPES: Biofuels and waste, oil, nuclear, coal, natural gas, electricity imports, heat imports, hydro, peat, wind (IEA 2018)	electricity imports and exports, coal, natural gas and oil imports (IEA 2018)	43.8%	44,6%
Norway (5.4 million)	TFC: hydro, oil, natural gas, bioenergy and waste, solar, wind, tide, coal, heat (IEA 2022b)	oil and natural gas, electricity exports; kerosine and fuel oil, biofuel imports (IEA 2022a)	77.4%	3,5%

West by opening its energy markets and joining key international organizations like NATO, the EU, and the IEA (IEA 2019). In addition to creating energy connections with neighbours, Estonia has pursued de-synchronisation from the Russian grid since 2007. A political roadmap to synchronise with the EU electricity system was signed between the Baltic states, Poland, and the European Commission in 2018 (IEA 2019). Estonia's national security objective is to maintain its independence and sovereignty, with a heavy reliance on NATO and the EU (Kaitseministeerium 2017).

Finland's energy infrastructure relies on EU sources like nuclear power, natural gas and some coal and domestic sources like bioenergy, peat, hydropower, and wind power. Oil and gas were mainly imported from Russia before 2022. Energy security is a priority due to Finland's high dependence on imports (IEA 2018), and energy policy is steered towards carbon neutrality, with Finland having targeted a carbon-neutral society by 2035 (Finnish Government 2019). Like Estonia, Finland is a member of the Nordic electricity market Nordpool and imported roughly 10% of its electricity in 2021. The electricity sector is largely decarbonised, but hydrocarbons are used in heating, transport and industry. Phasing out peat production has been a politically difficult challenge, while Russia was a deeply sensitive subject; before the invasion an 'apolitical' approach was taken, under which difficult questions were treated as technical rather than political (Haukkala and Vaahtoranta 2016). Finland's energy relationship with Russia was viewed as asymmetrical (Tynkkynen 2021). Finland operates on the total security concept, which means cooperation between public authorities, industry, and citizens to safeguard vital societal functions. After the Russian invasion of Ukraine, Finland's security environment changed radically for the worse; it applied for NATO membership in 2022 and was admitted in 2023 (Ministry for Foreign Affairs 2023).

In Norway, societal prosperity is based on significant hydrocarbon exports. As a result, Norway is highly self-sustaining: its domestic energy consumption is almost fully based on hydropower, leaving the country with one of the lowest emission levels in Europe

(Energifakta 2021) when exports are not counted. Part of the European Economic Area (EEA) but not the EU, Norway trades electricity with Europe and has strong connections with other Nordic countries through shared electricity markets (IEA 2022a). Norway's alignment with EU targets for climate neutrality have faced domestic opposition, such as protests against the expansion of onshore wind power and local land use rights (Skjærseth and Rosendal 2022). Politically, the energy and climate sectors have been kept apart due to the economic importance of hydrocarbon production, but pressure from environmental activists (Kottasová 2021) and foreign policy actors (Hornburg and Sending 2019) is increasing. Norwegian defence policy relies on a Total Defence framework 'which enables relevant civilian assets to support the national and allied defence efforts during peacetime, crisis and armed conflict' and is based on NATO's collective defence (Norwegian Ministry of Defence 2020). Norway's security policy is aimed at strengthening international and bilateral relations, to which the 'High North' (i.e. Arctic region) belongs (Ministry of Foreign Affairs 2021).

## 5. Research approach and method

We chose to undertake a discourse analysis of energy, climate, Arctic, security, and defence policy strategy documents. Although such documents do not paint the full public policy picture, they do offer a perspective on the 'social facts' presented in a transparent way to varying audiences (Atkinson and Coffey 2011). The countries were chosen based on their northern location, size, differing energy profiles, similar democratic decision-making processes, and sharing a border with Russia. We expected similarities due to NATO membership and subtle differences in implementing global climate agreements due to different energy profiles and roles in the global energy market. By comparing these states, we can achieve a more coherent picture of the energy–security nexus and cover a broader geographical scope than would emerge from investigating only one or two countries.

The documents were collected from official websites and by contacting ministry personnel. We used

documents in English if possible and originals when English versions were not available. We excluded from the analysis paragraphs that did not involve wider security or defence issues, such as those referring purely to 'security of supply' or discussions of oil spills only as an environmental rather than a national security threat. If a paragraph clearly discussed energy – especially new energy systems in relation to other countries – it was included in the coding due to the international relations connection. In total, we analysed 73 documents<sup>1</sup> (19 from Estonia, 22 from Finland and 33 from Norway). The start date of 2006 was chosen due to the Russian – Ukrainian gas dispute that is viewed as inaugurating a new era of EU energy and security politics (Kuzemko, Keating, and Goldthau 2016). To enable comparisons over time, the documents were divided into four time periods: 2006–2010, 2011–2015, 2016–2020 and 2021–2023 (see Appendix 1).

After the material was collected, a keyword search was conducted, with energy and climate strategies scanned for 'security', 'defence/defense', 'geopolitic\*', and 'threat' and security and defence strategies scanned for 'energy', 'electricity', 'heat', 'nuclear power', 'fuel', 'oil', 'gas', 'peat', 'renewable', 'wind', and 'solar'. This approach helped reveal connections that the two policy domains may have by referring to fields and themes in the other policy domain. The first author used discourse analysis to code the data, paying close attention to language and how it is used to understand the phenomenon (Alasuutari 2011; Wood and Kroger 2000) and assessed objects of epistemic work to inductively concentrate the rhetoric used in a country-by-country analysis. The second author cross-checked the coding. The data were coded using the qualitative data analysis software NVivo.

Analysing political rhetoric with the epistemic governance approach is especially useful, as 'people's perceptions, understandings and desires are key ingredients of government, even though they might not be the only ingredients' (Vähä-Savo 2020, 3). The key actors in energy and security politics must not only convince other key actors but also the wider public to gain support for their proposals, especially as they often involve large, expensive, and uncertain projects. The documents provided fruitful data and are public, formal means to communicate the political leadership's agendas. Analysing policy intervention points in the discourses can contribute to understanding perceptions from policymakers' perspectives by helping to identify how sustainability can best be achieved and maintained. The first author identified the discourses using the epistemic governance framework and then compared them to the policy intervention points to reveal the interrelations of the two policy sectors and how they may co-evolve with, strengthen, or undermine one another and what that may mean for

sustainability transitions. Summary of detected discourses with recognised policy intervention points is presented in Table 2.

## 6. Identified policy interventions in prevalent discourses in the energy – security nexus in Estonia, Finland, and Norway

### 6.1. Transitions occur in a world full of risks (ontology of the environment)

The energy–security nexus in Estonian documents described the need for the nation to prepare for global pressures while maintaining international cooperation. Oil shale production enjoyed political importance as more than a commodity because it had provided energy independence to a young country. Over time, strategies turned to renewable energy: thus, [1] *stimulation of niche technologies* began with financial aid; towards the 21st century, [2] *acceleration* became visible, leading to plans to [3] *fully destabilise the oil shale regime* over time. In the earlier phase (2006–2010) of the time period of interest, however, energy strategies still justified the use of oil shale in terms of security of supply and energy independence, leaning heavily on national security needs. By describing the uncertainties of a risky world, the strategies [4] *addressed broader repercussions*, because internal stability could be jeopardised if the oil shale phase-out was carried out before desynchronisation from Russian grids was complete and without considering the poorer populations of North-East Estonia. Replacing Russian energy with exports to the West was depicted as an important political task throughout the studied period.

Preparations for possible threats were mentioned as an economically favourable environment to invest in renewables. Thus, [5] *multi-regime interaction* and the need for policy coherence are clear in relation to wind power development: Estonia's Ministry of Defence was noted to be involved not only in preparing the energy sector for crises but also in the planning of wind farms to avoid disrupting the operation of air surveillance radars. Estonia is strongly presented as part of the West throughout time, shaping the country's identity through international cooperation. The latest security strategy (2023) recognises this as a risk, noting a potentially increased risk of terrorism and unwelcome political influence and the global rivalry over energy. The following quote demonstrates that the creation of a renewable energy policy is politically difficult, due to national security that oil shale is depicted as providing:

Despite gradual reduction of the environmental impact through utilisation of novel and more efficient technologies, the negative environmental impact associated with oil shale will always remain the price

that has to be paid for energy security and the security of supply. (Government of the Republic 2017, 73)

In Finland, the prevalent themes were competitiveness and economic stability in an unpredictable world. Global markets were viewed as offering opportunities for Finnish technological expertise, including in the Arctic region. Technological energy innovations that involved [1] *stimulating* and [2] *accelerating niches* were described as contributing to global energy transitions and to [3] *destabilising regimes* beyond Finland's borders:

Increasing Finland's energy self-sufficiency, in particular by increasing the use of renewable energy and improving energy efficiency, will also have a positive impact on the balance of trade. (Finnish Ministry of Employment and the Economy Energy and the Climate 2014, 70)

The potential [4] *broader repercussions* of the regime change were addressed by increasing domestic renewable energy production. Although peat phase-out was recognised as politically challenging, it was described in the policy documents as a significant internal or security of supply issue like the oil shale phase-out in Estonia (although its actual importance is lower; for more detail see, e.g. Lempinen 2019). In Finland's latest energy strategy, published in 2022 after the Russian invasion of Ukraine, the importance of peat energy is justified by security of supply concerns. Until 2022, security was addressed in terms of cooperation and trade rather than framed as related to open conflict. Security risks pertaining to Russia were not explicitly addressed in energy policy documents but were acknowledged in security and defence documents. This inconsistency between sectors suggests a predominantly business-driven orientation framed to benefit the greater good. [5] *Multi-regime interaction* can be detected in relation to wind power planning throughout the study period, as the defence sector must consent to it, demonstrating the importance of national security and the potential co-evolution of the two sectors with robust planning, which is similar to Estonian development plans.

Like the other countries, energy transitions in Norway were perceived as materialising in a risky world as part of the global arena via trade and cooperation and an actively engaged society. However, as Norway's economic well-being is based on hydrocarbon exports, and because its own electricity consumption is nearly completely decarbonised thanks to hydropower, the proposed strategies sought to justify maintaining and increasing offshore oil and gas exploration, especially in the Arctic. This is done by claiming Norway's leading role as a seagoing nation, with responsible resource management for both the oil and gas industry and fisheries. The area is geopolitically important, with an increased importance over

time, and the melting polar ice possibly offering new revenues from hydrocarbon and mineral exploration. The energy–security nexus in Norwegian documents was less focused on the transition than in Estonia and Finland, perhaps because the biggest leaps in any such transition are in the oil and gas sector and because technological development regarding carbon capture and storage is in the early stages, with little [3] *destabilisation of regimes* detected. However, in more recent policy documents, including some from 2023, renewable energy was increasingly mentioned as part of foreign and security policies in connection to economic development, indicating support for [2] *niche acceleration* through economic incentives:

Norway's position as a significant energy exporter and as a country responsible for the administration of important natural resources extending over large sea areas has an important bearing on security policy. (Norwegian Ministry of Defence 2008, 7)

Renewable energy is another priority area for Norwegian development assistance related to climate and the environment. More than 60 per cent of greenhouse gas emissions relate to the use of energy. According to the international energy bureaus, we must double our energy efficiency and replace most fossil fuel with renewable energy if we are to reach the Paris Agreement targets. (Ministry of Foreign Affairs 2019, 50)

The documents emphasised Norway's responsibility, desire, and capacity to govern the sensitive and important Arctic area. Climate change poses a major risk, but the global energy transition of which hydrocarbon-rich Norway will inevitably be part is undermined by security justifications, with a strong emphasis on continued production after the Russian invasion of Ukraine. Globalisation was depicted as a major concern in relation to the increased security challenges posed by cybercrime and in energy in terms of the risk of terrorist attacks.

To summarise, all countries describe a similar, unstable, and risky global context within which energy transitions are being governed; this is the ontology of the environment. Unsurprisingly, national security policy trumps energy transitions in all countries, although climate change was recognised as a major global risk and used as a justification for energy system change throughout the study period. However, the ways in which those risks were to be managed differed over time and between countries. Estonia's strategy had the biggest change, moving from justifying extended oil shale production and consumption with national security concerns to a complete phase-out and identifying renewable energy as the core provider of national security via mature, extensive, and EU-funded renewable energy-based technologies. In Finland the strategic increase in decarbonisation was consistent throughout, although the Russian energy



trade ended only due to the war in Ukraine, strengthening domestic renewable energy production on the one hand. On the other it bolstered peat production, because peat was typically framed as a reliable, domestic, and easily stored source of energy. Although all three countries cast themselves as part of the democratic West and shared energy markets, Norway's strategies did not emphasise this point until the Ukraine war began, whereas the importance for Estonia was part of its assertion of its sovereign, democratic status from early on.

## 6.2. *Reliable partners and unpredictable neighbours (actor identifications)*

In Estonian strategy rhetoric, the EU grew in importance over time. Due to pressure from the EU, Estonia accelerated its energy transition, which also aided its energy de-synchronisation from Russia. More recently, Estonia was presented as ready to build an energy system without either oil shale or Russia, while [4] *addressing broader repercussions* by, for instance, a just and stable labour market policy. The strategies created a long list of different actors in the nexus, suggesting well-managed communication between sectors but also the significance of the nexus in general when [5] *multi-regime co-ordination* is needed. The rhetoric presented Estonia as a strong, independent nation, seeking support from international fora as a trustworthy partner that is separate from Russia, especially for national renewable energy production. This kind of [2] *niche acceleration* through selected international partners grew over the study period, indicating the importance and success of this policy. Countries like Finland, Latvia, and Lithuania were safe references as representing good, active relations in energy and security policy, with reliable business relations and similar situations in terms of Russia and the EU. By referring to Russia as an active participant in cyber-(in)security, Estonian documents maintained the long-signalled threat and instability of a hybrid threat especially from Russia.

In Finnish documents, the EU was a significant reference point that increased in importance over time. Although national actors like relevant ministries and the National Emergency Supply Agency were mentioned, that language was passive, directing action towards external actors with guidelines and regulations to follow. Cooperation between Russia, EU, and Finland was long described as stable, with increasing mentions over time. After the invasion of Ukraine, the 2022 energy strategy mentions Russia's banning trade with 'unfriendly states' as its reason for stopping trade with Finland. The energy strategies do not openly address the potential threats, indicating a lack of [5] *multi-level regime interaction*. Energy trade and other business-orientated solutions were portrayed as keys

to confronting climate change aiming to [6] *tilt the landscape* by showing progressive examples to others. Nordic energy markets were portrayed as valuable to industry, and political decision-making was not to jeopardise economic growth as a way to [5] *address broader repercussions of the transitions* by, for instance, investigating gender-biased labour markets, especially in the later period. Numerous actor identifications indicated a scattered policy environment and a lack of multi-regime interaction.

Among others, Russia is paying increasing attention to resource efficiency and the improvement of energy efficiency in industry and society at large. Finnish expertise is of the highest standard and widely recognised in Russia; for example, Finnish technologies permit sustainable mining in the Arctic environment. (Prime Minister's Office 2013, 34)

Throughout the study period, Norwegian documents presented the government as active and Norway as a unified, unfaltering nation. The most visible national actor discussed in the nexus was the Norwegian Water Resources and Energy Directorate (NVE), with a growing role in the energy sector and increased responsibilities in cyberspace. The number of NVE mentions increased over time, and Norway had the longest list of different national actors. NVE is a directorate under the Ministry of Petroleum and Energy, which is the most frequently named ministry. Russia played a dual role: as a military and economic threat due to its vast natural resources, especially in the Arctic, and an important trading and knowledge-transfer partner where [5] *multi-level regime interaction* is detected in relation to energy and security operations. Nordic neighbours were important actors for cooperation and in energy markets. Although Norway is actively involved with the EU and NATO, our analysis indicates that the energy–security nexus is treated as domestic:

Russia has also named the High North as a target area in terms of energy recovery. It is also a fact that these areas have a strategic military importance for Russia. As such, we face a persistent requirement to update our knowledge within the defence sector on the developments and security challenges in the High North, and to increase our knowledge of environmental and climate changes. (Norwegian Ministry of Defence 2013, 10)

To summarise, all three countries identified Russia as a threat, but Finland and Norway regarded trade and technological partnerships with it as valuable, leading to incoherence in policymaking before 2022 (cf. Kivimaa 2022). In Finland, the threat was kept out of energy policy, with a focus on positive cooperation and economic benefits, similarly to Norway. Estonia was already de-synchronising from the Russian grid and directing trade towards the EU and the West more generally. All three countries valued Nordic

cooperation in energy and security, but whereas the importance of the Arctic and the various actors operating there grew in importance in Finland and Norway, Estonia (a non-Arctic state) did not mention this factor. Estonian and Finnish strategies showed some level of multi-regime co-ordination with security to accelerate energy transitions, while in Norwegian documents regime stability was perceived as important. The EU's significance to the Estonian and Finnish transitions was substantial, while strategic industrial cooperation for Europe's energy transition was not highlighted in Norway until the 2022 war. NATO was identified as an actor in the nexus, and major global actors like China, India, and the United States were mentioned in most strategies, but only in passing.

### 6.3. Energy transitions with reservations (norms and ideals)

Underlying norms and ideals are important to recognise, as they communicate what is important and valuable to policymakers. Thus, the audience can either support or oppose them. In Estonian documents, national interests were highlighted as a priority, yet they also emphasised Estonia as part of the wider world. Developing the energy sector towards sustainability also allowed strengthening security guarantees through cooperation and trade. Especially towards the end of the study period, building a national identity as a sovereign state decarbonising its energy system evolves in both sectors:

Promoting and defending Estonia's interests on global issues requires a positive image and considerable influence on the international arena. A proactive and constructive contribution to the digital, cyber, human rights, climate, energy and connectivity agenda increases Estonia's involvement and allows to better protect its interests in these areas, but also creates other opportunities. (Republic of Estonia 2023, 16)

Towards the end of the study period, the strategies began to address the [4] *broader repercussions* of regime change, such as security of supply beyond oil shale production once national renewable energy production and exports were balanced. The rhetoric changed towards economic development, as Estonia aims to use modern green technologies to export energy. These expensive operations are also ways to connect more firmly to Western grids and ensure audiences that Estonia aspires to be a green, modern, and technologically savvy society. The ambitious development of cybersecurity is paid due respect, with regular references to the 'e-state' clearly signalling the desire to develop the field further in electrified systems.

In Finnish strategy rhetoric, preparedness, economic interdependence (specifically in references to Russia, which are unsurprising given the two countries' long, valued trade partnership), and sustainability were

highlighted. Climate diplomacy was mentioned as part of foreign relations on all levels, implying the Finnish aim to be a leader in soft power international negotiations and its determination to provide the structural premises for climate-friendly actions through energy policy. If realised, these ambitions would have significant implications for the security and defence sectors, which are also expected to consider their own negative impact on the climate. Finland's well-connected civil society is regarded as a strength, and cross-sectoral cooperation between ministries is intended to be enhanced. This reflects a comprehensive take on security, where all societal aspects are considered in a [5] *multi-level regime action*. The transition is to be based on economic growth premises:

Russia and the EU are strategic partners and their mutual relationship, especially in the area of the economy, is extensive. The EU is Russia's biggest trading partner and the most important market for its energy exports. Russia is also the most important energy supplier for many EU countries. (Prime Minister's Office 2013, 34)

Norwegian strategies discussed sustainable development, societal stability, science and research, and international cooperation, especially in the Arctic. Climate change was clearly recognised as causing serious damage to the environment and uncertainties for society and government, with pleas for science-based policymaking. The energy transition was supported, with [1–2] *niche stimulation and acceleration* through wind and wave power serving as examples, although that would not mean reducing fossil fuel production: thus, [3] *regime destabilisation* was absent. The oil and gas industry was viewed as part of sustainable development by, for instance, using renewable energy to run oil rigs and providing green energy to rural areas. The defence sector's interest in hydrogen for vehicles was cited as a measure not only to shift that sector away from fossil fuels but also to highlight the sustainable development ideal and not destabilise the regime, given that gas would still be exploited. NATO's seven baseline requirements, one of which is critical infrastructure, were mentioned as part of civil–military cooperation. Along with this element, developing the IT sector was discussed in the context of international cooperation in the nexus and securing trustworthy allies. Some signs of [6] *tilting the landscape* could be detected in the numerous mentions of different international agreements and were perhaps intended to indicate Norway's ambitious goals to be a leading global partner, with the caveat that Norway would still provide oil and gas to the world in the most reliable and responsible fashion.

During the study period, norms and ideals were framed in a similar way, with an increased emphasis on national security after the invasion of Ukraine in

**Table 2.** Summary of detected discourses with recognised policy intervention points.

Country	Transitions occur in a world full of risks (ontology of the environment)	Reliable partners and unpredictable neighbours (actor identifications)	Energy transitions with reservations (norms and ideals)
Six policy intervention points: [1] stimulate different niches, [2] accelerate those niches, [3] destabilise the regime, [4] address the broader repercussions of regime destabilisation, [5] provide co-ordination to multi-regime interaction, and [6] tilt the landscape. (see Kanger, Sovacool, and Noorköiv 2020)			
<b>Estonia</b>	Transitions accelerated with the involvement of the MoD and on its terms, highlighting the insecurity of the world [1] [2] Sustainable transitions undermined due to national security concerns, until oil shale phase-out is inevitable due to global pressures. [3] [4] Global climate crisis forces co-evolution of the two sectors. [5]	EU for safety and decarbonising efforts, with importance growing over time. [2] Baltic and Nordic neighbours as 'safe' references and partners. [4] Russia depicted as an unpredictable neighbour and threat to safety throughout the study period. [5] Cybersecurity threats strong throughout the period. [5]	Developing the energy sector with EU and Western partners to support security guarantees through cooperation and build a national identity. [5] In the last period, sustainable economic model mentioned as part of security strategy strengthening the zero-carbon energy goal. [4]
<b>Finland</b>	Economic incentive is clear: Finnish technology to contribute to national and global energy transitions. [1] [2] [3] Increasing domestic renewable energy production in peat phase-out. [4] Russia as a potential security threat recognised in security and defence strategies but not energy strategies. Co-ordination with the MoD needed as part of wind power development, co-evolving throughout the time period. [5] No major changes detected.	EU and Nordic countries are important partners in decarbonising efforts, increasing significance over time. [5] [6] Russia seen as a reliable trading partner in energy sector though 2021, but the security sector consistently identified the potential threat. [lack of 5] Nordic neighbours as reference groups and partners, but business can also be done with Russia (prior to 2022). [lack of 5]	Preparedness, economic interdependence (specifically in references Russia, a long-time trading partner), and sustainability. [5] Climate diplomacy, cross-sectoral decarbonising plans. [5] Economic benefits with sustainability transitions. [5]
<b>Norway</b>	Risks and uncertainty in the world, yet society is active and part of globalised world through trade and cooperation. [2] Claims over sea areas due to importance of oil and gas production and fisheries: 'responsible resource management' in the Arctic connected to security policy and increasing interest over time. [5] Connections to other countries important, but not highlighted until after Russian invasion of Ukraine, unlike in Finland and Estonia. [lack of 5]	Norwegian government and NVE nationally important. [5] Nordic neighbours are trading partners and reference groups. [5] MoD part of energy policies in the Arctic. [5] NATO not significantly mentioned. [lack of 5] Russia powerful and unpredictable but important trade and research partner (especially in the Arctic). [5]	Sustainable development can be achieved with science and research, but stability of society and international cooperation cannot be jeopardised. [6] Continued oil and gas production, but with measures to increase sustainable production. [opposite to 3] Increasing domestic wind and wave production. [1] [2]

2022. Estonian policymaking changed from energy independence through oil shale to promoting 'green' initiatives and the modern 'e-state', bringing its policymaking closer to Finnish and Norwegian norms of 'sustainable development'. In Estonia and Finland but not Norway, comprehensive preparedness of society for potential risks was valued in the energy–security nexus. In Norway, economic development was used to justify policies through principles of sustainability development and preparing for potential future risks. Norwegian documents showed no discourse involving regime destabilisation or addressing the broader repercussions of such destabilisation.

## 7. Discussion

We used the epistemic governance framework and its specific objects – how society and the world in the nexus are depicted, who is involved and the norms and ideals connected to policymaking (Alasutari and Qadir 2019) – to shed light on the 'epistemic work' policymakers do when justifying policies. By using this framework, we identified three main streams of discourse in all three countries: 1) transitions occur in a world full of risks, 2) reliable partners and unpredictable neighbours, and 3) energy transitions with

reservations. After the events of February 2022, the available documents emphasised these discourses, as Europe's energy sector was in an unprecedented crisis.

The discourses maintain the premises of transitions by providing cause and effects, the broader picture that governments wish to convey, and the directions they want to take, using far from neutral language (Scrase and Ockwell 2010), despite that kind of neutrality often being a goal of technological and security talk. However, they also feature disclaimers that not everything is possible – both schedules and the best-laid plans may be obliged to change. The policy strategies, therefore, provide justifications as to why it takes such a long time to decarbonise energy systems – some of those claims may be more realistic and others merely symbolic. One example is how the importance of peat in Finland has been framed in terms of energy security, although its actual importance has been seen as low (Lempinen 2019). Therefore, attention to how policy strategies are epistemically governed is important to help make these processes more transparent.

As Avelino has previously discussed, defining transition is a powerful move (Avelino 2021). In our analysis, Norway took its own route in defining the kind of transition it is making: one with continued oil and gas production, justified by its being the world's most

environmentally sound producer. By analysing which policy intervention points sustainable transitions need to target (Kanger, Sovacool, and Noorkõiv 2020), we were able to understand why the three countries in the study are still using and producing unsustainable energy forms. The world is framed as too risky to change course rapidly – until the landscape shock in 2022 occurred. Even when transitions progress slowly, national security is sometimes presented as too important to endanger while it is otherwise completely ignored in the texts. The construction of the energy–security nexus was described as requiring constant balancing between reliable partners and unreliable neighbours; however, even sharp pivots can materialise and allow sustainability transitions to move forward. All countries presented a strong desire to decarbonise while keeping their domestic audiences happy: the national economic interest is simply not to be jeopardised. This kind of framing has resulted in policy frameworks lacking co-ordination or coherence in practice (Höysniemi 2022; Kivimaa 2022). However, the Estonian case showed that renewable energy can be branded as significant for national security if the energy niches are strong enough, and the Finnish case showed that rapid changes in policy discourse are possible when landscapes are tilted as they were in 2022.

The discourses were connected to six policy intervention points that have been identified as creating a successful path towards sustainability transitions. According to Kanger, Sovacool, and Noorkõiv (2020), all points must be addressed to succeed, although the importance of each point may differ depending on the chosen direction. They are thus normative in their underpinnings, which made them an effective and thought-provoking frame to link with epistemic governance.

We found all six policy intervention points supported in the Estonian documents, but the emphasis regarding sustainable policies changed greatly over time. Support for moderate destabilisation of the oil shale regime did not appear until later periods because oil shale was so strongly connected to Estonia's national security needs. Over time, national policymaking begun addressing the repercussions of the oil shale phase-out, with destabilisation of the regime made possible due to both landscape pressures like the growing awareness of climate crisis and because niche acceleration had been successful, meaning that the national energy system and (Western-directed) international energy trade had developed further. Although fossil fuels were not fully phased out during this time period, significant changes in justification regarding fossil fuel use appeared. It can be argued that Estonia gradually built its national security and sovereignty aspirations alongside its energy transition by emphasising reliable partners and national,

sustainable energy production that is well matched with global climate agreements agreed to by the EU and the other Baltic states, which are crucial Estonian trade partners. The de-synchronisation from the Russian grid set to happen in 2025 was also framed as an issue of national security.

In Finnish strategy planning, niche stimulation and acceleration were emphasised through the technological development required. Regime destabilisation via technological advancements domestically and globally is being developed in Finland, making it a major export sector. In terms of the country's peat production phase-out, it was once an important sector providing domestic energy and security of supply, but production was nearly shut down for climate reasons; yet it was reintroduced on the policy agenda after Russia invaded Ukraine. Here, the broader repercussions of losing a domestic, reliable and easily stored form of energy were seen as too great to tackle, with attention directed instead to other gender-biased fields in the energy sector to alleviate costs. As the country's comprehensive security concept entails, Finland's Defence Forces were to partake in climate mitigation practices, indicating the co-ordination of multi-level regime action: open and public dialogue regarding wind power development and radar systems had been acknowledged, and the desire for a mutually beneficial solution was expressed. It is to be seen, if the open dialogue continues as a NATO member, or if the decisions are made behind closed doors without public disclosure.

In Norway, although many niche developments were noted, regime destabilisation regarding the oil and gas sector was not present. The importance of climate change mitigation and adaptation was visible, however, and Norway reiterated its desire to be part of the international solution, but on its own terms. The state placed hope in new and emerging technologies like carbon capture and storage that would enable future hydrocarbon production. The Norwegian discourse was more connected to international developments rather than domestic security and defence.

As to our second, broader question – why these highly developed and seemingly pro-climate countries have yet to fully decarbonise their energy – our analysis shows that sustainable energy transitions are constantly being both strengthened and undermined by rhetorical means. Framing certain energy forms, renewable or otherwise, as important to national security strengthens them. In turn, simultaneously justifying policy measures to extensively support other energy sources can be difficult unless the landscape changes considerably. Indeed, after the invasion of Ukraine, renewable energy forms – but also liquefied natural gas – were increasingly connected to sovereignty and energy independence and not only to security of supply. In Norway, this also increased the

debate on energy sovereignty, which unlike other countries, saw increased wind power as decreasing national sovereignty by being controlled more by the EU (Hansen and Moe 2022). While landscape changes may benefit sustainability transitions (Antadze and McGowan 2017; Kanger, Sovacool, and Noorköiv 2020), they can also be interpreted as taking pressure off national decision-making. Indeed, as the owner of the world's largest sovereign wealth fund, Norway could have a tangible impact on transitions if its policies and investments were tuned towards environmental sustainability (Froggatt, Stevens, and Bradley 2020).

Our findings confirm the association between states and global energy networks (Johnstone and Newell 2018) as the data present close if varied relations to other states in energy matters. Indeed, one anticipated finding was that states seek international cooperation, but only with carefully selected partners. Framings of 'threat' and 'us vs. them' are significant because public perceptions of issues determine transition directions, sometimes even in a physical sense. With epistemic work, actors can assure the status quo will not be jeopardised even as global climate agreements will be acknowledged. However, rhetoric of this sort is also likely to ignore the broader repercussions of transitions and its multi-regime nature. It appears that the purpose of such strategies in the energy–security nexus is not to provide the best solutions for transitions, but rather to craft the best arguments that will convince as many audiences as possible about the desire to transition the energy sector without jeopardising national security or the state's economic growth.

Transitions governed by states are expected to provide much more than responding to obvious landscape pressures such as climate change: they must also provide wider societal benefits, such as societal security (Kivimaa and Sivonen 2023). One such example involves cybersecurity as part of the provision of societal security, as the analysis clearly shows that all countries seek to develop this sector, which spans multiple governing levels. This may be one of the most significant components where the nexus comes together and tangible cooperation is needed.

When security policy outstrips energy policy, decision-making may become more closed and secretive, and practices in energy transitions may become securitised (Floyd 2019). However, considering security in energy policymaking may be essential to prepare for the broader repercussions of energy transitions (cf. Kanger, Sovacool, and Noorköiv 2020), as the situation in 2022 showed, and to involve less extreme measures than traditional securitisation theory proposes (Heinrich and Szulecki 2018). Some have framed this softer version of securitisation as geopoliticisation (Herranz-Surrallés 2022). Yet, considerations of security must remain characterised by open discussion and

dialogue in democratic states in order to avoid elite hegemony. If processes are closed, it becomes almost impossible to analyse decision-making.

## 8. Conclusions

This study has investigated how national strategic energy, climate, security, and defence planning unfolded under increasing pressures to decarbonise energy systems. We call this area of governance the energy–security nexus. Previous research has paid little attention to it in small states. We analysed policy documents in three Northern European states, Estonia, Finland and Norway, over a 17-year time period (2006–2023). Despite political efforts and grand promises, these countries continue to use and produce fossil fuels. We expected that perceptions of national security could affect how their policies frame zero-carbon energy transitions and sought answers to the question of how zero-carbon energy and security issues have co-evolved with, strengthened, or undermined one another in national policy strategy documents. Additionally, we sought to shed light on why these highly developed and seemingly decarbonising countries still use and produce fossil fuels.

The epistemic governance framework is ultimately about social change and proved to be useful in analysing and comparing the discourses in official policy strategies. The analysis provided knowledge for sustainability transition governance to understand policy-making as an area where perceptions matter, and not just actions or technological advancements. The prevalent discourses to keep up certain framings in the policymaking context were identified: 1) transitions happen in a world full of risks, 2) reliable partners and unpredictable neighbours, and 3) energy transitions with reservations. After identifying the discourses used for epistemic work, we compared them in relation to policy intervention points for transitions from the literature: 1) stimulate different niches, 2) accelerate those niches, 3) destabilise the regime, 4) address the broader repercussions of regime destabilisation, 5) provide co-ordination to multi-regime interaction, and 6) tilt the landscape (Kanger, Sovacool, and Noorköiv 2020). We can only comment on these points based on discourses in the energy–security nexus of the studied policy documents rather than the documents in their entirety because the data comprised individual paragraphs identified in the documents. Full texts were not included, as the representation of the energy–security nexus was captured with a carefully selected word search.

We identified all six policy intervention points in Estonian and Finnish discourses. The strategic direction appeared similar in these two countries, yet the emphasis differed until the major landscape shock of war in Europe aligned the Finnish attitude towards

Russian trade with Estonia's view. In Norway, regime stabilisation was not detected at all, making it an expected finding in Norway's path towards zero-carbon energy policies. The intervention points indicated that despite seemingly grand efforts to participate in global climate agreements, Norway did not provide concrete policies that would lead to fossil fuel phase-out in the energy–security nexus. Perhaps the suggestion to think about the intervention points in a different order (Kanger, Sovacool, and Noorköiv 2020) would be useful, as Norway's reluctance to avoid regime destabilisation appears static, yet major landscape changes may still destabilise its fossil fuel regime.

Our study also contributes to the theoretical understanding of sustainability transitions by illustrating how rhetorical tools are practical and institutional tactics in legitimation. Policymakers must gain legitimacy for policy measures by defining threat scenarios while demonstrating their aspirations to fulfil global climate agreements. Governments need to demonstrate responsibility to achieve institutional legitimacy by presenting factors causing instability in society during a transition, defining those who are the causes of it, and finding suitable solutions based on existing societal norms and ideals. The analysis shows that the last task in particular differs between countries when it comes to the energy–security nexus: while sustainability was important to all of the countries, Estonian strategies highlighted national sovereignty, Finnish strategies emphasised preparedness and the economy, and Norway's approaches tied its sustainable development and economic security to hydrocarbons.

Interestingly, NATO was not significantly visible in the nexus, despite its orientation to energy security (Bocse 2020). Another unexpected point was that Norway did not seem to explicitly advertise for the importance for Europe of fossil fuels sourced from a stable and reliable country until the Russian invasion of Ukraine in 2022.

We close by arguing that the greater inclusion of security- and defence-related aspects in energy politics or broadening energy and climate politics to also consider security and foreign politics would significantly expand the perspectives under which both sectors operate. This would enhance the understanding regarding the complex global system of energy flows and the need to improve the preparedness of both sectors for future challenges. However, this approach also carries risks, such as security and defence concerns becoming the supreme concern and thus hindering sustainability transitions. Path dependencies are also connected to the expansion of renewable energy sources, creating new interdependencies with broader repercussions, such as

through global power competitions that create more physical and rhetorical obstacles to sustainability transitions. Generally, the co-evolution of the two sectors would benefit both sectors and bring long-term benefits for climate change mitigation.

## Note

1. Not all documents included cross-references.

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## Appendix 1: Policy documents selected for the strategy analysis involving policy interplay

		2006–2010	2011–2015	2016–2020	2021–2023
Estonia 19 documents	<b>Energy/ Climate 8 documents</b>	National Development Plan for the Utilization of Oil Shale 2008–2015 (2008), Ministry of the Environment Development Plan of the Energy Sector until 2020 (2009), Ministry of Economic Affairs and Communications Development Plan of the Estonian Electricity Sector until 2018 (2009), Ministry of Economic Affairs and Communications National Renewable Energy Action Plan 2020 (2009), Ministry of Economic Affairs and Communications	National Development Plan for the Use of Oil Shale 2016–2030 (2015), Ministry of the Environment	National Development Plan for the Energy Sector until 2030 (2017), Government of the Republic General Principles of Climate Policy until 2050 (2017), The Riigikogu Estonian National Energy and Climate Plan 2030 (NECP 2030) (2019), Government of the Republic	
	<b>Security/ Defence 11 documents</b>	Cyber Security Strategy (2008), Ministry of Defence Estonian Long-Term Defence Development Plan 2009–2018 (2009), Ministry of Defence National Security Concept of Estonia (2010), The Riigikogu	National Defence Strategy (2011), Ministry of Defence National Defence Development Plan 2013–2022 (2013), Ministry of Defence & Defence Forces Estonian National Cyber Security Strategy (2014), Ministry of Economic Affairs and Communication	National Defence Development Plan 2017–2026 (2017), Ministry of Defence National Security Concept of Estonia (2017), Government of the Republic Digital Agenda 2020 for Estonia (2018), Ministry of Economic Affairs and Communication Cyber Security Strategy (2019), Ministry of Economic Affairs and Communication	National Security Concept of Estonia (2023), Republic of Estonia, Government
Finland 22	<b>Energy/ Climate 9 documents</b>	Long-term Climate and Energy Strategy (2008), Prime Minister's Office Valtioneuvoston tulevaisuusselonteko ilmasto- ja energiapolitiikasta: kohti vähäpäästöistä Suomea (2009), Prime Minister's Office	Kansallinen energia- ja ilmastostrategia (2013), Ministry of Employment and the Economy Kansallinen energia- ja ilmastostrategia Taustaraportti (2013), Finnish Ministries Energia- ja ilmastotiekartta 2050 (2014), Ministry of Employment and the Economy	Valtioneuvoston selonteko kansallisesta energia- ja ilmastostrategiasta vuoteen 2030 (2017), Ministry of Economic Affairs and Employment Taustaraportti kansalliselle energia- ja ilmastostrategialle vuoteen 2030 (2017), Ministry of Economic Affairs and Employment Finland's Integrated Climate and Energy Plan to EU (2019), Ministry of Economic Affairs and Employment	Carbon Neutral Finland 2035 – National Climate and Energy Strategy (2022)
	<b>Security/ Defence 13 documents</b>	Strategy for Safeguarding Vital Societal Functions (2006), Ministry of Defence Suomen turvallisuus- ja puolustuspolitiikka (2009), Prime Minister's Office Yhteiskunnan turvallisuusstrategia (2010), Ministry of Defence	Puolustushallinnon yhdyskunta- ja ympäristöpolitiikka (2011), Ministry of Defence Suomen turvallisuus- ja puolustuspolitiikka (2012), Prime Minister's Office Suomen kyberturvallisuusstrategia (2013), Prime Minister's Office Finland's Strategy for the Arctic Region (2013), Prime Minister's Office	Government Report on Finnish Foreign and Security Policy (2016), Prime Minister's Office Update to Finland's Arctic Strategy (2016), Prime Minister's Office Society's Security Strategy (2017), Prime Minister's Office Government Report on Defence (2017), Prime Minister's Office Finland's Cyber Security Strategy (2019), Prime Minister's Office	Valtioneuvoston puolustusselonteko (2021), Finnish Government

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Norway 33 documents	<b>Energy/ Climate 14 documents</b>	Norwegian climate policy (2007), Ministry of the Environment Strategi for økt utbygging av bioenergi (2008), Ministry of Petroleum and Energy	Fullskala CO2-håndtering (2011), Ministry of Petroleum and Energy En næring for framtida – om petroleumsvirksomheten (2011), Norwegian of Petroleum and Energy Vi bygger Norge – om utbygging av strømmettet (2012) Ministry of Petroleum and Energy Norwegian Climate Policy (2012), Ministry of the Environment	Kraft til endring Energipolitikken mot 2030 (2016), Ministry of Petroleum and Energy Norway's Climate Strategy for 2030: a transformational approach within a European cooperation framework (2017), Ministry of Climate and Environment Health, safety and environment in the petroleum industry (2018), Ministry of Labour and Social Affairs Norway's national plan related to the EEA joint committee (2019), Ministry of Climate and Environment Vindkraft på land – Wind power on land (2020), Ministry of Petroleum and Energy Regjeringens hydrogenstrategi (2020), Ministry of Petroleum and Energy	Energi til arbeid – langsiktig verdiskaping fra norske energiresurser (2022), Ministry of Petroleum and Energy
	<b>Security/ Defence 19 documents</b>	Norwegian Defence 2006 (2006), Ministry of Defence The Norwegian Government's High North Strategy (2006), Ministry of Foreign Affairs Norwegian Defence (2008), Ministry of Defence New Building Blocks in the North (2009), Ministry of Foreign Affairs	The High North (2011), Ministry of Foreign Affairs Cyber Security Strategy for Norway (2012), Norwegian Ministries Competency for a new era (2013), Ministry of Defence Norway's Arctic Policy (2014), Ministry of Foreign Affairs Core values of Norway's defence sector (2014), Ministry of Defence Norges strategi for internasjonalt samarbeid for reform av subsidier til fossile brensler (2014), Ministry of Foreign Affairs Unified Effort – Expert Commission on Norwegian Security and Defence Policy (2015), Ministry of Defence	Risk in a Safe and Secure Society (2016), Ministry of Justice and Public Security Setting the course for Norwegian foreign and security policy (2017), Ministry of Foreign Affairs Cyber Security (2017), Ministry of Justice and Public Security Norway's Arctic Strategy (2017), Norwegian Ministries National Cyber Security Strategy for Norway (2019), Norwegian Ministries Norway's Role and Interests in Multilateral Cooperation (2019) Ministry of Foreign Affairs The National Strategy for Artificial Intelligence (2020), Norwegian Ministry of Local Government and Modernisation The defence of Norway Capability and readiness (2020), Ministry of Defence The Norwegian Government's Arctic Policy (2020), Norwegian Ministries	