

**How has the 2021 energy crisis impacted the EU's energy transition, as can be observed in the Dutch energy market in the period of 2021-2023?**

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## **Abstract**

The 2021 energy crisis presented itself as a haunting event for the European Union's (EU) energy transition by greatly increasing energy prices and threatening the security of supply for consumers throughout the bloc. Previous studies have combined expert insights within several member states such as Italy, Greece and Germany, with the energy trilemma indicator to measure its impacts and implications. Pioneering research in the field has also incorporated historical institutionalism as a lens to reflect upon the effect of the 1970s oil crisis on the institutional logics revolving the US's energy sector. Contrary to popular belief, the crisis is not only harmful for the EU's energy transition. This research's findings utilise the exogenous shock's impacts on the Dutch energy market as a case study to highlight the shortcomings of energy policymaking at the European and Dutch level. They indicate that although the crisis was harmful in the short term, it has triggered shifts in mindsets of stakeholders, and can be employed by policymakers to trigger problem searching processes which can offer up great promise for the future of the EU's energy transition, on the long term.

## **Introduction**

The following thesis comprises a comprehensive study of the 2021 energy crisis' impacts for the European Union's (EU) energy transition. There is a targeted focus on the Dutch energy market - as the institution of note - for measuring the crisis' impact due to its particular vulnerability, which will be elaborated upon in the *Theoretical Framework* section. The study utilises the lens of historical institutionalism in order to better understand the implications of this exogenous shock<sup>1</sup> event for the future course of the EU's energy

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<sup>1</sup> "Exogenous shocks are external events that affect a system but they are not generated by the system itself. They are considered as random and unpredictable such as technology outbreaks, hurricanes, sudden changes in governments, geopolitical events..." (IGI Global, 2023)

consumption and production patterns. The energy trilemma indicator will also be applied to concretely understand the impacts of the crisis at both a Dutch and European level.

The research methods used to collect data include a study of existing legislation and a set of interviews with relevant stakeholders involved in the Dutch energy market. The study of legislation will allow the thesis to inform readers on how relevant legislation at the European level was updated as per the crisis' effects. Whereas, the semi-structured interview format will shine light on the lived experiences of actors in the market during this time of crisis. The stakeholders perspectives which were included are university researchers, experts in the field, energy cooperatives and consultancy firms<sup>2</sup>, due to their crucial role in the Dutch energy market throughout the crisis' duration. I hope to not only determine how they were impacted by this exogenous shock, but also, to offer their feedback for the Dutch and EU's policy response, and their expected long term implications for the Dutch energy market and, more broadly, the EU's energy transition.

In order to achieve this I have structured the thesis as follows. The next section states the research question which the research I have conducted revolves around, and provides a short overview of what brought about the 2021 energy crisis, placing it into the broader context of the EU's energy transition. This is followed by my reasoning for inclusion of the energy trilemma indicator and historical institutionalism as the theoretical frameworks utilised in my research. The *Methodology* section provides an in-depth description of the interview process which I carried out as part of the thesis, justifying the inclusion of relevant stakeholder perspectives for understanding the impacts and implications of the exogenous shock studied. Subsequently, the results are presented in the form of a thematic analysis of the

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<sup>2</sup> The reasoning for their inclusion as relevant stakeholders will be elaborated upon in the beginning of the *Methods* section of the paper

interviews' content, as well as, an analysis of legislation implemented prior to - and in response - to the crisis. Lastly, I will discuss the implications of my findings and draw comparisons with previous academic research conducted in the field before offering a conclusion with the key takeaways of my research.

### **Research Question**

*How has the 2021 energy crisis impacted the EU's energy transition, as can be observed in the Dutch energy market in the period of 2021-2023?*

The research question which pertains to this study has been laid out above. The following section will furnish readers with the necessary information to understand the backdrop underlying the importance of the research question.

### **Background to the Research Question**

I have included a short section in the *Appendices* section of the thesis elaborating on how developments within global climate policy over the past few decades set the stage which preceded the crisis' onslaught.

#### **2021 Energy Crisis**

The 2021 energy crisis had a huge economic and social impact throughout the globe. This is in part due to its timing, which followed the aftermath of another global crisis brought about by the COVID-19 pandemic. This left "inflation in many countries well above target

and budget deficits already large because of emergency spending” (International Energy Agency, n.d.), which meant that countries throughout the world were less prepared to cope with a subsequent crisis.

However, this was not the only crucial piece of groundwork laid ahead of the 2021 energy crisis. It is important to mention the long lasting conflict between Russia and the bloc, caused by territorial disputes over Crimea, the Donetsk and Luhansk regions (International Crisis Group, 2022). There were a series of attempts at the international level, between Russia, Ukraine, France and Germany to end the conflict by signing a series of multilateral agreements, but these never came into effect (Reuters, 2021). As a result of the fruitless discussions with Russia, the EU implemented economic sanctions in 2014 with the aim of “effectively thwart[ing] Russia's ability to continue its aggression” (European Council, n.d.) The conflict came to a climax in early 2021, as Russia began withholding part of its gas supplies to the EU, justified as a response to the bloc’s economic sanctions (Meredith, 2022). Once the territorial disputes broke out into an all-out war between Russia and Ukraine, it culminated in the sabotage of the Nord-Stream 1 pipeline: the main pathway furnishing EU’s member states with natural gas from Russia.

This sabotage represents the foundational cause of the crisis, as evidenced in an European Council on Foreign Relations article, where Szymon Kardaś mentions that Russian gas “[...] accounted for about 45 per cent of total gas imports” made by EU countries in 2021. The same article states that Russia was their largest supplier of petroleum, and that 51.4 million tonnes of coal were imported from the country in that year, “which represented nearly half of total EU coal imports”. Kardaś (2023) clearly shines light on a broader issue which opened up the possibility for the 2021 energy crisis to occur. This hints at the EU’s pattern of

overreliance on Russian fossil fuels in the decades leading up to it, which will be elaborated upon in the *Results* section of the thesis.

### **Relevance of Research**

The 2021 energy crisis is an extremely recent global shock event, meaning that the study of its implications is still a novel academic field. Moreover, the implications of this external crisis can have a huge impact on the progress of the EU's energy transition. It is within public interest to better understand these implications in order to effectively tackle them, and build resilience ahead of future crises which will recur at some point due to the interconnectedness of the global economy (Gilbert et al., 2021) (Kardaś, 2023).

Throughout the process of acquainting myself with the relevant academic discourse surrounding the topic, I have found several studies which focus on the value of relevant stakeholders' experiences for the analysis of an energy market (Kleanthis et al., 2022) (Frilingou et al., 2023) (Jehling et al., 2019). However, these studies often lack an instrumental piece of the puzzle which is how institutional logics can deter, and bring about, change within the energy transition. This thesis combines a study of relevant policies at the European level with the narratives of stakeholders in the Dutch energy market, acquired through a set of interviews guided by the theoretical frameworks of the energy trilemma indicator and historical institutionalism. The essence of the study will build upon the plethora of existing research already in place, in order to reach a truly encompassing perspective of the 2021 energy crisis' influence for the EU's energy transition, and the Dutch energy market. In order to do so, I aim to not only analyse the immediate impact of the crisis, but also look

beyond them. I will actively acknowledge the effects of policy making choices of the bloc which have partly contributed to its precarious position, instead of seeing the crisis as an isolated event. Moreover, I plan to acknowledge the potential of this exogenous event to shake the institutional foundations supporting the EU's energy transition. This will allow me to adopt a more long term perspective at how it can carve the future of energy production and consumption patterns of the EU, and the Netherlands.

### **Theoretical Framework**

In the following section of the paper, I aim to both elaborate on and substantiate my choice of theoretical frameworks for the analysis of the 2021 energy crisis. This will be done through analysing the existing academic literature surrounding the topic of my thesis, and reflecting on how it guided my choice of theoretical frameworks.

### **Energy Trilemma**

It is important to highlight that trends in research of the energy transition tended to place great focus on the study of shifts in the patterns of sustainability (Gilbert et al., 2021). This came as a result of the ongoing shift towards renewables, and away from fossil fuels, in order to meet the climate targets laid out by the aforementioned Paris Agreement and EU Green Deal. However, it has been highlighted by Pliousis et al. (2019) that the energy transition is “a complex and multifaceted task that should take into consideration a wide range of technological and socio-economic issues”. Moreover, the ‘Fostering Effective Energy Transition’ report produced by the World Economic Forum outlines that the recent



2021 energy crisis led to several countries shifting their focus towards energy security and away from sustainability (World Economic Forum et al., 2023). Similar shifts in priorities were echoed by Grigoryev and Medzhidova's (2020) research which revealed that the COVID-19 pandemic increased "the necessity to solve problems of [...] energy poverty [...] and inequality", on top of climate change mitigation. Therefore, both the recent developments of exogenous crises affecting the global energy market, and pre-existing shortcomings in studies conducted to monitor the progress of countries' energy transitions showcase the need for a novel framework which can provide a more encompassing perspective on the issues faced by countries striving for an idealised energy market.

On the other hand, the extensive research which has been conducted on the 2021 energy crisis from its onset, has led to a large database regarding the broad implications of its effects (Hille, 2023) (Meckling et al., 2022) (Mathews & Tan, 2014). This means that not having a targeted approach when accessing the available data would result in an overly general analysis of the crisis' impacts. This led me to conclude that narrowing down the focus of my research to a set of concrete indicators of the crisis' effects will allow for the best ratio between the depth and breadth of my research. The study conducted by Liu et al. (2022) on the energy transition of the top ten CO<sub>2</sub> emitting countries in the world, achieved this by utilising the energy trilemma as a theoretical framework to concretely measure the progress of their energy markets. It concluded that policymakers ought to integrate the three aspects of the indicator: energy security, affordability and sustainability into implemented energy policies in order to "facilitate [a] clean energy transition that maximizes social and economic benefits that support environmental sustainability." Additionally, Weiss et al. (2021) successfully applied this same framework to analyse several models of forecasted growth for the electricity markets of 5 EU member states. The outcome of the research determined that the energy trilemma can be instrumental in "help[ing] policy makers to determine which

combination of policies can be effective in achieving the long-term decarbonization goal and to understand better how electricity markets and their regulation can successfully co-evolve.”

These two pioneering studies supported the rhetoric that policy making and the energy transition are foundationally linked. Therefore, I purposefully sought guidance within the most impactful organisation towards the EU’s energy transition. This is the European Commission’s vision of an ideal European energy market because of its pivotal role in shaping the future of the bloc’s energy transition through effective policymaking. This describes its “[...] aims to ensure a secure, competitive and affordable supply of energy, while meeting our climate targets” (European Commission, 2022). Furthermore, I analysed the ‘RePowerEU’, as the most recent and relevant set of legislation adopted by the EU in response to the crisis. Its 3 step plan to tackle the crisis consists of policies aiming to “accelerate [the] clean energy transition”, “diversify energy sources” and “save energy” (European Commission, 2022). The combination of the European Commission’s vision and RePowerEU plan’s goals for an idealised energy market align with the energy trilemma approach which was successfully employed by Weiss et al. (2021) and Liu et al. (2022) in their research of the energy transition. Their shared keywords suggest that the trilemma deeply reflects these two entities’ policy making goals for the future of the EU’s energy transition, and by extension, the Dutch energy market. This allowed me to conclude that the energy trilemma indicator was the most appropriate framework to measure the crisis’ effect.

### **Historical Institutionalism**

This thesis is rooted in the ideology of historical institutionalism, and utilises it as a foundational framework to analyse the crisis’ broader implications for the EU’s energy

transition. The particular institution to be analysed is the Dutch energy market, which will serve as a case study of how one of the EU's member states responded to the crisis' effects. Historical institutionalism is "based on the assumption that institutional rules, constraints, and the responses to them over the long term guide the behaviour of political actors during the policy-making process" (Encyclopedia Britannica, 2014).

Institutional theory has already been successfully used in the field by Jehling et al. (2019a), to determine that institutional composition has a crucial effect in the implementation of renewable energy (RE) projects by relevant stakeholders across Germany and Australia. This study both supports the value of institutional theory as a lens for the process of the energy transition's analysis, and of stakeholder perceptions as a means of gathering insights into the transition, beyond the top-down approach of policy making. The researchers argue that institutional theory lends its use through contextualising the "historically embedded norms and power structures" present in the energy transition, which shape its future through the path dependency present in institutions. The concept of path dependency is the keystone of historical institutionalism, one of the core theoretical frameworks utilised in this thesis, as it provides a clear causal mechanism to explain the institutional persistence which is undoubtedly present in the energy transition (Arthur, 1988) (David, 1985). This is similarly reasoned by Andrews-Speed (2012), who defines 'policy paradigms' as a "set of shared beliefs, values, ideas and principles relating to [...] a particular sector." He argues that policies implemented in the field of the energy transition are most often formulated within the constraints of the existing institution due to the large economic and political importance of this sector.

It is also important to note that part of the current body of literature pertaining to the field of institutional theory includes a focus on the mechanisms which manage to offset

these constraints. The two main mechanisms are referred to as ‘exogenous’<sup>3</sup> and ‘endogenous’<sup>4</sup> change. The following thesis will focus on the role of exogenous change due to the nature of the 2021 energy crisis, as an external jolt which impacted the existing institutional logics and structure of the Dutch energy market - the institution of choice. Existing literature regarding exogenous events describes their disruptive effect for the usual taken-for-grantedness of long lasting institutions (Thornton & Ocasio, 1999). This is because the immediate and alarming consequences brought about by crisis events have the potential to delegitimize existing institutional logics (Sine & David, 2003). In this way, they generate new “search processes” within institutions, which have been freshly reminded of the shortcomings of the existing practices. This means that “fringe entrepreneurs, inventors, and economists” who previously failed at gaining the necessary momentum to implement their critiques of contemporary practices now received a renewed interest in their ideas. This interest is not borne of innovation, but a legitimation of already pre-existing alternatives, which were previously overlooked due to path dependency.

This theoretical framework was successfully used by Sine & David (2003) to analyse the implications of the 1970s oil shocks for the US’s energy sector. However, it is also present in more recent studies, and has led Hille (2023) , Meckling et al. (2022), and Mathews & Tan (2014) to speculate that the 2021 energy crisis could bring about benefits for the EU’s energy transition, brought about by the same undermining of current institutional practices and structure as in the US’s energy industry. These benefits could come in the shape of the ‘RePowerEU’ plan, which will be elaborated upon in the following *Existing*

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<sup>3</sup> “actors navigate tension between agency and structure, managing to revolutionize or alter practices while acting within the constraints and opportunities provided by existing institutional arrangements” (Wijen & Ansari, 2007)

<sup>4</sup> “characterized by critical events such as economic shocks which can precipitate institutional change” (Wijen & Ansari, 2007)

*Legislation* section of the paper, and examined through the experiences of relevant stakeholders within the *Interview Results* section.

This paper will make use of institutional theory by taking it as a starting point from which one can effectively analyse the policy making choices laid out in the decades before the crisis, and the experienced changes made by policymakers as a result of the exogenous shock. Additionally, the lens of historical institutionalism proves to be instrumental in allowing the reflection upon the intricacies of the Dutch energy market as more than individual, isolated components of its making. Instead, it provides a unique perspective of the importance of underlying values and motivations which have inspired the overarching patterns in policy making choices, painting the energy market as the cohesive and dynamic entity which it is.

## **Methodology**

The results are supported by two primary methods of research: an analysis of legislation implemented prior to, and in response, to the crisis and a set of semi-structured interviews. For the analysis of policy documents, I have used the European Commission and EUR-Lex website to access information regarding relevant agreements and targets. This analysis has proven crucial in deepening my knowledge of the EU's energy transition, by shining light on the vision outlined by policymakers for the European (and through inclusion the Dutch) energy market. It helped me prepare a set of questions<sup>5</sup> for the semi-structured interviews which I conducted, in order to successfully engage deeper with the content of my thesis.

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<sup>5</sup> A model of the interview questionnaire is provided in the Appendix section of the paper

## **Relevancy of Methodology**

The stakeholder perspectives included in my research were of energy cooperatives, energy developers, experts in the field and university researchers. In the following paragraph I will argue for the inclusion of these perspectives as relevant input for the findings of the thesis' research. Some of the most relevant papers in the emerging field of this thesis are Kleanthis et al. (2022) and Frilingou et al. (2023), which both exhibit the value of stakeholders' experiences and perceptions, by adopting it as a lens to examine the EU's response to the climate crisis. The authors of the papers argue that the "cross-cutting themes" and "context specific challenges" highlighted by a combination of experts from various member states allow them to "draw conclusions for better-informed decision-making and joint planning at national, regional, and supranational/EU levels".

The study conducted by Kleanthis et. al. (2022) calls upon experts to represent the various groups of the EU's energy transition. I would argue that, in this way, the study does not make full use of the variety of stakeholder perspectives active within the European energy market. On the other hand, Frilingou et al. (2023) incorporates a wider variety of perspectives through eliciting knowledge from "stakeholders with a professional background that is relevant to Italy's energy sector and with domain expertise in the country's electricity system—be that researchers, academics, or representatives from industries, civil society associations, and NGOs". In this way, he determines that the inclusion of actors in the market "ha[s] been found critical in supporting and/or guiding the 'best available science'", by supporting that they hold inherent knowledge of the market's intricacies due to their close engagement with it.

This rhetoric has also been supported by Eker et al. (2017), who successfully applied a combination of expert and stakeholder perspectives to analyse the Dutch dynamics of the

Dutch gas sector in response to the 2021 energy crisis. They emphasised the importance of an inclusion of “diverse opinions and views, not only on possible futures but also on values and interests” in order to give me a more encompassing perspective of the crisis’ impact. In this way, one’s research will be more reflective of the diverse nature of actors within the market, going beyond the information which statistics alone can provide. This rationale clearly justifies my usage of relevant stakeholders’ experiences in the event of the crisis’ impacts on the Dutch energy market.

Moreover, the increasing importance of energy cooperatives for the Dutch energy market since its liberalisation in 2004 justifies that their inclusion will complement the findings of my research (Nordic Energy Research, n.d.). Their relevance as a stakeholder has been investigated by Hufen & Koppenjan (2015) who investigated whether energy cooperatives “can contribute to a transition towards renewable energy production or consumption in the Netherlands”. Their results revealed that this emerging stakeholder contributed successfully to the Dutch energy transition, especially through the implementation of local wind projects, and that their “knowledge about the mechanisms underlying energy transitions or radical innovations seems to be valuable.” In this way, the existing body of academic literature which has been discussed in the previous paragraph provides the underpinning for my choice to include the relevant stakeholder perspectives.

## **Participant Selection**

The participants were selected based on a combination of previous contacts from my *Living Lab* research project, and by sending emails to stakeholders involved in the market found through the internet and LinkedIn. The Participants were self-selected and no financial compensation was provided to participate in the study. The possibility of sharing the thesis

with interested stakeholders after completion was partly used as a motivation to gather interest, and it received positive responses. The perspectives which have been incorporated are exhibited by Figure 1.

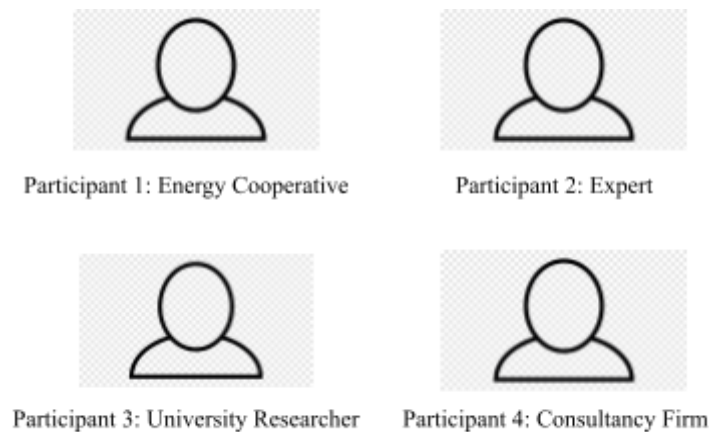


Fig. [1]: Layout of research interviewees involved within the research

## Research design

The interviews were of qualitative nature, as they entailed an in-depth analysis of stakeholders' experiences of the crisis, and its policy responses. They lasted 45 minutes to 1 hour and followed an interview guide which was provided to participants beforehand. Most participants were interviewed through individual online meetings through Google Meets and Microsoft Teams. One interview was conducted in person, at the office of the consultancy firm. There are important ethical considerations that come with conducting qualitative research, especially because it involves recording other people's voices. To ensure that the research was conducted in an ethical manner, I have created a consent form that every participant must sign prior to interviews being conducted. This is in order to ensure that they are familiar with what the research entails, and to guarantee that their anonymity will be preserved at all times throughout the research. Moreover, I have taken further precautions to



ensure confidentiality through the omission of any information which could tie the research back to the participants and the company or organisation which they are affiliated with.

### **Data analysis**

The interviews conducted were transcribed partly with the help of Otter.ai and verbatim. The transcripts were then analysed using thematic analysis. I followed a deductive approach due to the nature of my theoretical framework providing me with the themes to look out for in my data collection. These 3 themes are the indicators of the energy trilemma, which were utilised to categorise the participants' responses based on which crucial aspect of the crisis' effects, on the EU's energy transition and Dutch energy market, their answers were touching upon. I analysed these results adopting a semantic approach, because I was interested in the explicit content provided by the participant's valuable insights as active stakeholders in the Dutch energy market. This analysis, along with the nature of my interview guide, allowed me to identify 3 sub-themes within the interview results: these were *crisis impacts*, *policy review* and *long term implications*, and will be applied to each of the energy trilemma's indicators in the *Results* section of the paper.

## **Results**

### **Existing Legislation**

The RePowerEU was an emergency set of policies implemented by the EU in response to the 2021 energy crisis. These are relevant for the pathway of the EU's energy transition because they updated existing legislation present in the 'Fit for 55' package. This

was a set of proposals introduced in 2019 with the aim of revising existing legislation, in order to ensure that the EU remained in line to meet the goals outlined by the Paris Agreement and EU Green Deal (European Council, n.d.-b). The nature of both legislations pertains to a European directive, which is defined by the European Union (n.d.) as: a “legislative act that sets out a goal that all EU countries must achieve. However, it is up to the individual countries to devise their own laws on how to reach these goals.” This specific type of European legislation aims to provide guidance or act as an example of how member states ought to account for the union’s established goals within their national legislation. This means that the implementation of the directives at the national level is binding, although it leaves room for interpretation on how to achieve this result. Therefore, they are impactful for the case study of the Dutch energy market because the Netherlands is a member state of the EU and, as such, should comply with the legislation and goals laid out by its institutions and frameworks.

I have identified three relevant topics present in both sets of European legislature, which are highlighted in Figure 2, a diagram produced by the European Commission to illustrate the priorities of the RePowerEU plan. I will discuss the legislation laid out by each package regarding each of the topics in the following section, so that they can be better assessed in comparison to the experiences of the stakeholders of the Dutch energy market which have been interviewed as part of this study.

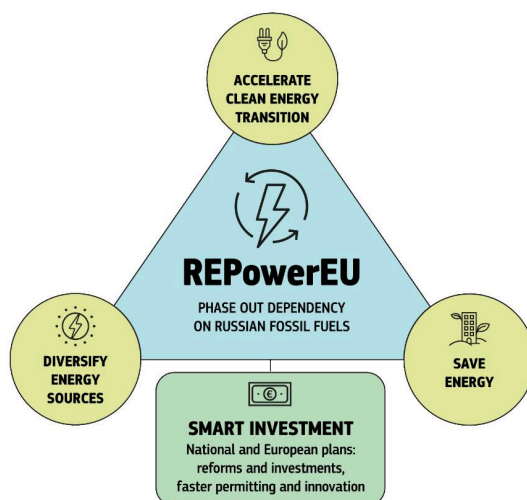


Fig. [2]: The goals laid out by the RePowerEU plan

### ***“Accelerate Clean Energy Transition”***

The ‘Fit for 55’ package most notably converted the EU Green Deal’s ambition of “reducing EU emissions by at least 55% by 2030” (European Commission, 2021) into a legal obligation for all Member States (European Council, n.d.-b). In this way, it sets unprecedented standards for the shift away from fossil fuels. This has large implications for the EU's energy sector, because of its aforementioned large role in the bloc’s GHG emission generation. In order to effectively progress the energy transition, the package encouraged the scaling of RE projects throughout all the member states. This is done in the form of an increase to the previous target laid out by the ‘Renewable Energy Directive’ from “[...] 32% of renewable energy sources in the overall energy mix to at least 40% by 2030” (European Council, n.d.-b). The RePowerEU plan took this one step further, by updating existing legislation through the increase of the ‘Renewable Energy’ directive’s target “[...] to 45% by 2030, up from 40% in last year’s proposal” (European Commission, 2022).

### ***“Save Energy”***

In terms of saving energy, there were two avenues outlined by the EU. Firstly, energy efficiency measures, with an initial goal in 2007 of improving “[...] energy efficiency by 20% by 2020 compared to 1990 levels [...]” (European Union, 2021). Secondly, saving energy was tackled through the means of decreasing consumption. The ‘Fit for 55’ package outlined the importance of this issue primarily through the goal to “make buildings in the EU more energy efficient by 2030 and beyond” (European Council, n.d.-b). As for the RePowerEU, it revolutionised this avenue of the energy market by achieving a binding target to “reduce final energy consumption at EU level by 11.7% in 2030, compared to projections made in 2020” (European Commission, n.d.-c). Moreover, it provided a novel shift in the focus of responsibility of energy saving towards a shared responsibility, between the stakeholders of the energy market and consumers. This was done through the goal of “[...] behavioural changes which could cut gas and oil demand by 5% [...]”. Moreover, it targeted demand reductions of natural gas specifically, due to the 2021 energy crisis, which had caused its prices to greatly increase, as evidenced by the [x] section. This meant that it laid out a “voluntary target to reduce gas demand by 15%”.

### ***“Diversify Energy Resources”***

The third theme found in how the two policymaking packages relate to the energy transition, lies in the bloc’s efforts to tackle their overreliance on natural gas as an energy source. This was initially present in the ‘Fit for 55’ package, which contained its first ever legislation concerning ‘methane’, the main ingredient in natural gas. The package offered a

proposal with targets to “track and reduce methane emissions in the energy sector” (European Council, n.d.-b). The EU Energy Platform is a joint purchasing mechanism introduced as part of the RePowerEU plan, which allows member states to coordinate bids and aggregate demand<sup>6</sup> of natural gas, LNG and hydrogen from foreign suppliers (European Commission, n.d.-d). Its aim is to ensure the most competitive costs for the bloc amidst the crisis due to the sudden loss of a large source of energy production, and an already saturated LNG market, by preventing member states from competing against each other as well. Alongside the EU Energy Platform, the RePowerEU plan outlined goals of “[...] working with international partners to diversify supplies[...]” (European Commission, 2022). The potential reasoning and implications of the changes in EU policy making, as per the 2021 energy crisis, will be elaborated upon in the *Discussion* section of this thesis.

## **Interviews**

The analysis conducted of existing research and legislation guided the interview questionnaire<sup>7</sup>, rooted in the theoretical frameworks of historical institutionalism and the energy trilemma indicator, which yielded the following results:

### ***Energy Affordability***

**Crisis Impacts.** All relevant stakeholders reported energy prices as being characterised by a sharp increase and reaching extraordinarily high numbers. Participant 1 expressed that this led

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<sup>6</sup> “A demand aggregation contract [is] established to combine purchases of common goods and services to yield better value for money through economies of scale.” (Chew, 2016)

<sup>7</sup> A model example of the interview questionnaire provided to stakeholders is present in the *Appendices* section

to shock from members of energy cooperatives throughout the Netherlands, because they did not expect the renewable energy which they generated to be impacted so heavily by the sudden cut-off of Russian gas. Participant 2's expertise shone light on one demographic which was particularly affected: the Dutch 'heavy industry'. Several companies suffered "[...] due to the high energy prices, they operated at half speed." This includes fertiliser and metallurgy companies which utilised "cheap natural gas" for their business to be profitable. The crisis meant that their prices were no longer competitive and led to the closing of several companies. Participant 3 revealed that energy prices went up from all time low prices during the COVID-19 crisis of "around 14 or 15 euros per megawatt hour [...] to 220" during the height of the crisis' effects. This was exacerbated by price volatility<sup>8</sup>, which became a real issue, as "we saw price jumps that normally happened in one year in just one day." Lastly, Participants 1 and 3 both described intensified energy poverty<sup>9</sup> throughout the country due to rising prices, and a lack of isolation in housing throughout the country. This came as a result of the "government cut[ting] down the subsidy for building such houses much earlier than the crisis started".

**Policy Review.** The main critiques of policies implemented to tackle the affordability of energy both ahead of the crisis, and in its subsequence, were made by Participants 1, 3 and 4. Participant 3 elaborated upon the fact that the EU's mandate for member states to "[...] have at least 80% of their reserves filled in [...]" by the winter of 2022 (European Council, n.d.-c) led to a massive purchase wave by all member states which unnecessarily lended its contribution towards intensifying the already record high energy prices. Moreover, the linkage between gas prices and electricity prices in the global market meant that electricity

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<sup>8</sup> Market volatility is the frequency and magnitude of price movements, up or down. The bigger and more frequent the price swings, the more volatile the market is said to be. (Ashford, 2023)

<sup>9</sup> "Energy poverty occurs when a household must reduce its energy consumption to a degree that negatively impacts the inhabitants' health and wellbeing" (European Commission, n.d.-e)

prices kept increasing during the crisis too, even though the cost for making electricity was not increasing. These were pre-existing problems created by shared decisions and the current law system which were only brought to the forefront by the crisis, even though they were already present (Participant 3). All participants expressed discontent with the price caps implemented by the Dutch government in response to rising prices. Participant 2 stated that their reactive nature is flawed because there should have been proactive measures already in place to prevent the situation in the first place. He did, however, acknowledge that it was a milestone for the Dutch energy market as, for the first time, the government identified a “ceiling” for the percentage of citizens’ income they would tolerate to be spent on energy.

Additionally, Participant 1 mentioned that although they were helpful for “people at home” by bringing costs down, energy cooperatives felt that the energy suppliers were profiting hugely as they could set the prices at an all time high and receive the remainder above the price cap directly from the government. Alternatively, Participant 4 expressed that the energy developers, who their consultancy firm worked closely with, were extremely unhappy with the European Commission’s decision to implement a new law. This law determined “[...] that if the revenues for energy projects exceed a certain amount for solar and wind, it was from out of my head 130 euros per megawatt hour [...]”, then 90% of revenues above that threshold should be taxed from developers. Their clients shared the sentiment that this was not in line with the free market values which they expected, as when prices of energy were extremely low during the COVID-19 pandemic this was seen as part of the risk of entrepreneurship. And now that prices benefitted them, they could not reap the profits to compensate for the money they had lost prior. Participants 2 and 3 also commented on the implemented price caps, by claiming that they were inefficient, because they were deployed as a “wide spread measure”, instead of being targeted towards those who were facing conditions categorised as energy poverty. Lastly, the RePowerEU act was praised due to its initiative to increase cooperation,

and solidarity, EU member states in the purchasing of energy during the time of crisis (Participant 3).

**Long Term Implications.** Participant 4 outlined that the crisis triggered a high demand in their clients to make production processes more efficient, in order to save energy due to increased prices. Participant 2 also mentioned a shift in client demands brought about by the same reasoning. However, this shift was towards investments in renewable energy such as solar PV (photovoltaic) fields and wind turbines because rising prices meant the “payback times improve[d]”. Both Participants 2 and 3 believe that this scale up of RE will result in more locally produced energy which will slightly increase prices, but make them more predictable, which is an important characteristic in energy markets for stakeholders and consumers. However, Participant 1 revealed that the crisis would create increased awareness from consumers moving forward regarding the excessive profit made by energy companies. In turn, they predict this “wake-up call” will ensue a demand by the public “[...] to see energy as a common [...]”, instead of a privatised commodity. Lastly, Participant 2 speculated that the crisis would nudge the heavy industry present in the Netherlands away due to exposing the vulnerability of its energy market to external pressures. This could present a “blessing in disguise” (Participant 2) because it would further decrease the country’s consumption.

### ***Energy Security***

**Crisis Impacts.** There was a consensus among all responses that the importance of energy security for the stakeholders of the Dutch energy market was highlighted through the crisis. The participants described that prior to its effects, there was a ‘taken-for-grantedness’ of energy shared among consumers who never experienced feelings of concern over their energy



supply. Participants 2 and 4 both suggested that this was likely due to the prior accessibility of the Groningen gas field<sup>10</sup>, which provided the luxury of “being able to fulfill your own energy demands, to secure your energy”. Participant 2 also expressed the fact that the energy developers who they worked with struggled in the set up of new energy contracts. This is because clients were hesitant to sign new contracts due to the increase in prices, due to energy developers not knowing where to set the market rate due to the aforementioned high price volatility, and due to agreements based on the old prices leading to a huge risk of bankruptcy.

**Policy Review.** Both Participant 2 and 4 mentioned that a crucial factor in the crisis’ impacts was the approval of the Dutch Senate for a law vowing to shut down the extraction of natural gas from the Groningen gas field in October of 2023, after several years of public backlash over the seismic activities produced by the drilling for gas (Reuters, n.d.). This decision was highlighted by both participants as being fundamental to the severity of the crisis’ impacts due to it leaving “the Netherlands a lot more vulnerable for all the price swings in the energy market”, including external shocks such as the sudden cut-off of supply from Russia. In order to cope with the increased vulnerability brought about by the crisis, the government “buil[t] an LNG terminal in Groningen in less than six months” (Participant 4). This was praised as a big achievement by the consultancy firm because of how rapidly the permitting procedure was overcome. They claimed that the external shock of the crisis provided a prime case study of how the energy transition could be made more efficient. Participant 3 expressed that the crisis exposed the “wrong policy choices that had been done in the past concerning how to meet our energy needs”. He added that policies were extremely motivated by national interest in securing the cheapest energy possible, leading to an overreliance on a singular party to supply so much of the EU’s energy, which compromised the bloc’s energy security.

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<sup>10</sup> The Groningen field was discovered in 1959 and at that time turned out to be the largest natural gas field in the world. (NLOG, n.d.)

**Long Term Implications.** It was outlined by Participant 4 that the crisis highlighted the importance of energy security above the goals of sustainability laid out by the Netherlands and EU. This is because, “if you have not enough energy, just the lights go off, industry turns off, and then well, your whole country is disrupted”. However, although Participant 2 agreed that the crisis highlighted the importance of energy security, they stated that it also presented itself as a new driver of the energy transition in the very form of an external shock to the geopolitics surrounding energy. They argued that the shock was working towards shifting the EU’s pre-existing perceptions that “the wholesale market will solve the problem in the most cost effective way”, and instead putting an increased interest in the securing of energy security for the bloc to become independent from the market. Participant 3 concurred with this point by claiming that it is crucial for the Dutch energy market to “[...] avoid being too much dependent on others and make sure that indeed you have more energy production on your own jurisdiction through the means of renewables.” All of these three participants expressed hopes that it has opened up a window for a future scale-up in implementation of biomethane and hydrogen in the Dutch energy market, as solutions to this increased need for energy security. This is because, although there was a huge increase in prices, the crisis revealed that companies and households will still consume energy. Participant 4 stressed the importance of this outcome because, for the development and implementation of biomethane and hydrogen technologies, the production costs will initially be higher than those of natural gas. Participant 3 and 4 were once again in unison, as they expressed a perceived increase in discourse surrounding the “green molecules transition”<sup>11</sup> through new targets outlined by the EU and Dutch government.

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<sup>11</sup> “Green molecules are a new class of sustainable fuels and chemicals that are produced from renewable energy sources and have a low carbon footprint.” (Dadhich, 2023)

## **Energy Sustainability**

**Crisis Impacts.** A common thread in the answers provided by the interviewed stakeholders was that the crisis led to an acceleration of the energy transition. This is due to a variety of additional drivers caused directly by the crisis, such as the increased profitability of new energy projects as per the increase in prices brought about (Participant 2). This justifies the increased interest amongst Dutch citizens to join energy cooperatives, and invest into renewable energy projects, reported by Participant 1. It meant that the Netherlands saw a “big inflow of pension funds from abroad” (Participant 4) who invested heavily into the renewable energy sector, looking for profits. Another shared theme across stakeholders was an increased focus by actors in the market to decrease consumption. This approaches sustainability from a different perspective, as actors became more conscious of demand throughout the crisis due to the increase in prices (Participant 3).

**Policy Review.** Participant 4 outlined that the pre-existing Dutch SDE++ subsidy scheme would become even more crucial following the lack of energy security and increased price volatility experienced during the crisis. This is because it provided a favourable and risk free environment for stakeholders to invest into renewable energy production. It does this through its 12 to 15 year guarantee of subsidising the difference between the cost of sustainable energy technology and market rates of electricity, to ensure that pioneering technologies have a profitable implementation (Netherlands Enterprise Agency, 2020). Additionally, Participant 1 argued that the Dutch government should place more emphasis on energy cooperatives in the energy transition. They claimed that the privatisation of the energy sector was harming consumers, and by simultaneously giving power back to the people and taking it away from

energy developers, more renewables can be implemented and a fairer energy market can be created.

**Long Term Implications.** The primary future prospect surrounding energy sustainability was identified by Participants 2 and 3. They stated that the acceleration of renewable energy implementation, inspired by the crisis, exacerbated an already existing problem which was impending grid congestion at an European level. Participant 3 claimed that electricity operators are becoming increasingly saturated, and that they “cannot guarantee [stakeholders] energy deliverance in five years time” due to “an inability to transport and to deliver the energy from where it’s produced, or imported to where it’s needed”. As previously mentioned in the “Long Term Implications” of the *Energy Security* section, Participants 3 and 4 believe that the green molecules transition could provide a solution to this growing problem because this is another low carbon option which is not as dependent on the electricity grid for its implementation. Participant 1 explained that there was a change in motivations among people who chose to engage in energy cooperatives away from “people who are like sustainable interested and want to do something for their neighbourhood, want to do something nice which favours sustainability”, and towards people “who thought about the price, so they think, okay, maybe it's really interesting to join an energy cooperative to get more sustainable assets.” Participants 2 and 3 echoed this rhetoric, of the crisis changing the behaviour of stakeholders and consumers, through mentioning a reduction in consumption brought about by the crisis. This occurred through an increased consciousness of energy prices due to their increase, which led people to “wear more heavy socks” (Participant 3), “drink more warm soups and tea” (Participant 3) and turn the thermostat to 19 degrees Celsius instead of 21 (Participant 2). Participant 2 claimed that the drop in energy demand has the potential to

create a “new reference point” or “new normal” which will shape lower energy consumption in a structural way.

## **Discussion**

The outcomes of this research have provided unique insights on the experiences of stakeholders in the Dutch energy market to the 2021 energy crisis, and the EU’s and Dutch response to this exogenous shock. The following section of the thesis will focus on discussing and evaluating the implications of the results yielded by the stakeholder narratives. This will be done by comparing their experiences with the previous academic research analysed to inform the theoretical frameworks. Moreover, I will suggest how they can be used to reflect upon and inform better policy making choices through referring to the policies outlined in the *Existing Legislation* section of the thesis. Lastly, I will analyse the limitations of this study and discuss directions for future research in this academic field.

The findings provide supporting evidence that stakeholders within the Dutch energy market were all impacted by the huge increase in energy prices brought about by the 2021 energy crisis. Energy affordability became a growing issue as stakeholders stressed the greatly intensified energy poverty and price volatility which characterised the market. This led to shifts in consumption patterns, as stakeholders felt the need to reduce their energy usage due to the increased prices. In this way, it is evident that the monetary interests of stakeholders and the effective course of action towards the climate goals were tied closer together through the crisis. This is because a decrease in consumption by households and companies not only meant a cut down in costs for consumers, but also less emissions produced as a result. Moreover, stakeholders also highlighted that the importance of energy security was enhanced by the crisis’ impacts. The previous taken-for-grantedness of the energy supply was shaken simultaneously by the shutting down of the Groningen gas field

and sudden cut-off of Russian gas supply. Both of these shifts prove to be consistent with Grigoryev & Medzhidova's (2020) research, and the report produced by the World Economic Forum et al. (2023), as they also suggest that crisis events generally bring about shifts in the dynamics between the indicators of the energy trilemma.

These shifts came in the form of policy makers placing more emphasis on energy affordability and energy security over energy sustainability, which was the previous focus of the energy transition (Gilbert et al., 2021). This can be seen in the Dutch response, primarily through the identification of a ceiling for energy poverty and implementation of caps for energy prices. Additionally, it can also be seen in the EU's response through the 'Save Energy' aspect of the RePowerEU plan which outlined legally binding goals to reduce energy demand and consumption as measures to alleviate energy poverty. This outcome is also congruent with Sine and David's research (2003) as the newly implemented measures suggest a change in mindset within policy makers as well. Their research determined this to be brought about when "fundamental outcomes [were] in contrast to expectations, and precipitate[d] action intended to avoid dramatic negative outcomes."

Although the findings of this study recognise this through its rooting in historical institutionalism, they also place great emphasis on policy changes being brought about by the aforementioned crucial shift between prioritisation of the energy security and energy affordability aspects of the energy trilemma. Therefore, this study complements existing literature by suggesting that the usage of the historical institutionalism lens and the energy trilemma indicator both provide important lenses from which one can analyse the impacts of exogenous events. The implications of applying each framework to the results of this thesis build upon each other to provide a more encompassing picture of the crisis' impacts on stakeholders and policymakers.

Moreover, the yielded results provided insights regarding stakeholder perspectives on the broader institutional logics underlying the EU's energy transition and Dutch energy market, as they lost legitimacy as per the ongoing crisis (Sines & David, 2003). In this way, my results are consistent with claims made by previous studies which adopt the historical institutionalism lens. Participant 3's mention of the linkage between natural gas and electricity prices, as an aggravating factor of its effects, stuck out to me as it touches upon a deeply rooted practice within the laws of the global energy market. However, this was also echoed by Participant 2 who characterised the responses as reactive rather than proactive. This result implies that the 2021 energy crisis could initiate the process of shifting policy paradigms outlined by Andrews-Speed in his research (2012). Participants 2 and 3 are, in this way, engaging in the 'search processes' outlined by Sine & David (2003) which occurred throughout the US's electric power industry when it was faced with the 1970s oil crisis. These search processes often indicate the reevaluation of many taken-for-granted aspects of institutions. Therefore, they could prove to be a crucial initiative amongst stakeholders to overcome the path dependency in institutions outlined by Arthur (1988) and David's (1985) research.

It is important to highlight that the stakeholders did not always have cohesive responses due to the plural nature of their own values and interests within the context of the Dutch energy market. This culminated in the results touching upon contrasting perspectives in a variety of issues. A particular standout lies in the contrast between Participant 1 and Participant 4's answer to the same question, which touched upon the EU's and Dutch response to the crisis. Participant 1 criticised the price caps implemented by the government due to them still resulting in a disproportionate amount of profits flowing into the hands of energy developers. On the other hand, Participant 4 criticised the European Commission's response to tax profits from energy developers in light of the huge increases in prices. Both

responses imply a critique of a core aspect of the Dutch energy market, which lies outside of the crisis but was highlighted through its effects. This is, again, in line with the proposed shaking of institutional logics initiated by exogenous events which was highlighted in previous literature (Sine & David, 2003) (Thornton & Ocasio, 1999).

For Participant 1, their philosophy of placing people at the centre of the energy transition, meant that the crisis highlighted the deep rooted problem (in their eyes) of the privatisation of the market. Whereas, for Participant 4 the crisis involved restrictions which inhibited the free market characteristics they value within the Dutch energy sector. The implications of these contrasting narratives of the crisis shine light upon both the strengths and shortcomings of the research which I have conducted. My findings concur that the incorporation of a variety of perspectives will generate “cross-cutting themes” and “context specific challenges” amongst stakeholders, as outlined by Kleanthis et al. (2022) and Frilingou et al. (2023). These have been supported by Eker et al. (2017) to provide a more encompassing understanding of the impacts of an exogenous event. It could also be suggested that the findings accurately represent the multi-faceted nature of the Dutch energy market due to the diverseness of the stakeholders involved in the research. However, it must be acknowledged that the plurality of their experiences have the potential to be counterproductive for policymakers - such as the EU and Dutch government - due to contrasting perspectives pointing towards different courses of action, as is the case in part of my findings.

Although this is the case, if research in this field does not attempt to understand the full picture of the impacts brought about by exogenous events, it cannot effectively inform policymakers on how to cater to the needs of all the actors inherently impacted by the policies introduced. Therefore, I pose that although the process of comprehending relevant



stakeholder perspectives in the face of a crisis is arduous, it is also a crucial one. This is because of my findings, and previous academic literature, pointing towards unique opportunities presented by the undermining of institutional logics which can encourage stakeholders and policymakers to reevaluate tendencies of path dependency when faced with exogenous events. In this way, the incorporation of stakeholder perspectives in this study successfully suggests how policymakers can strive to reach their own stakeholders' definitions of more effective and complete energy markets.

There were two primary emerging pathways identified by the Participants which hint at the potential future of the EU's energy transition and Dutch energy market. Participant 1's claims suggest that the increased involvement of Dutch citizens in energy cooperatives would lead to them playing an increasingly pivotal role in the energy transition in moving forward from the crisis. This hints at how the exogenous shock could steer the prior path dependency into a new form of energy transition, as hinted by previous academic literature (Thornton & Ocasio, 1999) (Sine & David, 2003) (Andrews-Speed, 2012). The findings of Participant 2 also support this hypothesis through their claims of monetary incentives brought about by the crisis in the form of higher energy prices. This prospect of RE projects becoming more profitable could indeed breathe new life into the role which energy cooperatives play in the Dutch energy market and EU's energy transition, as Hufen & Koppenjan's (2015) research identified that only wind projects could be replicated with high rates of success at the time of their research. This increased profitability could create a pattern of decentralisation in the energy market as more Dutch citizens join energy cooperatives, and external stakeholders choose to engage with them.

However, this was not the only relevant pathway identified for the future. Participants 2, 3 and 4 all stressed the promise held by the 'green molecules transition' as a solution to

meeting relevant climate targets, while also tackling the increased importance of energy security and affordability brought about by the crisis. This is because this transition would entail increased reliance on biomethane and hydrogen to meet energy demand, which can be implemented at the national level, decreasing the necessity to import energy from external partners. The renewed prevalence of these two already existing technologies in face with the crisis' effects is in line with Sine & David (2003)'s research which determined that exogenous shocks "[...] did not create a new set of solutions, but merely altered the focus of the public and policy makers to include pre-existing solutions as legitimate alternatives."

The adoption of green molecules would be likely to strengthen the Dutch and EU's energy market resilience to future exogenous shocks which will eventually occur. One impending future shock was alluded to by Participant 3: grid congestion. He suggested this will be brought about by the focus of the EU's energy transition over the past few decades on electrification. The distribution networks in place currently are becoming saturated and could once again threaten the energy security of consumers. Therefore, green molecule alternatives could be a crucial step towards tackling Participant's 2 critique of the policymakers response being overly reactive. By implementing these proactively the policymakers could learn from this exogenous shock in order to avert the following one. Therefore, the results have proven to be congruent with Hille (2023), Meckling et al. (2022), and Mathews & Tan (2014)'s studies because the Participants have engaged in undermining the institutional logics underlying the Dutch energy market's vulnerability to the crisis. It is now up to the policy makers to reflect upon the flawed logics exposed in order to avert vulnerabilities to future crises.

## **Limitations**

The results of this thesis focus on the experiences of various relevant stakeholders, within the Dutch energy market, when faced with the impacts of the 2021 energy crisis. The qualitative nature of the research has the potential to provide great value by shining light on unique insights which actors involved in the market can provide regarding the policy response of the EU and Dutch government, as well as, the underlying problems of the EU's energy transition. Although these experiences are based upon years of experience and close involvement with the market, they are ultimately unique in nature. Therefore, the fact that the study only includes one participant from each perspective means that it cannot look out for discrepancies within the narratives that might be caused by the unique experiences of individuals.

Moreover, it should be mentioned that throughout the process of reaching out to participants, I encountered difficulties in incorporating an energy developer perspective, as the developers I reached out to left me with no response, regardless of several emails sent. I attempted to combat this by including the perspective of an expert in the field (Participant 2), who has worked within various sectors of the Dutch energy market including for energy developers, consultancy firms and a research agency directly involved with the Dutch government. Additionally, I inquired with the consultancy firm (Participant 4) about how their clients experienced the crisis, namely energy developers. This is not, however, fully representative of the energy developer perspective which represents another shortcoming in my research, due to their crucial role in the Dutch energy market.

Lastly, I would like to mention that the deductive approach which I adopted to guide my interview questionnaire shaped the outcome of the results of my interview process. I attempted to substantiate the choice of theoretical frameworks behind this deductive approach with existing academic literature, which outlines how these frameworks can effectively inform policymakers in shaping the energy transition. However, I must acknowledge that the framework likely constrained their input regarding the crisis by introducing a certain level of bias into the discussions between the stakeholders and interviewer.

The findings of the thesis, along with its limitations, suggest that future research should be conducted in the field which incorporates a variety of perspectives within each stakeholder group in order to find discrepancies in the narratives presented through interviews. Moreover, the incorporation of the policy maker perspective through the same method of qualitative interviews could complement the variety of narratives provided by my research. It would likely help to better inform the field on the institutional logics and priorities by which this group abides, which have a huge impact over the EU's energy transition and Dutch energy market, but is usually only taken into account from a standpoint of the analysis of existing legislation.

## **Conclusion**

The research conducted as per this thesis offers critical insights into the experiences of stakeholders within the Dutch energy market, when faced with the 2021 energy crisis' impacts. It utilises their unique perspectives to reflect upon policymaking implemented prior to, and in response to the crisis as well as, the implications which these might have for the future of the EU's energy transition. The yielded results indicate that the crisis significantly impacted energy prices and the security of supply for Dutch consumers, be it households or businesses. This created a shift in the prioritisation of stakeholders and policymakers of the

three aspects of the energy trilemma indicator used in the research. The shift was characterised by increased importance being attributed to the value of affordability and security during the crisis, as per adaptations to existing legislation and the perceptions of the interviewed stakeholders.

Moreover, the crisis undermined existing institutional logics which pervaded the market and the EU's energy transition prior to the crisis. In this way, it created an opportunity for stakeholders to diverge from preconceived ideology regarding their future, bringing about potential changes in their functioning. These changes are consistent with previous research outlined in the field which employs the energy trilemma indicator, and lens of historical institutionalism. However, by employing the two frameworks in combination with the insights of stakeholders, this thesis complements the academic field through providing a focused analysis of the crisis' effects, with an encompassing perspective of how it could shape the future of the EU's energy transition and Dutch energy market. The relevant stakeholders identified two key pathways, one which would push it further towards decentralisation and another which would bring the green molecules transition to the forefront of the policymakers idealised energy market, both are congruent with the increased emphasis placed on energy affordability and security brought about by the crisis.

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## Appendices

### Abbreviations

CO2 - Carbon Dioxide

EU - European Union

GHG - greenhouse gases

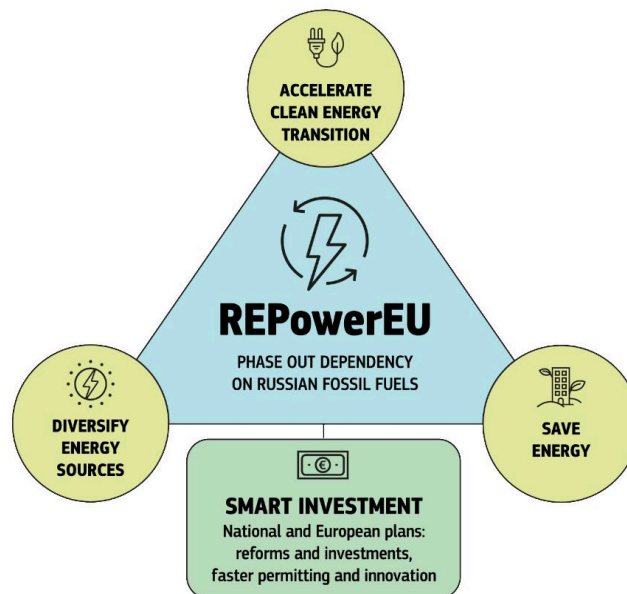
LNG - Liquefied natural gas

UN - United Nations

### Figures

#### Figure 2

*The goals laid out by the RePowerEU plan*



*Note.* This diagram represents the three main themes which characterise the EU's RePowerEU emergency plan as a response to deal with the 2021 energy crisis' impact on the EU's energy market. The diagram is present in the RePowerEU plan's official document which pertains to Eur-Lex, the EU's website designed to share access to its previous and

current legislation, by European Commission (2022). *REPowerEU Plan*

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022DC0230>

## **Model Interview Questionnaire**

As stated in the Methodology section, I hereby provide the model questionnaire which I used to guide the semi-structured interviews which were conducted as part of my research. The questionnaire utilises the aforementioned deductive approach by being centred around my two theoretical frameworks: the energy trilemma indicator and institutional theory. They were employed in order to spark up a discourse between the interviewer and stakeholders on their experiences of the 2021 energy crisis' impacts, and the following policy response.

It is important to mention that the interviews were not fully structured which meant that, if at any point relevant information was mentioned by the stakeholders which was not in line with the interview questionnaire, the interviewer would nonetheless ask follow up questions to uncover the full extent of the stakeholders' perspectives. Moreover, the sub-questions played a supporting role, as they were only asked when the interviewer felt like their input would expand upon, or complement, the stakeholders' existing answers. Lastly, question 4 was omitted from the *Results* sections, as the results yielded by the other questions were considered to be more in line with the aims of the study.

### *Energy Trilemma*

1. How did the energy crisis affect the prices of energy for stakeholders within the EU and Netherlands?

- Were there any specific sectors, industries or groups of people that were particularly affected?
- 2. How did the energy crisis affect energy security for stakeholders within the EU and the Netherlands?
  - Were there any specific sectors, industries or groups of people that were particularly affected?
- 3. How did the energy crisis affect the energy consumption patterns or preferences within the EU and the Netherlands?
  - Were there any shifts in terms of how carbon intensive the primary methods of energy generation were being used?

#### *Stakeholder Perspective*

- 4. Can you discuss how the 2021-2023 energy crisis impacted your company's operations and development projects within the EU?
  - Follow-up: Were there any specific challenges or opportunities that arose as a result of the crisis?

#### *Policy Review*

- 5. How effective were measures implemented in mitigating the impacts of the crisis for you?
  - Follow up: Is there anything else which you would like to be done to alleviate impacts in future crises?

#### *Long Term Implications*

- 6. Looking ahead, what are the anticipated long-term implications of the energy crisis on the Dutch/EU's energy transition trajectory?

### **Climate Policy**

The past few decades have been characterised by a trend of continuous increase in annual global temperatures, since the onset of the Industrial Revolution in the 18th century. According to NASA Earth Observatory (n.d.), “the average global temperature on Earth has

increased by at least 1.1° Celsius (1.9° Fahrenheit) since 1880.” The scientific community has come to the consensus that global warming is driven mainly by anthropogenic factors. The primary factor reflects a huge increase in greenhouse gas (GHG) emissions which are intertwined with the process of rapid industrialization and economic development undergone by the Global North<sup>12</sup> over that same timeframe. The GHGs emitted by a variety of sectors settle in the Earth’s atmosphere, “trapping the sun's heat and stopping it from leaking back into space [...]” (European Commission, n.d.). Although GHGs are naturally present within the Earth’s atmosphere, human interference has artificially tipped the balance point, leading to an increase in concentration of 48% of carbon dioxide (CO<sub>2</sub>) by 2020 compared to pre-industrial levels (European Commission, n.d.). If overlooked, this increase will bring about devastating consequences worldwide such as, “[...] regional and seasonal temperature extremes, reducing snow cover and sea ice, intensifying heavy rainfall, and changing habitat ranges for plants and animals [...]” (NOAA, 2024).

In order to cope with this ongoing climate crisis, several international organisations have taken charge, encouraging their member states to make pledges which aspire to decrease GHG emissions worldwide. The pioneering example of this is the United Nations’ (UN) ‘Paris Agreement’. This was the first *legally binding* multilateral international treaty concerning climate action. It was adopted by 196 parties at the 21st UN Climate Change Conference (COP21) in Paris, coming into effect on the 4th of November 2016 (United Nations, n.d.). The United Nations (n.d.) set out the infamous long-term warming goal to limit “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.” The primary method by which this colossal objective would be achieved is directly linked to a

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<sup>12</sup> “Those countries found mainly, but not exclusively, in the northern hemisphere, characterized by high levels of economic development” (Castree et al., 2013)



subsequent requirement of the agreement. This is for all parties to collaborate in order to reduce their GHG emissions to zero by the second half of the 21st century (Climate Action Tracker, n.d.). This was the chosen course of action because of the substantiated link between GHG concentration in the atmosphere and global warming, as well as its associated impacts on the Earth's climate.

Although its member states had all signed the Paris Agreement, the EU decided to take matters into its own hands, through the implementation of its own legally binding multilateral agreement - the EU Green Deal. This ambitious set of policy initiatives aimed to set the bloc's trajectory towards climate neutrality by as early as 2050 (*European Green Deal*, n.d.). It could be argued that the Paris Agreement acted as the predecessor to the EU Green Deal, as it initiated the rhetoric for developed countries to decarbonise<sup>13</sup> their economy. However, through the Green Deal's implementation, the EU has cemented itself as a pioneer of climate action due to their ambitious goal of reaching climate neutrality much ahead of the rest of the world. The EU Green Deal is not only a crucial step to ensure that member states comply with the Paris Agreement targets set by the UN, but a statement of commitment to the environment by setting higher standards for global aspirations of reducing GHG emissions and mitigating the impacts of human activity induced climate change.

One of the foundational premises of this mitigation strategy is the importance of the energy transition. The term was coined as a means to describe the “global energy sector's shift from fossil-based systems of energy production and consumption — including oil, natural gas and coal — to renewable energy sources like wind and solar, as well as lithium-ion batteries” (S&P Global, 2020). The energy transition is an extremely important part of the bloc's response to climate change as “[e]nergy accounts for 75 % of greenhouse

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<sup>13</sup> to stop or reduce carbon gases, especially carbon dioxide, being released into the atmosphere as the result of a process, for example the burning of fossil fuels (Cambridge, 2024)

gas emissions in the EU" (European Commission, 2022). Consequently, several policies targeted it specifically, the most up to date ones present in the 'Fit for 55 package' which will be elaborated later on in the essay.