UNIVERSITY OF TWENTE.

Master Thesis

Bridging Temporal Misalignment in Business Ecosystems: A Case Study of Grid Congestion in the Dutch Electricity Sector

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Preface

Dear Reader,

In front of you, you will find the thesis that I conducted as part of my Master Business Administration with a specialisation in Entrepreneurship, Innovation, and Strategy. During this research, I conducted a case study on the business ecosystem related to the grid congestion crisis in the Netherlands.

It has been inspiring to research a topic that is so pressing in The Netherlands. I want to especially thank all the interviewees who have participated in this research and have been able to clear their schedules for me. Their enthusiasm during the interviews has been catching, and this research is truly based on their efforts.

A second big thank you goes to Hein Trebbe, Hein Stooker, and their colleagues from Trebbe Groep B.V. The suggestion for this research is based on their experiences. I want to thank them for this opportunity and the guidance they provided throughout my graduation period.

Lastly, a big thank you to my first supervisor, Dr. Ir. R. Siebelink, for his guidance. I enjoyed our meetings and your constructive but pleasant feedback. It was truly an honour to navigate myself through this graduation period with your support. I would also like to thank my second supervisor, Dr. R.P.A. Loohuis, for his dedication and support during the final phase of my thesis.

Hopefully, you will enjoy reading this thesis.

Coenraad Kerbert

Enschede, May 2025

Management Summary

The Dutch electricity grid is transitioning to a more decentralised system where renewable energy sources play a significant role. Consequently, the current grid is unable to cope with the increased capacity, resulting in grid congestion. In this research, we examine how various actors within the business ecosystem, including grid operators, governments, local municipalities, and industry partners, respond to the growing grid congestion crisis. We investigate how different temporal perspectives influence cooperation among various actors and how specific temporal misalignments are addressed.

The central research question for this research is as follows:

"To what extent can the Dutch electricity network transition ecosystem optimize its efficiency and innovation in the context of conflicting temporal focus of its key actors, within a market heavily regulated by government policies?"

For this research, we conducted a qualitative case study using semi-structured interviews with 15 key actors. Accordingly, we used the Gioia method to analyse these interviews and process our results into a dynamic model.

The research results highlight various issues of temporal misalignment, where actors operate under distinct short-term and long-term objectives. Additionally, signs of individualism and a short-sighted focus of the government resulted in coordination issues. The data structure yielded four key dimensions: temporal misalignment across the ecosystem, institutional reform for structural resilience, operational flexibility and resource configuration, and innovation and incentivisation for long-term transition.

Through the four dimensions, we observed a changing business ecosystem where regulatory reform, role adaptation, innovation, and incentives are key elements in bridging the misalignment of temporal focus and strengthening proactive collaboration.

Our research makes a theoretical contribution by introducing the concept of bridging theories to the concept of business ecosystems that are facing a crisis. The research argues that for a business ecosystem, not only are innovations and strong policy key to success but also being able to coordinate effectively between actors is just as important.

Lastly, we present recommendations to the business ecosystem actors. Grid operators need to have greater flexibility in their operations and must have more trust in their subcontractors. Throughout the entire business ecosystem, standardisation needs to play a more dominant role, ensuring that actors know what to expect from each other. The relationships between residential developers, local municipalities, and grid operators need to be strengthened, particularly in terms of communication about building possibilities, so that the housing sector is less affected by this crisis. On top of that, users of the grid need to receive stronger financial incentives to make more efficient use of available electricity such that green energy is better utilised. Lastly, there is a strong role for the government in this crisis. It is essential that they maintain stable policies and regulations and have a strong sense of what is happening in the market.

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Table of Contents

1. Introduction

Society is steadily progressing toward a more sustainable future. More electric vehicles, emerging technologies in the renewable energy industry and, most of all, a more conscious use of the available energy. The European Union (EU) aims for a greener environment and a lower dependency on foreign gas pipelines. To complement those aims, the EU has targeted that energy production by 2030 should consist of at least 40% renewable energy sources (Energy, 2021). To sustain the energy transition, many initiatives to expand renewable energy generation are provided. The Dutch government stimulates these initiatives through subsidies for organisations. The *Stimulering Duurzame Energieproductie en Klimaattransitie (*SDE++) is one of these subsidies that support renewable energy generation projects to compensate for the additional costs that such projects cost as opposed to 'regular energy' (*SDE++: Oriënteren*, 2020).

As society reduces its dependency on gas and increases its use of electrical sources, a challenge of grid congestion arises. In 2021, the Dutch research organisation TNO released a report outlining the possible challenges that may arise due to grid congestion (Wiggelinkhuizen et al., 2021). Grid congestion is comparable to a traffic jam where the maximum capacity of the grid is reached. This occurs for both the delivery and usage from the grid. **Error! Reference source not found.** shows a map of The Netherlands, indicating the degree to which issues arise due to grid congestion. The government has agreed to invest €8 billion per year as of 2025 to expand the electricity network and a total of €166 billion to set up so-called energy hubs among companies (*Kabinet neemt maatregelen tegen vol elektriciteitsnet*, n.d.). Additionally, the process of obtaining permits that contribute to the development of our electricity network is made easier and is expected to shorten the process by 1.5 years (Rijksoverheid, 2024). They do so in a way that grid congestion in the future is no longer an issue, allowing the network to cope with the higher demand. However, the government is not the only actor in this field; it must also cooperate with other stakeholders, including municipalities, grid operators, and the industry. This structure of interdependent actors can be described as a business ecosystem.

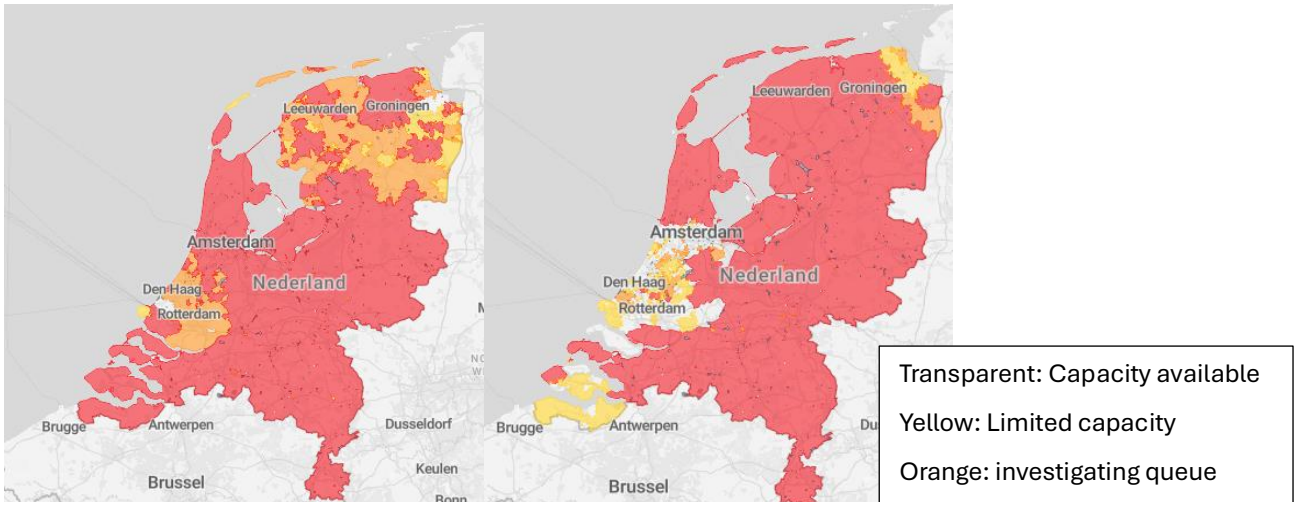

Figure 1: Electricity network capacity map for extraction and delivery

Business Ecosystems

The term 'business ecosystem' first arose in 1993 by Moore, who in some way developed the term and based it on its origin from Mother Nature (Moore, 1993). Since then, the concept has been of interest to multiple researchers. Iansiti and Levien define a more business-like definition for business ecosystems as "*loose networks—of suppliers, distributors, outsourcing firms, makers of related products or services, technology providers, and a host of other organisations—affect, and are affected by, the creation and delivery of a company's own offerings" (Iansiti & Levien, 2004b, p. 68)* They also emphasise the need to recognise the interconnectedness between firms and government parties and that they should not be isolated from each other (Iansiti & Levien, 2004b). Business ecosystems are a strong initiator for innovations in the industry and the interconnectedness is a good motivator for collaborations despite the competition. Complementing the ecosystem, therefore, benefits not only the company itself but also its surrounding stakeholders, including the government and other operating companies. Ultimately, this will lead to 'sustainable industrial growth'. On the other hand, problems such as grid congestion can only be solved through cooperation between different actors(Banka & Uchihira, 2024). We consider our case part of a business ecosystem as the issue needs to be solved together, and multiple actors are affected. Firms must collaborate with local municipalities, the government, and grid operators to innovate and strengthen the ecosystem. All operations are interconnected with each other (Speich & Ulli-Beer, 2023). This will be further discussed in Section 2.

An important element of ecosystems facing crisis is the role of agency. Raven (2012) and Geels (2010) claim that transition, like the energy transition subject to this thesis, is not driven by technology or policy alone, but the role of strategic actions by actors is crucial. Their ability to experiment, collaborate, and influence are important for this and define the role of agency. Agency is most prominent in niche environments where actors feel a great sense of freedom. For this research, agency enhances the view by identifying how the actor's behaviour in this business ecosystem influences ecosystem coordination and resilience.

Moore (2006) already described the need for 'comprehensive studies of the entire panoply of power and behaviour in business ecosystems' where the relationships between powerful participants, innovation rates and economic advantages are leading the business ecosystem (Moore, 2006, p. 54). As business ecosystems become increasingly crucial, it is essential to examine the various behaviours in different situations. Additionally, as we have introduced the various views from the government and other stakeholders, how does the ecosystem thrive under these circumstances? Riquelme-Medina et al. (2022) Call for future research to gain a better understanding of the coopetition-performance relationship of business ecosystems. Do the actors in our ecosystem work collaboratively to innovate and gradually solve the problem? Krome and Pidun (2022) also suggest further investigating the 'characteristics of an effective ecosystem organisation for both orchestrators and contributors' and how participants need to adapt when strategy parameters change (Krome & Pidun, 2022, p. 23). For example, when dealing with the energy transition.

Research Focus

The government is responsible together with its subcontractors to have a sustainable and future-proof electricity network. However, for this operation, 45.000 kilometres of cable need to be replaced, and 23.000 electricity supply stations are to be built (Liander, 2024). This makes it a complex and time-consuming process. A key challenge that can occur is the misalignment of temporal focus. Temporal focus refers to 'the attention individuals devote to thinking about the past, present, and future' (Shipp et al., 2009, p. 1). This type of attention spent by the individual will impact their operations. Where grid operators and the government may have a fast interest in shaping the future and are thus more forward-looking, other actors in the ecosystem feel more urge to pay their attention to the present because of grid congestion issues. For example, solar panels are shut down and new fields are delayed due the grid congestion (Oost, 2023). Or, new venues, for example, are denied a connection to the network (*Wat is netcongestie?*, n.d.). The relationship between the different actors and their type of focus is of great importance to understand the dynamics within the business ecosystem.

The goal of this research is to understand what the business ecosystem is like and how temporal focus affects cooperation between different actors. First, we investigate the business ecosystem surrounding the energy transition and the grid congestion. Who are the other actors, and what roles do they possess? Additionally, we investigate various strategies that can be employed within business ecosystems during periods of limited growth. Next, we gain more insights into the role of the temporal focus of different actors how the misalignment of this can create issues, and how these issues can be minimized. The objective is to gain insights into the dynamics of the business ecosystem and to be able to understand how long- and short-term visions are playing parts in the ecosystem. Therefore, the following research question is developed:

"To what extent can the Dutch electricity network transition ecosystem optimize its efficiency and innovation in the context of conflicting temporal focus of its key actors, within a market heavily regulated by government policies?"

This investigation is performed qualitatively using a case study method. To support the case study, semi-structured interviews are held with key players in the business ecosystem. This case study is specifically aimed at a Dutch ecosystem that is in the energy transition phase, but elements can be useful for other countries or similar ecosystems. This not only provides theoretical insights but also practical feedback for all actors in the business ecosystem. The insights from the research should enable the actors to position themselves correctly within the business ecosystem and consequently adapt their business and innovative strategies for as long as the grid congestion remains an issue.

The structure of the research is as follows: Chapter 2 reviews the theoretical framework that dives into the topic of business ecosystems and the role of temporal focus. Chapter 3 presents the methodology of this research. Chapter 4 describes the results of the research and displays an initial discussion. Lastly, in Chapter 5, the theoretical and practical contributions together with a conclusion are presented.

2. Theoretical Framework

In the following section, insights are provided into the theoretical aspects of our investigation. We will discuss business ecosystems in general, as well as business ecosystems in the energy transition and ecosystem strategies in the self-renewal phase.

2.1 Business Ecosystems

Iansiti and Levien (2004b) define business ecosystems as "*loose networks—of suppliers, distributors, outsourcing firms, makers of related products or services, technology providers, and a host of other organisations—affect, and are affected by, the creation and delivery of a company's own offerings" (Iansiti & Levien,* 2004b*, p. 68)*. In this section, the theory behind business ecosystems is explored its importance in business strategy and innovation is highlighted.

Business ecosystems have a two-sided function. On the one hand, it is a value creator that brings the client and provider closer together, thereby enhancing the growth of the entire ecosystem. On the other hand, ecosystems share value among actors within the business ecosystem (Boschian & Paganello, 2013). These two elements provide the basis for the interconnectedness between different companies. However, each actor within the ecosystem also has its own goals and visions, which makes an ecosystem complex at the same time (Kim et al., 2010). What makes it especially complex is that, within the business ecosystem, not only businesses are present, but other actors, such as universities and governments, also play an important role (Iansiti & Levien, 2004a). Universities perform investigations to continue the innovation and share this knowledge with their external stakeholders. Additionally, they train young people to contribute their part to different ecosystems (Heaton et al., 2019). Governments play a different role, supporting financially through incubators and influencing or regulating the ecosystem through legislation (Bernardus et al., 2024). Together, all these actors, or stakeholders, thrive on the ecosystem, combine forces and foster innovation. Despite the complexity, companies cannot afford to ignore the existence of business ecosystems (Moore, 1993).

There can be a wide range of different business ecosystems, too many for this research, but there are some common ones that are found in much of the literature:

1. Innovation ecosystems are named for their main purpose, which is to focus on collaborative innovation of products and services. Innovation ecosystems are about the 'collaboration between companies in which individual offerings are combined into a coherent, customer-facing solution (Adner, 2006).
2. Entrepreneurial ecosystems refer to networks and interconnected organisations that support and raise entrepreneurship within a region or specific industry (Stam, 2015). With these types of ecosystems, one should think of incubators or venture capitals that boost entrepreneurs with their ideas.
3. Platform ecosystems are a digital type of ecosystems where producers and consumers come together and cooperate to increase the value of the platform by exchanging their knowledge and experiences (Heaton et al., 2019). A well-known example is Apple's iOS platform. On this platform app developers provide their applications while consumers use these apps and can provide their feedback. The more developers create apps the more attractive the platform becomes for users.

4. Knowledge ecosystems are a form where new knowledge is created through the collaboration of researchers. Exploration ranks higher than exploitation within this ecosystem (Valkokari, 2015). Universities are a great example of knowledge ecosystems.

Actors within an ecosystem must be aware that business ecosystems are inherently dynamic. Through technological advancements, economic changes and regulations the behaviour of the ecosystem can change (Espina-Romero et al., 2023). Moore (1993) identified four 'evolutionary stages' in a business ecosystem: birth, expansion, leadership, and self-renewal. Within the Dutch electricity ecosystem, it can be said that they are currently facing a phase of self-renewal. Moore (1993) describes this phase as twofold. This stage most often occurs when mature businesses are threatened by rising new ecosystems and innovations. However, this stage could also happen due to new environmental conditions, government regulations or macroeconomic conditions.

The self-renewal phase is a result of the dynamic behaviour of business ecosystems. Through the different phases of the ecosystem, not all actors survive. At the end of the leadership stage, innovations or the need thereof provide a new opportunity for actors to enter the ecosystem and claim their dominance while existing actors need new strategies (Blijleven et al., 2013). During this period, organisations thus need to transform and modify their initial ideology. New knowledge needs to be developed, and actors are responsible for their absorptive capacity level and, therefore, their organisational response within the ecosystem (Jiménez-Barrionuevo et al., 2019). The following section will discuss how actors could adapt their strategies to this.

2.2 Business Ecosystem Strategies for the Self-Renewal Phase

The self-renewal phase is an important, if not the most important, phase within the ecosystem strategy, as proposed by Moore (1993). Within this phase, actors can employ different strategies. Moore (1993) mentions three strategies: *"1) dominant companies can seek to slow the growth of a new ecosystem; 2) they can try to incorporate innovations into their ecosystem; or 3) they can fundamentally restructure themselves to try coping with a new reality" (Moore, 1993, p. 84).* In this section, we will investigate these three different strategies.

2.2.1 Slow the growth of a new ecosystem

Enhancing collaboration and co-creation is crucial within the concepts of a business ecosystem, as Moore (1993) described. Moore (1993) mentions the need for continuous improvement within the ecosystem, which contributes to the dynamics of business ecosystems, as mentioned earlier. According to Moore, continuous improvement prevents the risk of emerging ecosystems from making the other ecosystems obsolete. In this phase, it is crucial to work together. Feng et al. (2021) Provide insights into how companies like Apple and Google have created an open innovation ecosystem that enhances the growth of their companies, and the innovation levels within the ecosystem result in competitive advantages. They claim that 'good competition, cooperation and symbiotic relationships' support all actors within the ecosystem and that a dynamic balance promotes the sustainable development of the ecosystem (Feng et al., 2021, p. 20).

2.2.2 Incorporate New Innovations

Moore (1996) presents his thoughts on survival within an ecosystem first to investigate if 'new ideas can be put in the old order'. The essence of this strategy is to utilise existing techniques, assets, and structures that can incorporate innovations to help the actor adapt to changing conditions within the ecosystem, which are relatively simple to implement. We will discuss innovation on two different levels: on the one hand, the innovation of actors within themselves and, second, the innovation of the entire ecosystem itself.

2.2.2.1 Innovating Individually

To survive the self-renewal phase, actors can also decide to innovate themselves or what they offer. It is part of an ecosystem strategy. Adner (2006) dives into this strategy and describes this strategy as an iterative process with multiple risk assessments. Three risks that constantly need to be identified are the *initiative risk,* which involves determining whether the innovation fulfils what the market needs and what it solves. Second is the *interdependence risk;* how much does the innovation rely on other actors and what is needed from those actors to succeed? The third risk Adner (2006) mentions is *integration risk;* what else is required in the market or supply chain of the product to work well? To manage these risks, Adner comes up with a seven-step plan to assess the realistic capabilities of the plan.

1. Identifying intermediaries that must adopt the innovation before it reaches the end customer.
2. Identify the complementary resources needed before the innovation can reach the end consumer.
3. Estimate the delays because of the interdependence within the innovation.
4. Estimate delays due to integration of innovation in decisions, design cycle, etc.
5. Estimate the delays caused by intermediaries' interdependence with their complements and the time it takes to adopt the innovation.
6. Deduce a time-to-market.
7. Decide whether this is feasible and worth the investment for the innovation.

This dual approach provides a backbone on how innovations can be tested and used to find their fit in the market and prevent the actors within the ecosystem from losing their position.

2.2.2.2 Innovating as an Ecosystem

This section will shift from a firm-centric perspective on innovation to the collective innovation within the business ecosystem. Innovating on an ecosystem level requires intensive collaboration between firms, strengthening the interdependencies within the environment (Jacobides et al., 2018). To achieve this, Jacobides et al. (2018) suggest that actors within the ecosystem must assume specific roles to complement the innovation. They suggest roles such as 'the keystone players', 'niche actors' and the 'complementors' that are based on the theory of Iansiti & Levien (2004b). Additionally, it is important to strategically manage the flow of resources to support the co-innovation within the ecosystem.

It is important to understand what the three different roles within an ecosystem entail. The **keystone actors** are the backbone of the ecosystem and possess a leading role in coordinating and orchestrating activities across the ecosystem. They can be considered central players that enable smaller or specialised actors to contribute to success. In the energy transition, actors such as Alliander and TenneT could be considered keystone players. Their employment of new strategies, materials, and processes reflects on the other actors. Barton et al. (2018) highlight the importance of utility companies, but also regulatory bodies, in the United Kingdom in their energy transition. Their vision and actions are reflected in the ecosystem, resulting in the coordination of innovations where renewable energy technologies and smart grid systems are taking a more dominant role.

Second are the **niche actors**. The name already suggests their position. They are the more specialised actors that are required for a project. Over time, they have developed their expertise and have devoted their people to do only a few things but do it well. Within their expertise, they provide innovations that contribute to the process but do not interfere with the innovations of the keystone players. Within the energy transition, renewable energy system developers who develop solar panels are a crucial example of niche actors (Geels, 2012).

Lastly, **complementors**. Complementors provide all the necessary services, products, and technologies to support the offerings of the keystone players. Competitors can easily replace these actors, but their contributions are crucial for the ecosystem's survival. The role of the complementor is often viewed as firms that offer complementary technologies, such as smart energy storage solutions, which are required for a successful energy transition (Lütjen et al., 2019).

The result of adopting these roles is the responsibility of innovating is shared among the different actors. However, this can only be done through a strong level of interaction. Keystone players need to create suitable conditions for niche actors to introduce innovations that support the energy transition. Complementors enhance the useability and functionality of these innovations from niche actors such that they can be integrated into the larger system. This interconnectedness and shared responsibility strengthen cooperation, resulting in a stronger ecosystem that can better adapt to a changing environment.

2.2.3 Restructure and cope with a new reality

It may be the case for companies that survival in its current form is no longer feasible within the ecosystem. In this case, the company can consider letting go of the firm or restructuring. Christensen (1993) states different strategies for restructuring firms. One of those strategies is to discover new and emerging markets.

2.3 Business Ecosystems in the Energy Transition

As time passed, business ecosystems became an important element in the energy transition challenge. Co-creation is crucial for the actors to remain existent, but it is also vital to the ecosystem to maintain its health (Banka & Uchihira, 2024). The business ecosystem in the energy transition consists of two levels. At ‘the state level,’ the transition should be supported through the government, where support for innovation is provided,

and regulatory frameworks are put in place to guide the implementation of these innovations. At the local level, the focus should be on how to consume less energy and to implement plans over time that support this transition (Bochko et al., 2024). In the following section, the different actors that play important roles are discussed.

2.3.1 The Role of the Government

In Section 2.2.2.2 the role of the government was already categorized as a keystone player. In this section, we investigate what the role of the government is within business ecosystems of the built environment and energy transition and how their regulations impact the actors.

Governments play crucial roles in business ecosystems. Especially ecosystems that are heavily regulated. The built environment is one of those ecosystems that is heavily regulated, particularly in terms of safety. Section 1 has already presented some real-life cases illustrating the role of the Dutch government in the energy transition, which demonstrates how it enables quicker processes for firms that contribute to resolving grid congestion. However, the Dutch government also sets restrictions for lower carbon emissions at construction sites (*Maatregelen emissiereductieplicht*, n.d.). The impact of the regulations is the largest on keystone players. As these players innovate and implement innovations, they must ensure these comply with governmental policies (Daszkiewicz, 2020). However, the introduction of 'green laws' also supports the ecosystem as it enables the entry of new players into the market and promotes further collaboration (Meckling & Hughes, 2018).

The government can also interfere in the ecosystem in a supporting way. Governments can fund R&D processes, provide tax incentives for clean energy production and facilitate public-private partnerships to financially support required investments for more sustainable energy systems, for example (*Energy Technology Perspectives 2020*, 2020). In this way, the financial risks of firms can be reduced, which in turn supports the adoption of innovations. Especially niche actors and complementors benefit from government support for innovation, as financial barriers to entry are lower.

2.3.2 The Role of Grid Operators

The role of grid operators within the business ecosystem may be just as crucial as that of the government. The grid operators are responsible for a safe and stable network and are therefore also responsible for a sustainable future of the network. Hence, their current work on to solve the grid congestion (*Wat is netcongestie?*, n.d.). Grid operators are keystone players in this ecosystem.

Whereas the role of the grid operators was relatively simple, they will now face a more complicated task. Initially, energy was generated centrally by partners of the operators and this generation was in their control. Now, with the energy transition, energy generation is becoming decentralised as consumers can generate their own electricity (Weiller & Pollitt, 2013). Additionally, due to this change, the grid operators will become responsible for creating smart grids. Smart grids have implemented technology that can monitor and manage energy flows. For example, to turn off certain solar panels when too much energy is supplied to the system (Muench et al., 2014).

The main challenge for grid operators is the loss of control of supply to the grid, of which the grid congestion is a result. The resulting challenge to solve the grid congestion for the grid operators will be to have the right technology at hand that creates a sustainable network for the coming decades. Additionally, funding of the grid operations is required where governments can only subsidise a certain amount and consumer prices can be targeted.

2.3.3 The Role of the industry

The position of the industry is double-sided. On the one hand, the energy transition, and grid congestion in particular, harm the operations of companies, as introduced in Section 1 of this paper. On the other hand, they are crucial for the transition, as they are required to carry out innovative ideas by collaborating with other actors in the business ecosystem.

The industry plays an important role in the sustainability of existing and future practices. Construction firms, for example, are retrofitting existing buildings to make them more energy-efficient can, on a large scale, reduce the amount of energy required to cool buildings (*Energy Efficiency 2019*, 2019). Construction firms also innovate in so-called 'green buildings' where sustainable construction approaches are used to create a responsibly built environment. The aim is to design, construct, and operate a building with minimal resource use (Darko & Chan, 2016). The industry also innovates, where energy storage systems become more interesting to relieve the grid at peak moments. The current energy transitions accelerates such needed innovations (Mäkitie & Steen, 2023).

The role of the industry is evident. They are requested to continue to innovate and implement the latest technologies to make their practices and projects more sustainable. However, we also know they are limited by issues such as energy congestion. Therefore, there is a constant search for balance on what can they do to support this transition, with the help of government subsidies for example, and how to maintain a healthy business.

2.4 Temporal focus

Long-term visions of the government and short-term visions of other actors, like construction companies, can potentially create challenges. This is also called the temporal focus. Temporal focus refers to 'the attention individuals devote to thinking about the past, present, and future' (Shipp et al., 2009, p. 1). Temporal focus is a crucial element that shapes how different actors envision and work toward their goals. Governments are often driven by long-term visions that align with a combination of sustainability and economic factors, while non-governmental actors prioritize short-term deadlines and profits (Slawinski & Bansal, 2015). By theory, actors that uphold a long-term focus perform actions that do not always directly imply immediate results but are part of a broader vision reached in multiple stages. For more short-term-minded actors, actions are often performed to have a direct effect. As a result, resource allocation is also impacted, as non-governmental actors allocate their resources to projects promising faster returns. This can compromise the sustainability goals set by the government

(Smulowitz et al., 2023). This misalignment not only affects project execution but can also impact partnerships between actors as timelines do not match (Slawinski & Bansal, 2015).

The misalignment of temporal focus is also witnessed in the energy transition. For example, the government's goal is to produce at least 40% of the energy using renewable resources (Energy, 2021). These targets are accompanied by policies that span a broad timeline. The reason for these broad timelines is the need for incremental changes in regulatory frameworks and stepwise improvements in the infrastructure (*Energy Technology Perspectives 2020*, 2020). On the other hand, other actors, such as construction companies, operate under much shorter-term goals, enforced by market pressure and financial performance. Construction firms prioritise their operating activities, such as securing new contracts, completing projects, and maintaining a healthy cash flow, which can conflict with sustainability goals set by the European Union (Daszkiewicz, 2020). This means that there is a misalignment in the temporal focus, and this can naturally cause conflicts, also in the energy transition.

2.4.1 Geels' Multi-Level Perspective

Geels' Multi-Level Perspective (MLP) is a framework that provides an understanding of the existing challenges between the government and non-governmental actors and how this can hinder the energy transition. The MLP conceptualizes socio-technical transitions as interactions between three different but related levels: niches, regimes and landscape (Geels, 2002).

The 'landscape' is the overarching layer that puts pressure on the socio-technical system. The issues can be of many kinds, such as economic trends, cultural shifts, or grid congestion, for example. These macro-trends put pressure on the system and require structural changes throughout the entire system.

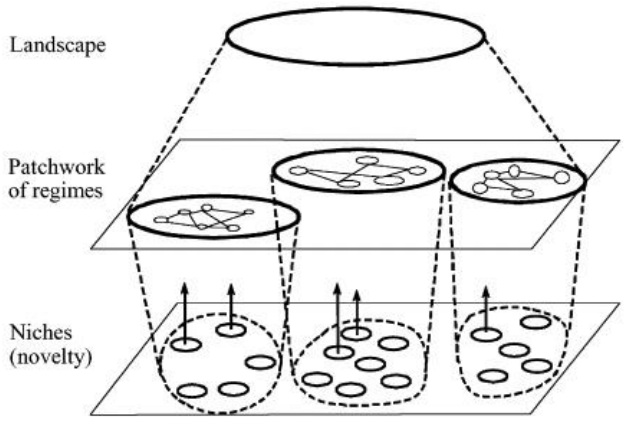

Figure 2: Multi-Level Perspective that represents the different layers in a socio-technical system (Geels, 2002)

The 'regimes' is the coordination that results from the 'organisational and cognitive routines'. In essence, these are the set of rules, technologies and practices that have become the standard in the system. Examples are building and regulatory standards that construction companies must adhere to. The focus of this regime is often focused on efficiency and profitability levels. The pressure from the landscape on the regime causes short-term market pressures that result in the resistance to invest in innovative systems that are more energy-efficient but require a long-term investment (Daszkiewicz, 2020).

At the 'niches' level, innovations and experiments are conducted that support the regimes to change, like the niche actors suggested by Moore (1998). The role of the niches

is crucial for change to take place as new ideas and innovations need to be created and tested before they can be adapted and become part of the regime. However, the niches require government support and are required to reflect the industry standards to remain effective. The arrows pointing upwards in Figure 2 represent the influence of the niches on the regimes.

2.4.2 Bridging the Temporal Gap

The literature discusses a wide array of strategies that can be employed to bridge the temporal gap between different actors in an ecosystem. An effective method is to set intermediate milestones within projects as a method to impose new benchmarks. These milestones allow actors to track progress and contribute to long-term goals while adhering to their own short-term goals. Setting new benchmarks throughout the process, therefore, also forces actors to innovate and employ new strategies that allow them to adhere to these new benchmarks (Verrier et al., 2014). Another effective method to bridge the gap is through financial incentives. The use of tax incentives or green subsidies encourages actors to innovate and adopt more sustainable practices, as it becomes more financially attractive (George et al., 2016). Research shows that financial incentives linked to environmental, social, and governance (ESG) goals are a good measure for companies to reach goals that do not always yield immediate returns (Flammer, 2021).

There are also examples from real-life scenarios where strategies have been successfully employed to bridge the temporal gap. In Germany, for example, they have already achieved an energy mix of 40% renewable energy. They have been able to do so by investing in ‘energy efficient technologies and infrastructure’. Germany proposed a special act, ‘The German Renewable Energy Sources Act’ consisting of a legal framework and financial incentives (Ashraf & Bocca, 2023). Additionally, the German government also imposed laws forcing developers to place solar panels on new commercial buildings and favour them on private buildings (Appunn, 2022). Non-governmental actors also employed their strategies. Energy firms, for example, held long-term contracts with the government combined with financial incentives to implement renewable energy and more sustainable systems (Matthes, 2017). This resulted in a stable environment for actors to invest, innovate and plan projects that are more sustainable and aligned with the focus of the government. This strategy supports the niche actors and complementors and creates a stable environment for companies to join the transition.

China’s energy transition is another example. China’s strategy is focused on the carbon trading market. This market was launched in 2021 and is now the largest market that incentivises companies to reduce their emissions (Zhao et al., 2022). Through the implementation of this market, the government demotivates the short-term financial decisions of other actors and promotes to align the long-term focus through financial incentives. The Chinese government plans to invest 100-300 trillion Chinese Yuan by 2060 for clean energy technologies. This commitment provides the opportunity for actors to innovate and adopt cleaner technologies, for example through subsidies. In this way, the short-term profitability is aligned with long-term sustainability goals.

From these two examples, we learn that several strategies can be employed to address the temporal misalignment between the government and non-governmental actors. Most

dominant is the incentivisation of the government and enabling non-governmental actors to invest in energy-efficient systems or to reduce the carbon footprint of the company. For example, through tax incentives, subsidies or carbon pricing. The most effective methods may differ for each industry and therefore need careful consideration.

2.5 Conclusion

Throughout this chapter, different research elements have been introduced and discussed. The findings around the relationships between niche, keystone and complementors have formed the basis for our understanding of business ecosystems. Additionally, we looked at different actors in our business ecosystem surrounding the energy transition and we investigated the role of temporal focus and how strategies can be applied to bridge the gap when a misalignment exists. To conclude, it is justified to say that the government possess a dominant role in the ecosystem and should take responsibility for this role to reach its vision by employing incentives for other actors that are more short-term-minded. These incentives can be effective for all kinds of actors, whether they are niche players or complementors. The framework in Figure 3 illustrates how these different actors are interconnected with the phase the business ecosystem is currently in and how they must tailor their strategies to address the problem. Temporal focus serves as an umbrella over all strategies that impact how actors behave towards a reformed business ecosystem.

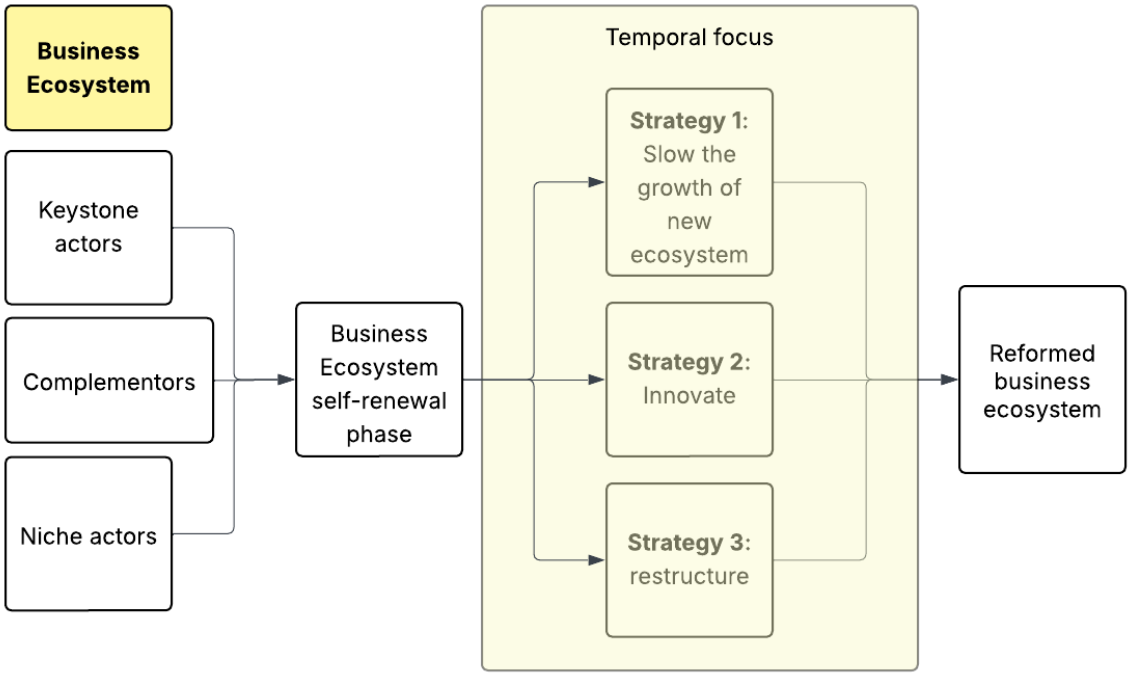

Figure 3: Theoretical Model Business Ecosystems Facing Self-Renewal Phase

3. Methodology

Within the following section, we present the research design that guides the investigation to answer our research question as presented in Chapter 1. The research entails a case study about the Dutch electricity sector, and we perform semi-structured interviews which are analysed using the Gioia method.

3.1 Research design – Qualitative Case study

This research is built upon a qualitative single-case study approach. The formal definition of a case study is "*an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the object of study and context are not clearly evident"* (Ebneyamini & Sadeghi Moghadam, 2018, p. 1). According to Yin (2003) case studies are effective for research where the research "*has little control over events and when the focus is on a contemporary phenomenon with real-life context"* (Yin, 2003, p. 1). This makes it an appropriate choice to investigate how misalignment of temporal focus has an impact on the business ecosystem. The research seeks to explain causal links and mechanisms between actors and their temporal focus. Therefore, our research classifies as an explanatory case study (Baxter & Jack, 2015). Case study designs can have single or multiple cases. As this research only looks at the business ecosystem of the Dutch electricity sector it is a single case study by nature (Yin, 2003).

3.1.1 The Case Study

In our case study, we are closely examining the Dutch electricity network transition ecosystem. The energy transition within the Netherlands is a long process aiming to reduce carbon emissions. Since July 2018, all newly built houses in the Netherlands have been built without a connection for natural gas. The transition was sped up when Russia invaded Ukraine, and the society became more aware of its dependency on foreign energy sources.

The energy transition also causes issues. Initially, our society had multiple options to create and use energy from different sources. Due to the transition, the focus of our energy use has shifted towards electricity as the primary source of energy consumption. Not only the shift from heating our houses with solar power instead of natural gas but also an increase in the sales of electric cars increases our electricity consumption. Additionally, with the addition of solar panels on people's houses and windmills on land and sea, energy generation has become decentralized. On the contrary, the electricity network in the Netherlands is outdated and only has a certain capacity. Currently, this capacity has been reached, and the demand and supply on the network are out of balance. This causes the so-called phenomenon of 'grid congestion'.

This energy transition shall continue, but the issues that come with it need to be solved as well. To do so, the government has started updating the cable network such that it can cope with the required capacity. This process, however, is expected to take at least until 2034 if not longer. Additionally, the Netherlands is facing a housing shortage and cannot afford housing projects to be put on hold. Therefore, the government tries to speed up the process by minimizing the administration barriers for projects and funding innovations

that support this transition. However, the government is not the only actor within this ecosystem. Grid operators and construction companies are important actors too. The grid operators are crucial to maintaining the integrity of the network during this phase, whereas the construction companies play a role in the requested innovations, but their operations are also affected.

The issue of grid congestion has a serious impact on society. Firms cannot electrify their operations and either a new or upgraded connection is not possible. Residential has been prioritised, but with the construction of new neighbourhoods, non-residential construction is crucial, making it difficult for developers to complete their projects. The issue is not yet improving much, and crowded regions like Utrecht are affected greatly, risking a complete stop on residential construction by spring 2026 as well.

As mentioned earlier in this paper, there is a discrepancy in the vision of the different actors within the ecosystem. The government and grid operators aim for a stable electricity network that is sustainable for future growth and is therefore tempted to do this cautiously. Construction companies have a vision that is much more short-term as their operations are taking place now, their revenue streams need to be maintained and projects that are put on hold are a danger to the industry. Within this case study we investigate how these dynamics within an ecosystem play a role and how the actors could adapt better to each other's situation such that an ecosystem can be sustained that has more 'winners'.

3.2 Data Collection – Semi-Structured Interviews

We conducted semi-structured interviews to answer our research question. Semi-structured interviews are a strong tool for qualitative research and provide the ability to gain valuable information in a formal setting but also leave room for the interviewee to provide additional information outside the set boundaries of the question by asking follow-up questions, for example (Ruslin et al., 2022). In total, 15 interviews were conducted with different actors of the business ecosystem; an overview of the interviewees can be seen in Table 1. Interviewees were initially selected on the relevance of their firm in the business ecosystem. Firms such as Alliander, Liander and TenneT were a logical choice as the grid congestion exists on their network. Local municipalities and the ACM would support answering the role of the government in our research question. Secondly, the criterium for an interviewee were that they should be well-informed about grid congestion in general and about the role of the firm in this crisis. Interviewees were mostly contacted through LinkedIn and Email. When contacting an interviewee, they were asked if they would fit the criteria, and if not, they were asked if they could refer to another more suitable person.

Throughout the process, we made use of the snowballing method. The principle behind the snowballing method is to add more interviewees to the sample based on recommendations or suggestions from other interviewees. GoPacs, Ministerie Volkshuisvesting & Ruimtelijke Ordening, and Bouwend Nederland are examples of interviewees that resulted from this snowballing method. In this way, a solid sample is collected, and expertise from the interviewees is guaranteed (Ritchie & Lewis, 2003). After about eleven interviews the saturation level was reached. The saturation level was

determined by the interviewer, as no further crucial information was provided (Guest et al., 2006).

All interviews were held online and were recorded and transcribed using Microsoft Teams and took between 35 – 55 minutes. Before the start of the recorded interview, the interviewee was asked for their consent to participate. After the interview, the transcription of the interview was downloaded through Microsoft Teams and cleaned up to create a readable verbatim version. Additionally, all interviews are anonymous and only identifiable through the company's name. The interview script can be found in Appendix 1.

To gain a broad perspective from the business ecosystem a wide variety of actors have been interviewed. Table 1 shows the interviewees for this research. The decision was made to interview only one or two representatives from a company. This was decided to be able to gain a broad perspective from the entire business ecosystem within the limited time frame available. Interviewing a similar number of participants from fewer actors could influence the perspective gained. **Validity / reliability**

Company / Institute	**Role / Position**	**Type of Actor**
ACM	Spokesperson	Complementor
Alliander	Relation Manager	Keystone
Ministerie Volkshuisvesting & Ruimtelijke Ordening	Consultant	Complementor
Beekman Bildung	Director	Complementor
Bouwend Nederland	Department Manager	Complementor
Eneco	Product Manager	Complementor
Gemeente Enschede	Program Manager	Complementor
Gemeente Utrecht	Program Manager	Complementor
GoPacs	Director	Niche
Liander	Relation Manager	Keystone
Liander	Stakeholder Manager	Keystone
Neprom	Manager	Complementor
TenneT	Program Manager	Keystone
TNO	Researcher	Niche
Trebbe	Department Head	Niche

Table 1: Overview of interviews

Authority Consumer & Market (**ACM)** is an important player in our business ecosystem. The ACM is the independent supervisor that strives for a fair market between consumers and firms (*Missie en Taken*, n.d.). For our investigation, they provide valuable insight into how they play a role within the ecosystem, as they monitor legislation surrounding grid operators and the costs they are allowed to charge consumers.

Alliander, Liander and **TenneT** are grid operators. The problem with grid congestion lies in their network. How do these players manage the network and how have they foreseen these issues? How do they manage quick operations but also maintain a financially healthy situation? How do they implement innovation? These three actors are our

keystone players and were crucial for our understanding of the business ecosystem and how the future could evolve.

The **Ministry of Public Housing and Spatial planning** (volkshuisvesting en ruimtelijke ordening) is responsible for housing within the Netherlands and to integrate new housing projects with our existing limited space ("Ministerie van Volkshuisvesting en Ruimtelijke Ordening," n.d.). Although grid congestion is their main issue, the way in which construction of housing will change in the future or the fact that electricity stations are required within neighbourhoods is certainly part of their portfolio.

Beekman Bildung is a one-man company specialising in consultancy on sustainability. He is a crucial player in the grid congestion where multiple actors are connected. He works with local municipalities, business parcs, etc. and is closely connected to the issue and provides us with good insights on what is going on the market.

Bouwend Nederland and **Neprom** are both trade associations. Bouwend Nederland represents the builders and Neprom represents developers. Through their members, they have good insights into the issues that are faced and what is needed for them and in the market. They actively contribute to conferences and publications of papers to represent the voices of their members and be able to make a change.

Eneco is an energy supplier that provides energy to consumers and firms. They are closely connected to the market and know the impact of grid congestion on their customers. As they are so closely connected, they are also empowered to make changes in the business ecosystem and support a better use of the network in the short- and long-term.

The **Gemeente Enschede** and **Gemeente Utrecht** are key players in the local grid congestion. What are the current issues they are facing concerning grid congestion? What is their view on the issue and most importantly, what is their role in overcoming the issue? Gemeente Utrecht is already experiencing a significant impact of grid congestion in their region and faces a complete building halt in 2026. This contrasts with Gemeente Enschede which is facing a much lower impact, still. How do they balance the needs of stakeholders in the region and obey the government's policy? What can we learn from these two situations and what do they do to learn from each other?

TNO is the largest research institute in The Netherlands. Their research often brings new insights, like they did in 2021 about the issues grid congestion can cause. The interview aims to get an idea of how research institutes have been able to foster innovation in the energy transition and how they view the impact on society and what possibilities are ahead.

Trebbe is a large construction firm in The Netherlands that operates in many different sectors. According to them, what exactly is the issue around the grid congestion? We want to know their view on the situation and who they think is largely responsible for solving the matter. Also, we want to shed light on their interpretation of the current ecosystem. How are the different actors operating? How do they feel that the government

is taking a role in supporting the ecosystem and its different actors? Through this interview, it is crucial to understand how actors who cannot actively solve the issue themselves are affected by it and how the ecosystem is actively supporting these actors to survive. Additionally, we want to know how they, and other construction firms, balance their operational efficiency within the framework of government regulations.

Gopacs is a marketplace platform that provides services surrounding congestion management. All grid operators are connected to this platform where they exchange usage of the network. What is the impact of this platform and why is it so crucial for the future of grid congestion?

3.3 Data Analysis - Gioia Method

To analyse the findings of the conducted interviews, the Gioia method was used. The Gioia method is an approach to the construction of grounded theory enabling one to understand and explain phenomena and the underlying mechanisms (Gioia et al., 2012). Within the Gioia method, the focus lies on the participants' perspectives and provides a balance between the qualitative data and developing a rigorous analytical model (Magnani & Gioia, 2023). Especially in our case, where we employ multiple actors from different sectors, this method is suitable to discover the insights from these different actors and to provide a clear understanding of the situation. The method contains the following steps; preparation of data, first-order coding, second-order coding, aggregated dimensions, creating Gioia data structure, and writing conclusions. For the analysis, the software Atlas.ti was used. This program is designed for qualitative research and supports structurally analysing the data and unlocking the insights in a simple manner.

Preparation of the Data:
The interviews are recorded and transcribed verbatim using the automatic tool from Microsoft Teams. In this step, the transcriptions are cleaned up and checked for errors using Microsoft Word.

First-Order Coding:
This step is also known as 'open coding'. Within this step, the focus is on the participant's words without prejudice on categories or concepts. Seemingly important quotes or statements are written down. An example may be; "Our highest priority within this stage is survival." In this way, important terms and phrases are extracted from the raw data.

To do so, each interview is read and inspected line by line and significant statements that are relevant to the research question are highlighted. After that, each highlighted word or sentence receives a label or code. For example, "survival is priority". The idea is to shorten the message of what the statement tries to say. This is important for the next step.

Second-Order Coding
The objective of this step is to group first-order concepts to identify overarching themes and theoretical categories.

During this process, the first-order codes are reviewed, and we look for commonalities and patterns among the codes. For example, "short-term goals". The goal is to capture

multiple codes under one theme to make them better interpretable. We therefore ask ourselves some questions during the process;

- What challenges are being highlighted?
- What long- and short-term strategies are suggested
- What mechanism is taking place?

Aggregated Dimensions

In this step, the goal is to create broader, theoretical constructs that combine the second-order themes into a more abstract, holistic understanding of our research question.

The process starts by reviewing the second-order themes like we reviewed the first-order themes. While doing so, it is important to relate the different themes to the research question. Different themes can be combined to, for example, create an aggregated dimension of “misalignment short- and long-term goals”. The goal is to only have a few aggregated dimensions that can strongly support our findings to answer the research question.

Creating Gioia Structure

In this last step, we present our findings in a structured visual format that clearly shows how we developed from first-order codes to aggregate dimensions and how they are connected as seen in Figure 4.

4. Findings

Within this chapter, we present the results from our semi-structured interviews to answer our primary research question: *"To what extent can the Dutch electricity network transition ecosystem optimize its efficiency and innovation in the context of conflicting temporal focus of its key actors within a market heavily regulated by government policies?"*. Within this chapter, we will thus focus on improvements within the business ecosystem and how temporal focus impacts the cooperation between actors. We present the key aggregated dimensions that emerged from our data analysis using the Gioia method as seen in Figure 4. The four aggregate dimensions identified are: temporal misalignment across ecosystems, institutional reform for structural resilience, operational flexibility and resource configuration, and innovation and incentivisation for long-term transition.

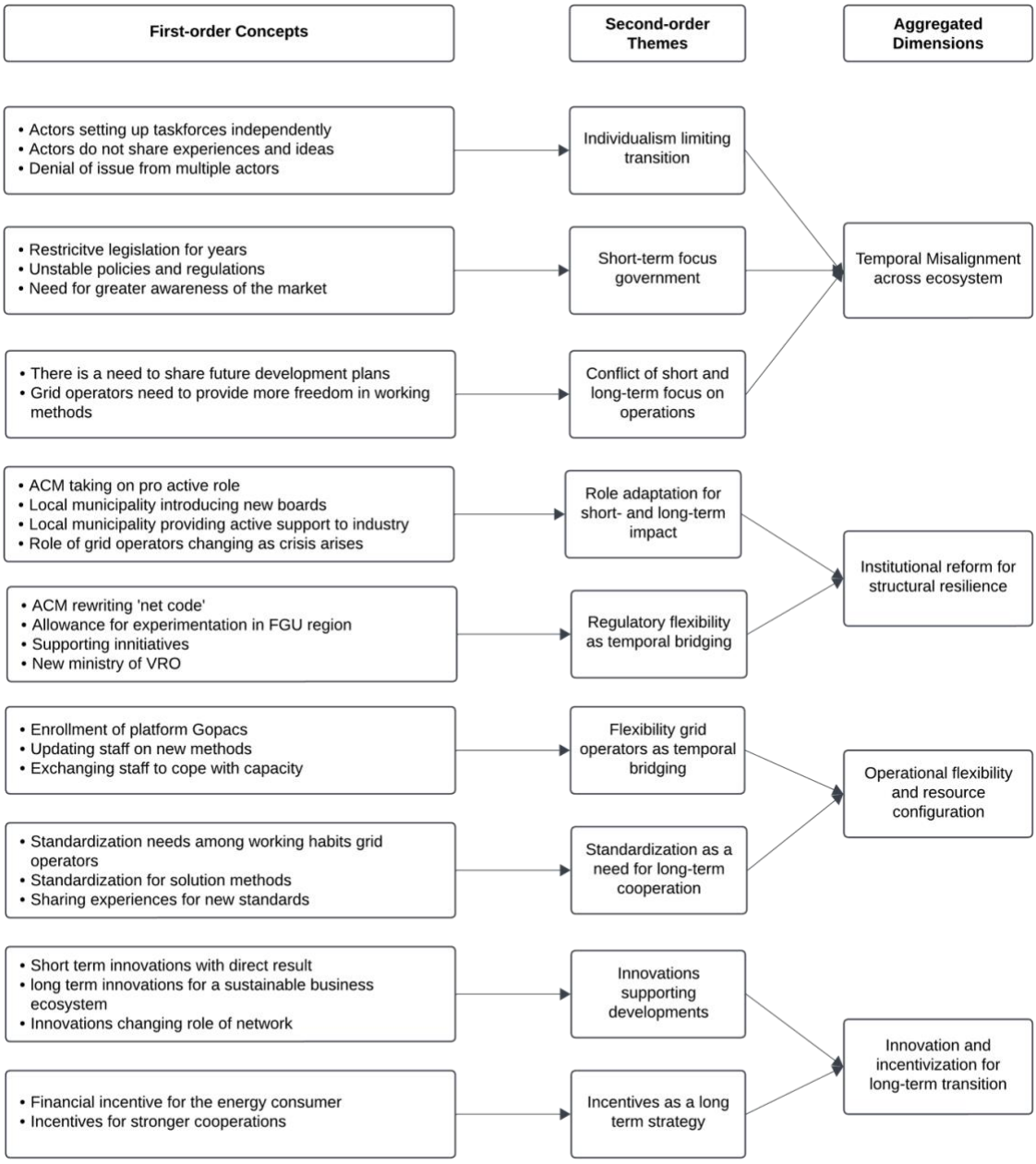

Figure 4: Data Structure

4.1 Aggregated dimension: temporal misalignment across ecosystem

A dominant finding within our research is the temporal misalignment between key actors in our business ecosystem. Although the crisis required urgent responses from those actors, the ability to cooperate efficiently was limited due to fundamental differences in temporal focus. Thus, we saw how some seek for immediate impact whereas other actors were more interested in the long-term effects. This overarching dimension consists of different themes that contribute to this, like **individualism**, the **short-term focus of the government**, and **conflicts on the temporal focus of operations** between actors from the business ecosystem.

Individualism limiting transition

As grid congestion arose in multiple regions, it became clear that this would affect everyone nationwide, and that action was required. From firms that were suddenly denied a connection to grid operators that saw his network reach capacities it never had before. That cooperation at all levels was required was clear, and everyone wanted clear solutions quickly. But, who to work with first and finding the right people to create a strategy with seemed difficult. Those parties never cooperated earlier before. An interviewee from TenneT mentioned, *"There were many uncertainties: who is responsible for what, and who should take on which role? Who investigates long-term solutions?"* As the crisis arose and some people were able to find each other, it was also witnessed that this was not effective. Many groups and 'taskforces' within companies were working parallel without each other's awareness; "*All parties that were able to participate passed each other, and sometimes people were in multiple taskforces'.* What we see happening on a large scale within the ecosystem also took place on a smaller scale, internally within firms where a lack of coordination exists and everyone does what they think is better. As a result, the task forces seemed ineffective and did not live up to the need of the market to have real solutions in the short term, as grid operators did not want to rush into the crisis. As firms internally could not coordinate themselves, how could they align goals and views on the issue with external partners? "*It was difficult to align our views, but slowly, we noticed we were starting to understand each other.*" These dynamics reveal how a lack of structured coordination and individualistic problem-solving delays progress within the crisis, despite all good intentions.

Respondents found a lack of actors sharing their experiences and ideas with others as the grid congestion issues became a real crisis. Single-handedly actors came up with solutions for their issues without anticipating the long-term viability of the solutions. During an event from Neprom in November 2024 a developer of residential areas said: "*After intensive and successful cooperation with grid operator Stedin and local municipality Utrecht for a large project, we had to start from scratch when we started with another project that was in a different area with a different grid operator. They had no experience with our proposed solution and wanted to do the calculations themselves. We went through the entire process again.*" This issue was widely acknowledged by other interviewees and people mentioned that it was difficult to get everyone "*off their island"* and to start sharing experiences on solutions that have been implemented and may or may not have worked. Especially among local municipalities, of which there are 300 in The Netherlands, it seemed difficult to share their findings and experiences. This

mechanism shows signs of individualism within the business ecosystem, where actors work and adapt for their short-term benefit but ultimately slow down the progress by not sharing important experiences that could benefit the entire business ecosystem in the long term.

Within this research, we spoke with the local municipalities of Utrecht and Enschede who take a proactive role concerning grid congestion. However, from other interviewees, we also hear that this is not the case everywhere; "*there are also local municipalities who say 'why? This is not my issue but that of the network operator.*" Although such standpoints may change quickly as problems progress, it is another perfect example of individualism. Local municipalities do not consider the issues to be theirs and forward it to another, while they are a key player in the coordination. Some interviewees call their role "*rather conservative." These local municipalities need* to visit others and hear about the issues that can arise and hear about the level of required cooperation to realise that their individualistic behaviour will not adapt well in this ecosystem. However, this is not only the case for some local municipalities. Also, within the industry and users at home, this plays a role. Interviewees point out that in cooperation with firms, there is often a first hurdle to overcome, making firms realise they are part of the transition and crucial element. "*Firms are surely long-term minded, but uninteresting topics like energy require time and thought which they often consider to be a secondary priority.*" That not all firms are aware of the impact on their firms becomes clear as "*a while ago Enexis released a report which stated that 70% of the firms would like their connection to be upgraded and thought grid congestion would not impact them.*" But also for users, "*they understand that it takes longer to warm up their houses, because of a lower power.*" Not everyone is aware of this yet shows that according to research by TNO "*people who live in well-insulated houses use more energy than people who live in poorly insulated houses.*" A different mindset will thus really make an impact.

<u>Short-term focus government</u>

The energy market in the Netherlands is under strict regulations. "*The security of supply is required to be 99,99% for us grid operators, this is incredibly high and we are debating if we should maintain this level considering the current situation.*" The Autoriteit Consument & Markt (ACM) is the party who is responsible for monitoring the compliance of the set rules and determining the maximum prices that may be charged to the consumers. This is also where issues have been playing parts at the start of this crisis. Many of the interviewees mentioned that the issue of grid congestion could have been foreseen and should have been prevented. However, grid operators were limited in their operations due to strict regulations from, for example, the ACM; "*Grid operators have been extremely frugal over the past decennium, which they had to from the ACM. So, with the construction of new cables dimensioning with thicker cables was no option, because the consumer would have to pay for it.*" One of the interviewees responded to a claim that governments often hold a long-term vision on their projects, that he noticed "*the ACM actually held a short-term vision only looking at the direct consequences for price changes, and not accepting projects that could somewhat have prevented the current grid congestion.*" The mechanism we witness here is the inability of the government to be able to adapt its standards and be able to implement changes for the benefit of the market that requests so.

Although interviewees ask the government to be able to adapt their policies, a second element where the short-term focus of the government plays a role in this crisis is regarding their policies and regulations. Interviewees agreed independently of each other that the government must pursue stable and consistent policies. "*We especially need a bit of stable policies. The example of the netting arrangement has been mentioned multiple times, and whether this arrangement was taking place. These escapades make it difficult to anticipate and invest.*" Another mentioned example was the sudden elimination of legislation that enforced zero-emission zones in cities. "*This was announced 10 years ago. Everyone was prepared, from entrepreneurs to local municipalities, and everyone invested huge amounts of money. Suddenly, the government says: 'It is no longer needed.' Well, that is the worst scenario you can think of.*" Someone else mentioned, "*If you ask what a government can do to support this transition, then it is their role to maintain stable policies. Make a choice and stand behind it.*" Actors face difficulties in making plans and strategies based on short-term, politically loaded decisions. As a result, this has led to ineffective grid management and possibly the grid congestion crisis.

A third element that marks the government's short-term focus is the need for greater awareness of the market. Interviewees are mainly lacking a connection between ideas and plans from the government and the possibilities in real life. "*What happened is that everyone needed to make the transition and let the gas connection go to make electricity the primary energy source. Well, if you make these kinds of claims you need to be sure that the electricity net is accounted for this change.*" Interviewees are also seeking stronger strategies to carry out these plans; "*What products do you wish to be launched, and under what conditions should this take place, the government needs to be better aware of this.*" In addition to an emphasized vision, it also means that the government could be better aware of trends in the market. Interviewees mentioned that the government is often behind on innovations and new practices and could change their policies more accordingly if they know better what is going on. "*We would like them to actively participate more in market developments and be part of it, such that they can account for this in their short- and long-term plans.*" A representative of the Gemeente Utrecht is seeking "*a strong policy on new norms. We want norms for controllable water pumps that create high peaks, norms for 'net conscious charging' and to compensate charging operators such that we can make this a new norm.*" These ideas that are mentioned are developments in the market that are already spoken about for a while and can have significant positive impact on grid congestion. Interviewees are thus asking to better regulate and implement ideas that have already been thought out and can have direct results. "*I see a strong role here for the government, and we would like to see more ownership from them.*" If the government can close this temporal lag between their policies and the activities from the market, it would potentially increase innovations and actors would be stronger in dealing with the crisis and could respond quicker to the needs with the support of the government.

Concluding we can say that the short-term orientation of the government emerges as a significant barrier to temporal alignment within the ecosystem. The restrictive legislation has locked actors into their long-term planning and the ability to anticipate changing

environments. Meanwhile, the unstable policies and regulations of the government limit the confidence towards other actors and hinder them in long-term strategic planning. These two elements, combined with a limited awareness from the government of the market dynamics, show a misalignment of temporal focus between the actors and challenge our ideas that the government always acts upon long-term goals. The government can thus play an important role in closing this temporal gap.

Conflict of short- and long-term focus on operations

Sharing future development plans is a widely mentioned topic by interviewees. Initially, this was never really needed, as constructions were built, and a connection was provided by the network operator. "*Suddenly we noticed that the planned connections were not possible, and vice versa the grid operators did not know what projects were being developed and which were planned.*" Interviewees mention that if we want to be able to continue building houses, "*local municipalities and grid operators need to investigate what can be built, what do we want to achieve to balance supply and demand.*" There lies a big role for local municipalities to monitor and control projects in the region. Interviewees mention multiple factors that are important for this, as a basis, it means that it becomes crucial for the local municipalities to have a strong cooperation with grid operators, developers of residential areas, and construction firms. Builders and grid operators have already agreed to cooperate according to the 'neighbourhood approach' (buurtaanpak) where they "*go through a neighbourhood all together in one pass where we upgrade the network and make it futureproof. However, this requires intensive cooperation, and local municipalities need to provide the permits for the projects all at once, while they are used to do this per individual project.*" This means that not only the network is upgraded, "*but it should be a project to make neighbourhoods climate adaptive where firms also work on the sewerage, the pathing and adding green to the neighbourhoods. In this way, we improve the neighbourhoods significantly and the impact of the operations is less.*" Local municipalities have likely been reluctant to do so as it impacts their operations and control over what is happening in the region. In this case, they value their position and power in the short run over the long-term impact within the business ecosystem. For grid operators, it is their role to share where the possibilities lie for construction projects. This active monitoring is proposed by Neprom and called the traffic light model; "*when the network operator informs that at a certain place, it is not possible, then the market can look where can we switch. Put one project on hold for a while, or change the planning of a project.*" In this way, Neprom believes we can be more flexible and improve the number of projects that can be conducted. TenneT also mentioned turning it around. "*Currently we build to stock, but we want to turn it around and lay out the network and then find clients. This can be cheaper and we can standardize more. This will be quicker than adapting connections one by one.*" We notice here that everyone is seeking standardization that in the long term results in flexibility. It is now key that decisions are made on what the best practice is that suits best for all parties.

Grid operators can potentially fasten the transition if they have greater trust in the capabilities of the sub-contractor. Currently, grid operators are strict in the operations on their network and subcontractors have no freedom in performing practices any different than is described. "*We need to let that go and have trust in the contractor that he delivers excellent work that is safe and functions well, just with his methods.*" If contractors can

do so, it is also beneficial to the entire business ecosystem. An experiment in Enschede showed that "*when the contractor gets complete freedom, it is incredible to see the innovative methods and techniques employees come up with. We came across so many things that can be smarter, faster, easier, cheaper.*" Grid operators limit themselves in their operations through their capacities and stick to strict regulations they set themselves. Their view on the sustainability of the network in the long run limits solving issues in the short-term solution methods, while experiments prove that this benefits the ecosystem as a whole.

These two concepts highlight a fundamental tension within the ecosystem: conflicting temporal misalignment in operations. On the one hand, actors are required to coordinate better to maintain momentum in construction projects. On the other hand, grid operators are abounded by long-term network planning and are cautious in subcontracting the overload of work. We see institutions like Neprom and Bouwend Nederland searching for mechanisms to bridge the issues through for example the 'traffic light model' and experimenting with subcontracting operations. However, long-term control overrides these short-term innovative practices. To overcome this, all actors must adapt and reevaluate their role within the ecosystem.

4.2 Aggregated dimension: institutional reform for structural resilience

The grid congestion crisis has not only revealed the technical and operational challenges of the Dutch electricity network but also the need for institutions to transform. As the pressures on our grid became stronger, actors were forced to reconsider their traditional roles and responsibilities. The following aggregate dimension shows how key institutions have adapted structurally and procedurally to cope with the upcoming crisis in the long run. We have witnessed the **adaptation of roles** and sudden **regulatory flexibility** from government institutions that are not just a response to the crisis but are the foundation for some reconfiguration that builds long-term resilience.

<u>Role adaptation for short- and long-term impact</u>

The changing role of the ACM has frequently been mentioned as an impactful change in this grid congestion issue. "*From 2012-2015 I worked a lot with ACM, at that time there was a formal relationship, and it was our responsibility. This is still the case, but offline they are actively participating to cater for our needs to cope with this situation. This is super valuable"* It is also part of ACM's strategy to broaden its services while maintaining its role. *"We also try to display ourselves differently. Firms say 'ACM is too formal and just a supervisor', now we want to prove that we support and look at what is possible outside the standard operations but within our borders."* ACM works hard to do so and show they are willing to help. Therefore, they are "*actively contacting firms, speak on stages, visit congresses. We organised a congress ourselves too.*" This evolution is not only symbolic but also strategic as it demonstrates how regulatory bodies adapt their temporal focus. The ACM acknowledges here the crisis faced by other actors and adjusts their behaviour by not just governing through rules but actively participating and supporting.

The situation in the Utrecht region provides another example of how roles reshape due to temporal pressures. Utrecht has faced a critical problem since the start of grid

congestion, and it remains problematic with the risk of being unable to build anything from 2026 onwards. To cope with this crisis, the local municipality of Utrecht adapted their board structures. "*We have been on the Energy Board for 1,5 years now. This existed already for the tuning between the local municipality and grid operators. For 1,5 years, we drastically expanded this board.*" Within this board, they "*meet every six weeks with the province, grid operators, regional representatives and the two largest local municipalities Amersfoort and Utrecht.*" On top of that, Utrecht initiated a crisis organization due to rising issues and risks of not being able to build in the coming period. Additionally, the local municipality of Utrecht incorporates their entire organisation, as it impacts all departments. "*We asked everyone how they can cooperate. Internal economies are working together with the industry. Our real estate department is investigating the electricity peaks. Our waste operators are investigating the impact of their fleet electrifies. You can see by the number of departments that it is a lot. It is now our task to coordinate all this.*" Also in other regions, they change their board structures. In Deventer, for example, they launched a special team. "*From January onwards, they will have a special 'grid congestion' team.*" These changes indicate a fundamental change in the governance structures of a local municipality that aims to have an impact in the short term but also has a focus on the long-term sustainability of its governance model.

Besides the internal restructuring within the local municipalities of Utrecht and Deventer, for example, we also view an adaptation in their roles to external actors. Local municipalities take on an active role in enabling different energy solutions in the region, "*in Deventer, for example, you see that the local municipality apart from developing, also actively supports the required components for setting up a hub.*" *Similarly,* in Utrecht, they actively support business parks in looking for possibilities. "*Firms contacted us to ask if they could work together and exchange their uses of the net.*" These certain requests were honoured by the local municipality as it would benefit the grid congestion issues, but it was also new for them and "*something that popped up since grid congestion became a thing.*" This reform within the local municipalities to external actors is not only providing solutions that enable operations in the short-term but also results in new, sustainable relationships that are beneficial for the future and that can have a broader impact than just on grid congestion.

Lastly, the role of grid operators undergoes a significant role redefinition as well. Initially, they operated on their 'own islands' with little required communication with other actors. "*We were an executive organisation that laid cables and provided gas, and now we are guiding the transition.*" As a result of this guiding role, grid operators gain a seat at the governance tables; "*I think the cool thing about what we achieved is that we have created a very firm position at the governance table where grid operators are now part of.*" An example of this is the active contribution to legislation and the code written by the ACM where they actively participate in what the future of the network should look like and what consequences this has for the code. "*Grid operators can suggest changes for the cost structure in the netcode.*" This adaptation of the role of grid operators is an example of how the business ecosystem adapts. The grid operators shift from a static to a dynamic role which supports the alignment of temporal orientation with other actors and ensures that people start to operate from the 'same island'.

We witnessed different institutions structurally reforming their structures to achieve short-term impact and create a sustainable environment with other actors in the long run. An important element in this reforming is the return of cooperation with other actors and the development of new cooperations that did not exist before. The interdependency between actors in this crisis is evident and crucial for actors to adapt. Whether the nature of this adaptation is on their initiative or due to the demand of other actors, actors need each other.

Regulatory flexibility as temporal bridging

Besides the ACM changing their role to support the business ecosystem and look for possibilities, they are taking a strong position in the legislation of the government. Together with the grid operators they have actively been reviewing their 'codes'. Codes are the additional rules for the energy market and apply to all parties involved ("Codes," n.d.). "*The present scenario forces us to reconsider our pricing options and conditions to benefit the electricity network and reduce the impact of grid congestion.*" But also, legislation concerning the construction of houses is actively being altered for the benefit of congestion management. "*Before, this would never have been possible and was too difficult to get it done. Now, they are working extremely hard to get the new energy legislation fixed.*" This active participation of the government and the willingness to adapt their legislation has been widely appreciated by the interviewees. This reform of the ACM, allowing external actors to influence the code is an important element in the short-term relief of existing mechanisms. It lays the foundation for long-term structural adaptability and aligns with the needs of other actors. In the future, this reform can be crucial to deal with different crises.

At the same time, local municipalities are actively seeking methods to reduce the impact of grid congestion so that other practices like construction can continue. "*The FGU region worked out an agreement and requested the ability to gain an experimental status from the government.*" The government has allowed this experimentation with new construction methods. The construction of residential areas is under strict regulations, and deviating from the regulations is not possible in a regular situation. To manage the grid congestion, the government has provided the FGU region (Flevoland, Gelderland, Utrecht) with space to act outside the standard regulations and experiment with a new method: net-conscious construction (netbewust bouwen). "*Let's say they allow the experimentation in Utrecht; then the local municipality has a better position to speak with developers as they cannot say 'this method does not match with the standard regulations' because Utrecht has received the freedom to move beyond this.*" This innovative approach serves as a temporal bridge between actors. It allows municipalities to break free from restrictive construction legislation to respond to immediate grid constraints without compromising the long-term objectives of sustainable housing development. The implementation of the experimental status shows the willingness of the government to support deviations from the norm and reflects a shift in institutional logic as they acknowledge the need for greater flexibility and consider the risk of not being able to build houses after 2026.

The 'Utrecht case' provides more examples of institutional adaptation. For example, the endorsement of new practices, like net-conscious charging that was initiated by grid

operator Stedin, for example; "*the alderman of Utrecht said we support this, period. We are going to introduce this into our city and to our people.*" The effect of this endorsement supports actors in their innovation that impacts residents, who may not be in favour of losing the luxury to charge their car at any time they like. This is an example of how governance mechanisms allow the business ecosystem to implement new technologies without waiting for the implementation on a national scale.

Finally, the reinstatement of the Ministry of Public Housing and Spatial Planning (Volkshuisvesting en Ruimtelijke ordening, VRO) represents a long-term reintegration of institutional power. The activities of the VRO have been spread among several other ministries since 2010. The renewal of this ministry in 2024 was initially called for to solve the housing problem. With the addition of the grid congestion issues, interviewees were very satisfied that this ministry had been relaunched. "*We are very happy to have a ministry of VRO again. With the issues of grid congestion taking place above the ground, they will play a crucial role in future.*" Although this new ministry is not directly linked to the grid congestion issue, the mandate they receive towards this problem reinforces the long-term resilience of institutions where multiple issues are being centralized again. As a result, coordination regarding housing and grid congestion should be improved and strengthening the long-term well-being.

We witnessed different institutions act upon the crisis and show a more flexible attitude which bridges several temporal gaps in the business ecosystem. Through short-term adaptive responses and long-term systematic reform, the different institutions build greater structural resilience for any future issues. The acknowledgement of interdependency and therefore the rise of new cooperations results in a strong foundation for the future. The business ecosystem showed that it can adapt itself from a strict system where only rules apply to a dynamic, cooperative system where flexibility and cooperation are central elements.

4.3 Aggregated dimension: operational flexibility and resource configuration

While the regulatory reform sets the structural conditions for new partnerships and flexible legislation, operational flexibility and the reconfiguration of resources are crucial to solving grid congestion too. A need to adapt routines, increased capacities and coordination on methods are needed to overcome temporal misalignment and capacity constraints. Actors are forced to reconsider their operations be **more flexible in their operations and share resources**. Additionally, the business ecosystem asks for greater levels of **standardisation** to level the playing field and to set expectations straight. This dimension highlights the importance of actors being agile and responsive and that not only institutional reform but also everyday operations can have an impact on this crisis.

<u>Flexibility grid operators as temporal bridging</u>

Gopacs is an initiative that received more attention as grid congestion started to cause serious issues. Before "*it was more run as a scale-up, but since the start of 2024 we gave more serious attention.*" Gopacs is a platform where the "*grid operators are united for congestion management.*" All seven large grid operators are connected to this platform which acts as a trading platform where grid operators can reduce congestion in certain

areas through selling energy to other operators ("Gopacs," n.d.). This platform illustrates how digital coordination can play a role in solving short-term grid congestion, allowing space for actors to operate while long-term solutions are being developed and implemented. This platform reflects a shift and requires actors to change their way of using the grid and share each other's flexibility where possible.

Another important area of flexibility for the grid operators lies within their internal operations. Interviewees mentioned that they faced issues with grid operators where staff from different departments were not always aware of the changes that have been implemented; "*as a result, the head of purchasing says 'well, well, we should investigate if we can approve this purchase'.*" Although grid operators are acting through "*meetings, flyers and other methods to inform their staff to let go of old methods and to seek more cooperation,*" it is also a matter of time to change this behaviour of the number of staff that are involved in these companies. The effect of this mechanism shows that alignment of focus is not only across different institutions and actors but also within them. To implement the flexibility institutions are looking for, internal resources must be reconfigured too. The internal alignment is thus crucial for operational performances across the ecosystem.

Grid operators adopt a long-term strategy for their networks where they prioritise reliability and safety. For this reason, they are risk-averse and in the past have not been willing to employ external support from companies to remain in control. Bouwend Nederland mentioned one of the goals they are working on. "*We want to work towards exchanging staff for the project preparations, designing, and engineering. We want to do this because one of the reasons projects are delayed is because grid operators spend huge amounts of time calculating and designing for which they have no capacity. The contractor often does have the capacity, so let's exchange our staff so we can cooperate and get projects done.*" Initiating such plans strengthens cooperation, supports each other's operations and is a benefit to the grid congestion crisis. Bouwend Nederland employs a short-term focus where they want to update the network as quickly as possible to solve grid congestion issues. This misalignment of the temporal focus requires network operators to become more flexible and to be open to exchanging staff with firms to support their operations in the short term without losing focus on the long-term goals. Additionally, grid operators can potentially fasten the transition if they have greater trust in the capabilities of the sub-contractor. Currently, grid operators are strict in the operations on their network and subcontractors have no freedom in performing practices any different than is described. "*We need to let that go and have trust in the contractor that he delivers excellent work that is safe and functions well, just with his methods.*" If contractors can do so, it is also beneficial to the entire business ecosystem. An experiment in Enschede showed that "*when the contractor gets complete freedom, it is incredible to see the innovative methods and techniques employees come up with. We came across so many things that can be smarter, faster, easier, cheaper.*" This shift in trust will accelerate short-term implementations and initiate a cultural change for grid operators where following strict internal rules creates space for performance-related logic. Decentralising this control requires deliberate resource configurations enhancing adaptability and bridging short-term operational goals with long-term grid sustainability.

These three examples demonstrate the growing need for operational flexibility. This flexibility is not just a deviation from their standard practices but will align temporal foci within the business ecosystem where short-term goals are more prioritised while there is no need to let long-term objectives relieve. Through embracing new platforms, reconfiguring knowledge flows and empowering external partners, immediate pressures on the grid can be targeted while undergoing a systematic reform. This reflects the need for operational flexibility and resource configuration; the ability of actors to reshape roles, routines and relationships that enhance the strength of the business ecosystem.

Standardization as a need for long-term cooperation

A difference in the working habits of grid operators has been identified as a clear barrier in the coordination between grid operators. The grid operators were forced to closely cooperate and actively work on long- and short-term solutions "*in a way they never had to"*. Each network operator, however, had its own style of working. For example, "*the data classification was done differently across all operators."* It took time for grid operators "*to start to understand each other and talk about the right elements".* This was not only difficult for the cooperation between grid operators but also other actors like developers of residential areas, construction firms and local municipalities. Overcoming this issue not only required communication between the grid operators but also a mutual understanding and sensemaking of each other's processes. These dynamics reflect the pathway where standardisation will positively influence the business ecosystem and, therefore, will act as temporal alignment within processes.

The standardization of the processes of grid operators moves beyond their internal practices. During an event of Neprom, it was mentioned how developers faced issues between grid operators and the lack of communication between them about solution methods that have been proven to be successful. "*The market called for us grid operators to be uniform. Perhaps that's the key such that we do not have to do things all differently. More cooperation between grid operators."* Getting closer in contact with each other about successful implementations "*is part of the standardization we are talking about."* As a result of this standardization, projects can be better streamlined and create a more predictable environment for other actors. This step towards greater interoperability will be important towards the coherence of the business ecosystem, which reduces friction in the short term and strengthens long-term coordination.

The shift towards standardization is also reinforced through knowledge sharing. Actors recognize the value of sharing experiences and knowledge from their operations. As a result of these small-scale innovations, actors admit that they have gained valuable lessons; *"I value how we have met each other, and that from the producer side, we can already look at what can be done in a home."* As a result of the experiences, we see that firms share their experiences publicly through a white paper, for example. *"Soon we will sit together with everyone who was involved and set up a white paper about how we tackled grid congestion, what can we do, what can we do in houses, and what can you do in neighbourhoods. These elements we will discuss."* In this way, actors not only align their operations and practices but also align temporal expectations. This enhances future collaborations between actors and can strengthen the business ecosystem which ultimately benefits the development of solving grid congestion.

Standardization within this ecosystem is not only a technical aspect but is the backbone for strong relationships and coordination between actors. Through listening to each other, creating mutual understanding and sharing experiences routines can be altered and aligned with each other. For this, all actors have their share and responsibility and require flexibility and a reconfiguration of their operations and methods for the greater good.

4.4 Aggregated dimension: innovation and incentivization for long-term resilience

Innovation is the backbone for anyone who is required to head into a new direction. Within this business ecosystem actors acknowledge this. This aggregate dimension shows how interviewees view the innovation and the need for strategic incentives to overcome bottlenecks and the impact on the system. **Innovation** and **incentives** play a crucial role in aligning temporal interests and promising long-term benefits while addressing short-term issues.

<u>Innovation supporting developments</u>

Firms have been denied a new or stronger connection to the network and will remain denied for an undefined period. "*Firms are looking for workarounds to not have to wait for their spot on the waiting list. An example of this is joining an existing E-hub.*" An E-hub is a cooperation "*between a group of firms that collectively use energy and try to balance out each other' usages. It is a sort of group contract.*" However, innovations also go further than e-hubs. There are also examples where batteries are installed that are charged when prices are low, and when prices of the network are high firms use the energy of the battery. "*This can indeed help the system but also harm it through increasing grid congestion. This led to a new type of agreement that ensure a certainty of 85%.* In this contract, the network operator can turn off the battery at times when it is disadvantageous that it is charging from the net. "*In return, the firms receive a 50% discount on the transport costs.*" A more radical example is from Schiphol. "*Within their business parc, there are a few firms that are completely self-sufficient and are only connected to the network as backup. It is some sort of showcase for the future.*" These innovations are examples of operational flexibility that reduce dependency on the grid and offer 'breathing space' during times of high congestion. The innovations thus have a short-term impact on the business ecosystem. However, these actions which have an impact in the short run can create long-term resilience. The anticipation of actors and the adaptation from grid operators offering altered contracts are an example of temporal alignment between actors. At the same time, these innovations set the stage for a reconfiguration of the use of the current grid which creates long-term resilience.

"*As a result of the crisis, you see many developments among different parties to find contributions to the issue. This is accelerating.*" Parties performing improvements on a small scale are already contributing "*to balance out peaks such that we can connect more houses to the same cable. That already helps.*" An example of a small innovation that contributes is altering the settings of the water pump. "*On default, they are set to perform in conditions of an outside temperature of -10 degrees Celsius, full ventilation*

and the entire home should be 22 degrees Celsius." These default settings ask for 9kwh of electricity. "*We have been playing with these settings together with the manufacturer and an instructor to see what we need."* It turned out that the settings could be changed and with the new settings only 1,5kwh of electricity was needed. As firms reassess assumptions and requirements, new opportunities are unlocked for the entire system. This learning on the job supports short-term grid relief and a long-term awareness of our energy consumption contributing to our adaptations.

The way we use the network might be subject to change too. "*If you think some concepts through, it would mean our network will no longer be the aorta of what we do but that it will become the backup line."* Because in the future we may no longer need that "*six-lane highway to the beach for only two days a year."* Innovation is thus reshaping the purpose of the electricity network and further decentralizing. There lies a real opportunity here for the grid operators to closely monitor together the developments on how energy is used and reevaluate investments. Currently "*everything is coming together and there are opportunities to design the future of The Netherlands. An opportunity that needs to be taken advantage of."*

Innovation within this business ecosystem is evolving and actors respond strategically to the current stress on the grid. Actors develop smart methods and tools to bridge the immediate effect of the crisis on their operations. The innovations function as temporal alignment, allowing actors to experiment with different functions. At the same time, the innovations reshape our perception of the grid and provide suggestions on how its purpose can be altered. This directly supports the aggregate dimension innovation and incentivization for long-term transition, emphasizing the need for continuous investment in forward-looking practices that can reshape the habits of today.

<u>Incentives as a long-term strategy</u>
Interviewees generally agree that if you want other actors in the business ecosystem to cooperate to be able to move on, there must be an incentive. "*If the network operator wants to solve grid congestion, he must offer an incentive to the user to use electricity during off-peak hours." "With such a structure, you can trigger the users to use the network more efficiently."* Interviewees also believe that in the long run, firms will be pressured to make use of the network more efficiently. "*Firms who do not see the need to adapt will go under. Either through regulation or because they are no longer competitive."* These short-term incentives will not only serve in the short run but act as a step up for stronger behavioural norms supporting a new culture embracing flexibility. In this way, it functions to bridge temporal misalignments where present-day actions are financially rewarded in the long term.

An incentive can also work between parties, and it is suggested that if the government wants to be able to force the requirements for spatial needs specific electricity stations, they must offer an incentive to the local municipality and community to allow the impactful changes of their neighbourhood. "*The government has the key in their hands to speed up expansion projects. Infrastructure is implemented in local regions, and smaller local municipalities need to offer space for a station that is needed for the larger cities. There is currently no incentive for this."* Incentives in such scenarios can balance the

temporal asymmetries, where local municipalities carry the social and political costs where the long-term benefits are marginal to them. Incentives also work the other way around, according to interviewees. As the crisis arose, firms made use of the potential to offer additional services. Energy providers, for example, "*As soon as the user needs to make a cost, it is an opportunity for us to offer a service.*" But also, GoPacs is one of the initiatives that got his spin-off through the sudden need to trade network capacities among grid operators. These developments illustrate that innovation and incentives reinforce each other in times of disruption. Initially, it is a way to work around the crisis but evolves to new standards that have a long-term impact on the business ecosystem.

Incentives are a tool to influence the behaviour of the user but are an instrument to distribute the different responsibilities, risks and benefits, too. Every actor can be influenced by incentives and have a distinct effect. In this way, the theme of incentives as a long-term strategy reinforces the aggregate dimension of innovation and incentivization for long-term transition: enabling short-term participation while building the economic and institutional foundation for a more resilient and collaborative energy business ecosystem.

4.5 Dynamic Model

From our research using the Gioia method, we present a dynamic model in Figure 5. This model is constructed to visualise how the grid congestion crisis developed and what elements played an important role in this. The model explains the temporal alignments between actors, policies and implementation of short- and long-term visions. However, it also displays the adaptation of actors and how this eventually emerged into a different operating business ecosystem. In the following section, we will dive into more detail about the different elements of the model.

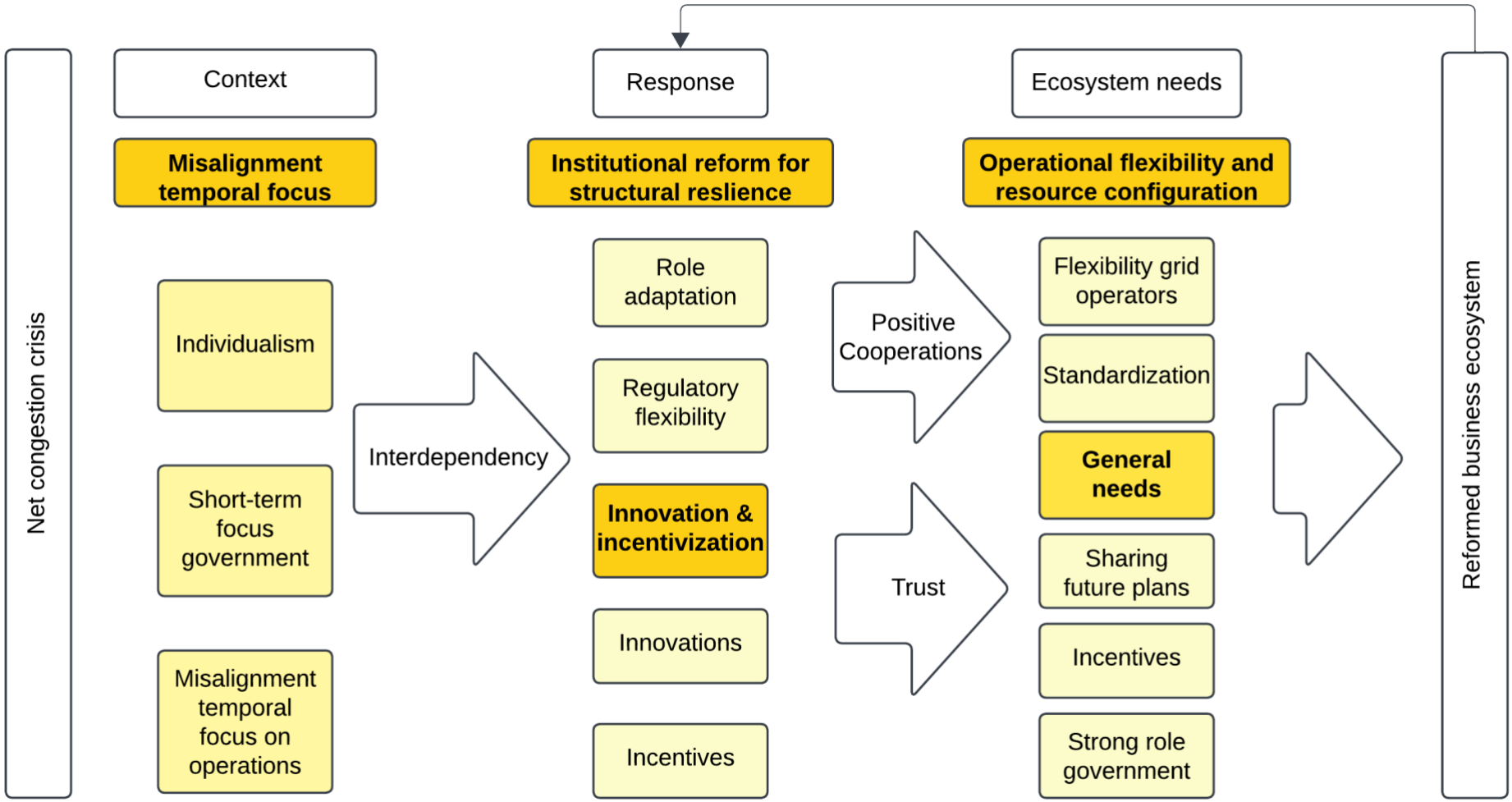

Figure 5: Dynamic Model from Data Structure

The model starts with the **context** of the grid congestion crisis. The start of the grid congestion crisis is characterized by fragmented relations between different actors where actors seem to be 'on their island' and operate for their benefit. This individualism is a weak starting point for the cooperation that is required to cope with this crisis. On top of that, the business ecosystem is facing a government and its institutions maintaining a short-term focus where restrictive legislation has limited the operations of grid operators and unstable policies have diminished trust and investments for other actors. Lastly, due to the fragmentation of actors and their cooperations, there was no communication about plans on what projects were to be built. Also, the grid operators maintained their traditional operations and showed little flexibility to decentralize their operations and provide flexibility to other actors to support their operations. These last two elements remain a point of interest throughout this scenario.

Actors start to acknowledge the crisis and start to **respond** within the ecosystem. We witness institutions like the ACM and local municipalities strategically adapt their role and start to support the role of interconnectedness between the other actors. The grid operators witness that their role is changing, and their traditional role is adapting from an executing organisation to a guiding role in the energy transition. Consequently, we witness regulatory flexibility where the ACM rewrites their 'codes' together with the grid operators, and space is created to experiment with new construction techniques. We also see the industry actors actively pursuing innovations, creating a new environment within the energy sector. New solutions and usages of the grid show a short-term relief on the grid but also reshape the future use of our current grid. Lastly, grid operators provide financially attractive contracts for large users to lower energy usage peaks and to give a financial incentive in return.

Although we see various responses from actors within the ecosystem to cope with the crisis, actors also mention improvements required according to actors for a more optimal operational business ecosystem, which we call the **ecosystem needs** to be seen in the third column. We hear the need for more flexible behaviour from grid operators. A more updated staff on new methods, the willingness to share staff to cope with high demand, better coordination with developers and local municipalities, and greater freedom in operations for subcontractors are some of the examples that can positively influence the business ecosystem as a whole and therefore the progress on grid congestion. Additionally, grid operators are asked to standardize their methods with each other such that actors within the ecosystem know what to expect. But also other actors need to standardise, for example, new solution methods on how we use our devices in houses. On top of that, actors need to share their experiences to elevate this standardization process between each other to a higher level. On a **general level**, we find the constant need for others to improve and maintain their lines of communication with other actors. Incentives for the users should be the tool to change the mindset of consumers on how we consume energy and that we should prepare ourselves for the future use of our network. Lastly, the government plays a strong role in this transition. It is their role to maintain stable policies and legislation such that the ecosystem can better prepare themselves for the future and not be impacted due to sudden, unexpected changes. Their

vision should be future-based and predictable, and not be short-term focused for the good of political treasure. This strategy has shown to not work out.

If all these elements combine, where context, the response from the ecosystem and some elements that remain the subject of attention, then we arrive at the **Reformed business ecosystem**. This reformed state is the utopia of business ecosystems where there are positive cooperations, where no one is 'stuck on his island' and where trust between the operations of actors is a fundamental element. Actors acknowledge and make use of the interdependency between actors and everyone heads the same direction. Until elements change again. As Moore (1996) described, business ecosystems are dynamic and are constantly changing. Then, we go back to the response stage again and adapt our behaviour to the altered situation.

An important role in the interdependency of actors is communication, we touched upon this within several elements of our model. (Carlile, 2004) Presents a framework for how knowledge transfer works across boundaries and classifies it into three layers: syntactic, semantic, and pragmatic. The last boundary plays an important role in the dynamics of a business ecosystem. This boundary comes into play when translating information is enough due to a conflict of interests. Different groups have different priorities, but to overcome these actors must adapt to the situation. However, due to power dynamics, the more influential actors could resist to transform. To overcome this prototyping and iterative problem-solving can support overcoming this boundary. The experimentation with net-conscious construction, improved partnerships between grid operators and subcontractors and adoption of new methods on the construction site show how this knowledge transformation can result in an improved business ecosystem. Additionally, political negotiation can elevate the power levels and establish a common interest. An ACM, for example, adapted from a bureaucratic governmental organisation to an organisation that reached out and actively looked for innovative methods within its boundaries. However, we also witness a government that is unstable in its policies and regulations due to its political gain, making it difficult for actors to anticipate their operations. We also see a grid operator that is sometimes too strict on its operations and is reluctant to share with other actors. These power dynamics can influence the progress of the business ecosystem.

In summary, there is a model outlining how the business ecosystem develops itself throughout the self-renewal phase indicating how actors respond and adapt to a crisis. It is important to point out the constant feedback loops and the need for knowledge transfer to maintain this development. Due to the strong relation between the elements, the ecosystem can better deal with the crisis and make the transition for a stronger future. The model shows that resolving the temporal misalignment is not just about coordination, but that it is a complex process requiring everyone's commitment. As a chain is only as strong as its weakest link.

5. Conclusion and Recommendation

In our research, we have conducted a case study based on the issues surrounding grid congestion. Within the case study, we investigated how a business ecosystem in the self-renewal phase responds and what dynamics come into play. We paid extra attention to the effect of the misalignment of temporal focus. We accomplished this using the Gioia method and semi-structured interviews among fifteen interviewees to represent the business ecosystem as well as possible. In this chapter, we present the conclusions of the research, the theoretical and practical implications, and the limitations and suggestions for further research.

5.1 Theoretical Contributions

This research develops the theory around business ecosystems by illustrating how different actors, like grid operators and government entities, cooperate in a highly regulated market. In Chapter 2 we touched upon the interdependencies of actors, we extend this interdependency through our case study that presents a business ecosystem in crisis where cooperation needed to develop from a state where little cooperation was present. Unlike business ecosystems where competition is the key driver to success, our case study presents an ecosystem that is subject to heavy regulations and a large impact on society.

We extend the work of Moore (1993) on business ecosystems with specific attention to the self-renewal phase where we show that the adaptation is not a linear process. Rather than a predictable sequence of strategic responses, leadership, and coordination strategies, our research showed a high level of individualism where actors responded to their actions and had difficulties in aligning focus with other actors. In addition, our data showed that in contrast to our expectations, the government upholds a short-term focus. These elements combined resulted in a difficult start of the business ecosystem in the self-renewal phase.

Our research contributes to the theory of business ecosystems emphasizing the impact of temporal focus and possible misalignment of this concept. Adner (2006) described innovating the business ecosystem on an individual level as one of the strategies to survive the self-renewal phase. However, our research contradicts this theory if the business ecosystem aims to recover from the self-renewal phase in the long term. Therefore, our findings align more with those of Jacobides et al. (2018). Constant cooperation and sharing of ideas and findings are crucial to align actors with each other. Working solely individually creates a conflict of temporal focus where actors are tempted to work for themselves and not for the benefit of the entire business ecosystem.

To bridge the discrepancies in the ecosystem we identified temporal bridging strategies. These strategies aligned short-term operational decisions with long-term strategic objectives. Examples of these strategies are role adaptation, regulatory flexibility, innovations, and providing incentives. Through this, our study contributes to the current literature on ecosystem adaptation with mechanisms that bridge the misalignment of temporal focus towards a resilient business ecosystem.

Moore (1993) defined keystone actors as the backbone of the ecosystem who possess a leading role in coordinating and orchestrating activities across the ecosystem. However, within our case study, we also find evidence for complementors taking this role whereas keystone players, like grid operators, are slowing down the development of the business ecosystem through outdated practices and slow adaptation to cooperation and standardization. This indicates that leadership roles within the ecosystem are designated to one group but are distributed among all actors.

In Section 2.2.2.2 the concept of co-innovation was introduced as a crucial element for the survival of the business ecosystem. Although our research has not contradicted this finding, considering the impact of small-scale innovations at construction sites for example, we do find that knowledge sharing is just as important for the survival mechanism. The difficulties of aligning data classification and a lack of standardisation in the business ecosystem show that this misalignment of knowledge sharing can hinder the development of the business ecosystem.

Moore (1993) presented the four evolutionary stages of a business ecosystem; birth, expansion, leadership, and self-renewal. Our study shows that a business ecosystem in crisis, or self-renewal, is not a linear process. There is no clear path on what works well and what does not. Actors are subject to rapid changes in the business ecosystem and require close monitoring of regulatory changes and changing demands from other actors.

Section 2.2 presents the theory by Moore (1993) on the self-renewal phase. We discussed the three strategies that apply: 1) slowing the growth of a new ecosystem, 2) incorporating innovations, or 3) restructuring to cope with new realities. However, our research shows that these three strategies are not isolated from each other. In our case study, we find firms incorporating innovations while simultaneously, the grid operators are adapting their role in the ecosystem. This proves that there is no one-size-fits-all strategy and that actors must adopt an iterative strategy incorporating the most suitable practices.

In Section 2.3.1 the role of the government in business ecosystems was highlighted and presented as a keystone player. The theory states that governments enable quicker processes while also having restrictions on carbon emissions. Additionally, the government has a strong impact on keystone players through their legislation, while at the same time enabling opportunities for new actors. This research contributes to the literature with an additional perspective that was mentioned. Strict regulations by the government can be a burden to actors, but as time passes actors can act upon them. However, our research shows that political instability in combination with strict regulations is a greater burden to actors and slows down several elements within the business ecosystem, like innovation for example.

This research progresses the understanding of how different temporal foci shape the adaptation of business ecosystems under the self-renewal phase. We intensified the theory with an understanding of how the misalignment of those temporal foci is a constraint and how temporal bridging strategies can act as a mechanism of change for a more resilient ecosystem. Temporal focus acts as a coordination mechanism which is only successful when it is aligned between actors. If not, issues like individualism and

misalignment of operations become serious issues and slow down the business ecosystem. This research elaborates on how to bridge these issues by displaying the need to recognize interdependency, to have trust in each other, and to be able to adapt yourself and the business to a new reality. The findings are also in line with the suggestion of George et al. (2016) providing financial incentives to adopt new practices. The two cases presented in Section 2.4.2 present a strong role for the government cooperating with the industry that has had a positive impact. Our research confirms this role is also applicable to the Netherlands. Recognition of this role is thus crucial.

5.2 Practical Contributions

Our research not only contributes to existing theory but can also support it on a more practical level. In this section, we present actionable insights for actors to minimize the impact of grid congestion. We divide the practical contributions based on the 'Ecosystem Needs' of our dynamic model (Figure 5). The contributions emphasize the need for flexibility, standardization, information sharing, incentivization and a strong role for the government.

For grid operators, for them to meet current and future capacity demand they should adapt and adopt a more flexible operational structure. This does not mean the actual operations on how they transport their capacities over the grid, but it is more related to their procedures on how projects are carried out. As we mentioned in Chapter 4, if grid operators offer greater autonomy in the methods of their contractor, then the strengthening of the grid could be fastened, and new innovative methods could benefit the operations within the business ecosystem in the long run too.

There is a need for greater standardization within the business ecosystem. Different working methods, inconsistent data classification and varying protocols resulted in friction among all types of actors. Standardization among practices between grid operators, for example, will result in more effective cooperation for other actors that deal with multiple grid operators. In this way processes can be fastened, benefitting the entire ecosystem. For standardization, successful innovations and implementations must be documented and shared. In this way, distant actors can be kept up to date and everyone can follow similar practices.

A central problem in the grid congestion crisis, according to our research, was the lack of communication. Inefficient coordination about different residential development plans was a result of this. Grid operators, municipalities and developers pursued their agenda resulting in inefficiencies and frustration among all stakeholders. We suggest these partners strengthen their relationships and cooperations to avoid redundant planning and to align project timings. The traffic light model suggested by Neprom and grid capacity forecasting could be beneficial elements to strengthen collaboration. With greater coordination at the early stages of the development phase, demand can be better distributed and grid congestion issues can be mitigated.

To benefit the grid and its future use, actors within the ecosystem need to implement stronger incentives to encourage different behaviours among users of the grid. Due to the decentralization of our energy production, users need to realise that our current use of

the grid is not sustainable and that we need to make smarter use of the available (green) energy. Financial incentives for off-peak use or participation in local energy hubs can smoothen the demand and lower grid congestion. Because users a relatively stubborn to make certain transitions in their use, and possess a mentality of 'it is not my problem' a financial incentive structure can still support this change of mentality.

The government should realize their responsibilities within this energy transition. Although they have provided experimentation space in the FGU region and the ACM has adopted a more proactive role, we also still witness a government that is oriented to its political agenda resulting in unstable policies and regulations. Our research has shown that our expectations of the government pursuing a long-term vision are somewhat false, however, to benefit the issues on the grid we suggest that the government pursue a more future-oriented vision on which other actors can rely and build their strategies.

A key insight from this research is the strong influence of temporal focus among actors within the Dutch electricity ecosystem. Conflicting temporal foci were highlighted which led to coordination issues, misalignment of operations and individualism. From a practical perspective, well-aligned temporal foci will result in higher efficiency, better resource utilization, aligned policies and enhanced trust. This research, therefore, does not only contribute to the literature but also raises practical awareness for any actor in a business ecosystem about the impact of not recognizing the interconnectedness between actors and not aligning strategies with each other.

5.3 Limitations and suggestions for further research

Our case study has very well represented the Dutch electricity ecosystem coping with grid congestion. However, as with every research, there are some limitations to our research and suggestions for future research to strengthen the current findings.

For our research, we made use of a case study. Yin (2003) presents two applicable limitations of using a case study as a research method. First, it is difficult to use a single case study for 'scientific generalisation'. We have made some conclusions in our research about the role of the government and the way actors have adapted which is in contrast with literature. It is difficult to generalize these findings scientifically and just as difficult to verify them within single research. A suggestion for further research could therefore be that the research on business ecosystems in the self-renewal phase is done within a different geographical location, for example, to verify whether our findings align. Only then we can make scientific justifications.

Second, Yin (2003) mentions the size of the case study to be 'microscopic' due to the sampling size. On top of that, respondents often present a subjective view of the situation. Although we reached a level of saturation that should eliminate biases, this level remains a decision by the researcher and is not based on hard numbers. Therefore, there is a risk of bias in our results. Thus, to minimize the bias in our results we would suggest expanding the current sample and verifying our findings.

A limitation of case studies is that results are difficult to express in numbers. Generally, numbers are hard facts and their outcomes are undebatable. The results presented are

observations and a collection of responses from people that, as mentioned, can contain some subjectivity. As a result, the findings can become easy to dismiss by those who do not accept it. Often this raises excuses that 'it is not the case' or 'the sample size is too small to make such remarks.' Here again, the larger the sample the more difficult it is for others to neglect the findings (Hodkinson & Hodkinson, 2001).

A suggestion for further research would be to increase the number of respondents from the different actors that were collected. The decision was made to only interview one or two representatives from a company or institution to be able to gain a wide perspective from different actors within a limited period. Further research could extend the number of respondents per company to potentially remove bias from a company's respondents.

The role of the government has taken a prominent position in this thesis. Within this thesis, one of the conclusions presented the burden created by political instability through regulations. A suggestion for further research would be to investigate what the degree of this burden is. A further investigation into the impact of inconsistent regulation could quantify and give a better perspective to the government itself to raise awareness of the impact it has.

The current research investigates the role of temporal focus in a single business ecosystem. The conclusions that are drawn from this research should be verified through investigating its role in different types of business ecosystems. The role of temporal focus could also be investigated for business ecosystems in different stages.

Within the response state of the dynamic model different elements are present. Future research could investigate the contribution each element brings. Insights in the level of contribution could help business ecosystems to understand what focus will bring the highest reward for the entire business ecosystem.

5.4 Concluding remarks

Throughout this thesis, we explored how temporal misalignment among different actors in a highly regulated business ecosystem impacts cooperation in times of crisis. Our findings highlight that short- and long-term visions do not align leading to a fragmented and inefficient business ecosystem. This study also shows how this misalignment can be overcome through role adaptation, regulatory flexibility, innovations, and incentives.

Our research contributes to the existing business ecosystem literature by introducing temporal focus as a key dimension and showing how business ecosystems evolve throughout the self-renewal phase. The dynamic model offers a framework to understand how the crisis triggers transitions when actors align their focus and strengthen their cooperation. Ultimately, this research shows that bridging the temporal gaps is not just a strategy but a requirement for the long-term resilience of the business ecosystem.

Bibliography

Adner, R. (2006). Match Your Innovation Strategy to Your Innovation Ecosystem. *Harvard Business Review*. https://hbr.org/2006/04/match-your-innovation-strategy-to-your-innovation-ecosystem

Appunn, K. (2022). *Germany to launch emergency programme for "huge, gigantic" 2030 emissions target task*. J. f. t. E. Transition. https://www.cleanenergywire.org/news/germany-launch-emergency-programme-huge-gigantic-2030-emissions-target-task#:~:text=Germany's%20new%20government%20plans%20to,Robert%20Habeck%20announced%20in%20Berlin.

Ashraf, M., & Bocca, R. (2023). *Fostering Effective Energy Transition*.

Banka, K., & Uchihira, N. (2024). Dynamic Capability in Business Ecosystems as a Sustainable Industrial Strategy: How to Accelerate Transformation Momentum. *Sustainability*, *16*(11). https://doi.org/10.3390/su16114506

Barton, J., Davies, L., Dooley, B., Foxon, T. J., Galloway, S., Hammond, G. P., O'Grady, Á., Robertson, E., & Thomson, M. (2018). Transition pathways for a UK low-carbon electricity system: Comparing scenarios and technology implications. *Renewable and Sustainable Energy Reviews*, *82*, 2779-2790. https://doi.org/10.1016/j.rser.2017.10.007

Baxter, P., & Jack, S. (2015). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2008.1573

Bernardus, D., Arisa, M. r. F., Sufa, S. A., & Suparwata, D. O. (2024). Supporting Start-ups in Indonesia: Examining Government Policies, Incubator Business, and Sustainable Structure for Entrepreneurial Ecosystems and Capital. *International Journal of Business, Law and Education*, *5*(1). https://doi.org/https://doi.org/10.56442/ijble.v5i1.372

Blijleven, V., Angeren, J. v., Jansen, S., & Brinkkemper, S. (2013). *An evolutionary economics approach to ecosystem dynamics* 2013 7th IEEE International Conference on Digital Ecosystems and Technologies (DEST), Menlo Park, CA, USA.

Bochko, O., Zarichna, O., & Kuziak, V. (2024). Transformation of business ecosystems of the energy sector enterprises. *Development management*, *23*(1), 62-71. https://doi.org/10.57111/devt/1.2024.62

Boschian, V., & Paganello, P. (2013). *The Evolution of Business Models within a Business Ecosystem for Cooperative Logistic.* Collaboratice Systems for Reindustrialization,

Carlile, P. R. (2004). Transferring, Translating, and Transforming: An Integrative Framework for Managing Knowledge Across Boundaries. *Organization Science*, *15*(5), 555-568. https://doi.org/10.1287/orsc.1040.0094

Codes. (n.d.). https://www.netbeheernederland.nl/codes

Darko, A., & Chan, A. P. C. (2016). Critical analysis of green building research trend in construction

journals. *Habitat International*, *57*, 53-63. https://doi.org/https://doi.org/10.1016/j.habitatint.2016.07.001

Daszkiewicz, K. (2020). Policy and Regulation of Energy Transition In *The Geopolitics of the Global Energy Transition* (Vol. 73). Springer. https://doi.org/https://doi.org/10.1007/978-3-030-39066-2_9

Ebneyamini, S., & Sadeghi Moghadam, M. R. (2018). Toward Developing a Framework for Conducting Case Study Research. *International Journal of Qualitative Methods*, *17*(1). https://doi.org/10.1177/1609406918817954

Energy, D.-G. f. (2021). *Commission presents Renewable Energy Directive revision* . European Commission. Retrieved 08/07/2024 from https://commission.europa.eu/news/commission-presents-renewable-energy-directive-revision-2021-07-14_en

Energy Efficiency 2019. (2019). https://iea.blob.core.windows.net/assets/8441ab46-9d86-47eb-b1fc-cb36fc3e7143/Energy_Efficiency_2019.pdf

Energy Technology Perspectives 2020. (2020). I. E. Agency. https://iea.blob.core.windows.net/assets/04dc5d08-4e45-447d-a0c1-d76b5ac43987/Energy_Technology_Perspectives_2020_-_Special_Report_on_Clean_Energy_Innovation.pdf

Espina-Romero, L. C., Guerrero-Alcedo, J. M., & Ossio, C. (2023). 7 topics that business ecosystems navigate: Assessment of scientific activity and future research agenda. *Heliyon*, *9*(6). https://doi.org/10.1016/j.heliyon.2023.e16667

Feng, L., Lu, J., & Wang, J. (2021). A Systematic Review of Enterprise Innovation Ecosystems. *Sustainability*, *13*(10). https://doi.org/10.3390/su13105742

Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, *142*(2), 499-516. https://doi.org/10.1016/j.jfineco.2021.01.010

Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy*, *31*, 1257-1274. https://ris.utwente.nl/ws/files/6761018/Geels02technological.pdf

Geels, F. W. (2010). Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. *Research Policy*, *39*(4), 20.

Geels, F. W. (2012). A socio-technical analysis of low-carbon transitions: introducing the multi-level perspective into transport studies. *Journal of Transport Geography*, *24*, 471-482. https://doi.org/10.1016/j.jtrangeo.2012.01.021

George, G., Howard-Grenville, J., Joshi, A., & Tihanyi, L. (2016). Understanding and Tackling Societal Grand Challenges through Management Research. *Academy of Management Journal*, *59*(6), 1880-1895. https://doi.org/10.5465/amj.2016.4007

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Seeking Qualitative Rigor in Inductive Research. *Organizational Research Methods*, *16*(1), 15-31. https://doi.org/10.1177/1094428112452151

Gopacs. (n.d.). https://www.gopacs.eu/

Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough? *Field Methods*, *18*(1), 59-82. https://doi.org/10.1177/1525822x05279903

Heaton, S., Siegel, D. S., & Teece, D. J. (2019). Universities and innovation ecosystems: a dynamic capabilities perspective. *Industrial and Corporate Change*, *28*(4), 19. https://doi.org/https://doi.org/10.1093/icc/dtz038

Hodkinson, P., & Hodkinson, H. (2001). *The Strengths and Limitations of Case Study Research* Learning and Skills Development Agency conference, Cambridge.

Iansiti, M., & Levien, R. (2004a). *The Keystone Advantage: What the New Dynamics of Business Ecosystems mean for Strategy, Innovation, and Sustainability*. Harvard Business School Press.

Iansiti, M., & Levien, R. (2004b). Strategy as Ecology. *Harvard Business Review*, *82*(3), 68-81. https://hbr.org/2004/03/strategy-as-ecology

Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, *39*(8), 2255-2276. https://doi.org/10.1002/smj.2904

Jiménez-Barrionuevo, M. M., Molina, L. M., & García-Morales, V. J. (2019). Combined Influence of Absorptive Capacity and Corporate Entrepreneurship on Performance. *Sustainability*, *11*(11). https://doi.org/10.3390/su11113034

Kabinet neemt maatregelen tegen vol elektriciteitsnet. (n.d.). Rijksoverheid Retrieved from https://www.rijksoverheid.nl/onderwerpen/duurzame-energie/kabinet-neemt-maatregelen-tegen-vol-elektriciteitsnet-netcongestie#:~:text=Gebruik%20van%20stroomnet%20explosief%20gegroeid&text=In%20grote%20delen%20van%20het,afgelopen%20jaren%20explosief%20is%20gegroeid.

Kim, H., Lee, J.-N., & Han, J. (2010). The role of IT in business ecosystems. *Communications of the ACM*, *53*(5), 6. https://doi.org/https://doi.org/10.1145/1735223.1735260

Krome, M. J., & Pidun, U. (2022). Conceptualization of research themes and directions in business ecosystem strategies: a systematic literature review. *Management Review Quarterly*, *73*(2), 873-920. https://doi.org/10.1007/s11301-022-00306-4

Liander. (2024). *Waarom duurt het zo lang om het energienet uit te breiden? - Een Echt Gesprek*. https://youtu.be/sAANIswWq_Y?si=5tsvd5TrLHfA1Gji

Lütjen, H., Schultz, C., Tietze, F., & Urmetzer, F. (2019). Managing ecosystems for service innovation: A dynamic capability view. *Journal of Business Research*, *104*, 506-519. https://doi.org/10.1016/j.jbusres.2019.06.001

Maatregelen emissiereductieplicht. (n.d.). Retrieved 26-09-2024 from https://iplo.nl/regelgeving/regels-voor-activiteiten/technische-bouwactiviteit/emissiereductieplicht-bouwen-slopen/maatregelen-emissiereductieplicht/#:~:text=Het%20Besluit%20bouwwerken%20leefomgeving%20introduceert,stikstofverbindingen%20naar%20de%20lucht%20beperken.

Magnani, G., & Gioia, D. (2023). Using the Gioia Methodology in international business and entrepreneurship research. *International Business Review*, *32*(2). https://doi.org/10.1016/j.ibusrev.2022.102097

Mäkitie, T., & Steen, M. (2023). The energy sector: an industrial perspective on energy transitions. In *Handbook of Industrial Development* (pp. 287-301). https://doi.org/10.4337/9781800379091.00027

Matthes, F. C. (2017). Energy transition in Germany: a case study on a policy-driven structural change of the energy system. *Evolutionary and Institutional Economics Review*, *14*(1), 141-169. https://doi.org/10.1007/s40844-016-0066-x

Meckling, J., & Hughes, L. (2018). Global interdependence in clean energy transitions. *Business and Politics*, *20*(4), 467-491. https://doi.org/10.1017/bap.2018.25

Ministerie van Volkshuisvesting en Ruimtelijke Ordening. (n.d.). https://www.rijksoverheid.nl/ministeries/ministerie-van-volkshuisvesting-en-ruimtelijke-ordening

Missie en Taken. (n.d.). Retrieved 18-05-2025 from https://www.acm.nl/nl/over-de-acm/wat-wij-doen/missie-en-taken

Moore, J. F. (1993). Predators and Prey: A New Ecology of Competition. *Harvard Business Review*, 15.

Moore, J. F. (1996). *The Death of Competition : Leadership and Strategy in the Age of Business*
Ecosystems. HarperBusiness.

Moore, J. F. (2006). Business ecosystems and the view of the firm. *Antitrust Bulletin*, *51*(1). https://doi.org/https://doi.org/10.1177/0003603X0605100103

Muench, S., Thuss, S., & Guenther, E. (2014). What hampers energy system transformations? The case of smart grids. *Energy Policy*, *73*, 80-92. https://doi.org/10.1016/j.enpol.2014.05.051

Oost, R. R. (2023). *Wel zon, maar geen stroom opgewekt: wat is er aan de hand?* RTV Oost. Retrieved 11-07-2024 from https://www.rtvoost.nl/nieuws/2234163/wel-zon-maar-geen-stroom-opgewekt-wat-is-er-aan-de-hand

Raven, R. P. J. M. (2012). Analyzing emerging sustainable energy Niches in Europe: A Strategic Niche management Perspective. In G. P. J. Verbong & D. Loorbach (Eds.), *Governing the energy transition*.

Rijksoverheid. (2024). *Snellere aanleg stroomnet door versnelde procedure*. Rijksoverheid. Retrieved 04-06-2024 from https://www.rijksoverheid.nl/actueel/nieuws/2024/05/28/snellere-aanleg-stroomnet-door-versnelde-procedure

Riquelme-Medina, M., Stevenson, M., Barrales-Molina, V., & Llorens-Montes, F. J. (2022). Coopetition in business Ecosystems: The key role of absorptive capacity and supply chain agility. *Journal of Business Research*, *146*, 464-476. https://doi.org/10.1016/j.jbusres.2022.03.071

Ritchie, J., & Lewis, J. (2003). *QUALITATIVE RESEARCH PRACTICE A Guide for Social Science Students and Researchers* Sage Publications.

Ruslin, Mashuri, S., Rasak, M. S. A., Alhabsyi, F., & Syam, H. (2022). Semi-structured Interview: A Methodological Reflection
on the Development of a Qualitative Research Instrument
in Educational Studies. *IOSR Journal of Research & Method in Education*, *12*(1), 8. https://doi.org/10.9790/7388-1201052229

SDE++: Oriënteren. (2020). Retrieved 11-07-2024 from https://www.rvo.nl/subsidies-financiering/sde/orienteren

Shipp, A. J., Edwards, J. R., & Lambert, L. S. (2009). Conceptualization and measurement of temporal focus: The subjective experience of the past, present, and future. *Organizational Behavior and Human Decision Processes*, *110*(1), 1-22. https://doi.org/10.1016/j.obhdp.2009.05.001

Slawinski, N., & Bansal, P. (2015). Short on Time: Intertemporal Tensions in Business Sustainability. *Organization Science*, *26*(2), 531-549. https://doi.org/10.1287/orsc.2014.0960

Smulowitz, S. J., Cossin, D., & Lu, H. (2023). Managerial Short-Termism and Corporate Social Performance: The Moderating Role of External Monitoring. *Journal of Business Ethics*, *188*(4), 759-778. https://doi.org/10.1007/s10551-023-05498-7

Speich, M., & Ulli-Beer, S. (2023). Applying an ecosystem lens to low-carbon energy transitions: A conceptual framework. *Journal of Cleaner Production*, *398*. https://doi.org/10.1016/j.jclepro.2023.136429

Stam, E. (2015). Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique. *European Planning Studies*, *23*(9). https://doi.org/http://dx.doi.org/10.1080/09654313.2015.1061484

Valkokari, K. (2015). Business, Innovation, and Knowledge Ecosystems: How They Differ and How to Survive and Thrive within Them. *Technology Innovation Management Review*, *5*(8). https://timreview.ca/sites/default/files/article_PDF/Valkokari_TIMReview_August2015.pdf

Verrier, B., Rose, B., Caillaud, E., & Remita, H. (2014). Combining organizational performance with sustainable development issues: the Lean and Green project benchmarking repository. *Journal of Cleaner Production*, *85*, 83-93. https://doi.org/10.1016/j.jclepro.2013.12.023

Wat is netcongestie? (n.d.). Zwart Techniek. Retrieved 11-06-2024 from https://www.zwarttechniek.com/blog/2023/05/24/wat-is-netcongestie/

Weiller, C. M., & Pollitt, M. G. (2013). Platform markets and energy services. https://www.researchgate.net/publication/280986378_Platform_Markets_and_Energy_Services

Wiggelinkhuizen, E. J., Bulder, B. H., Schwedensky, A. B., & Berlo, M. P. W. v. (2021). Verkenning van toekomstige risico's voor het elektriciteitsnet. 46. Retrieved 04-06-2024, from https://publications.tno.nl/publication/34638180/Io8mvl/TNO-2020-R12069.pdf

Yin, R. K. (2003). *Case Study Research Design and Methods* (3 ed., Vol. 5). Sage Publications, Inc.

Zhao, C., Ju, S., Xue, Y., Ren, T., Ji, Y., & Chen, X. (2022). China's energy transitions for carbon neutrality: challenges and opportunities. *Carbon Neutrality*, *1*(1). https://doi.org/10.1007/s43979-022-00010-y

Appendix

During the preparation of this work, the author(s) used ATLAS.TI, ENDNOTE21, and Grammarly to support the analysis, cite sources and perform a grammar check. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the work.

Appendix 1: Interview Script

Interview script Net Congestion

Introduction: Introduce the topic, state the research question: *"How can the Dutch electricity network transition ecosystem optimize its efficiency and innovation in the context of conflicting temporal focus of its participants, within a market heavily regulated by government policies?"*

- Want to get a better insight into the dynamics of the business ecosystem
- Investigate the role of temporal focus and possible misalignment
- Introduce the structure of the interview

1. Do you give consent for recording this interview and processing this data anonymously?
2. Can you introduce yourself and what you do exactly?

Topic 1: General information about the firm and their position in the ecosystem

3. Can you tell us a bit about your company?
4. What are your responsibilities as a firm?
    a. How do these responsibilities relate to the energy transition and/or net congestion?
5. What innovations and/or strategies has your firm implemented to adapt to this new reality?

Topic 2: Role of the Ecosystem

6. What is your vision on the net congestion?
7. What does your firm do to fasten the energy transition and solve the net congestion?
8. What are your long- and short-term goals regarding this matter?
    a. How do you balance short-term operational needs with long-term sustainability goals?
    b. How do these goals conflict with each other or expectations from others? Do you have an example of when this happened?
9. What is your vision for the current collaborations within the ecosystem in general?
10. What does your cooperation with other firms look like? What are some examples of collaborative initiatives to address the net congestion?
    a. How do these contribute to a smoother transition?
    b. Are there conflicting goals among firms?
    c. How can these cooperations be strengthened?

Topic 3: Impact of the government

11. How do you view the role of the government in the energy transition and net congestion?
12. How does the government influence the collaboration within the ecosystem?
    a. If negative points, what are these hurdles and what is needed to overcome them?
13. It is generally know that the government has a more long-term strategy, how do you deal with this?
14. How can the government improve its support in the ecosystem?

Topic 4: What is their vision on the solution?

15. What would your ideal scenario look like in overcoming the issues that we are currently facing around the net congestion?
    a. What is needed from your firm and others?

Closing

16. Do you have any documents from your firm that may support me in my investigation or support your answers?
17. Is there anything we have not touched upon that you find important to mention?