Navigating transition space: the grid operator as proactive incumbent in the energy transition

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Abstract

The energy transition has reached a new phase that current transition frameworks, in particular the multi-level perspective, have difficulty to adequately describe. As an alternative, we introduce *transition space* to conceptualize that part of a transition in which an old regime has destabilized and a new regime has not (yet) formed. In absence of the stabilizing and coordinating effects of a regime, transition space is characterized by instability and volatility, while at the same time providing opportunities for transformative system change. In transition space both 'old' and 'new' practices co-exist and interconnect in unprecedented ways, new actor coalitions are formed in the process, and ongoing changes in rules and regulations as well as physical (infra)structures keep changing the systemic parameters within which actors operate, while these parameters are itself again influenced by strategic decisions of the actors involved.

The aim of this paper is to conceptualize the space in between an old and new regime and illustrate it by studying how an incumbent grid operator navigates this transition space, how it makes strategic decisions under uncertainty and the tensions that arise internally and externally from phasing out existing practices while simultaneously developing new activities and roles.

1. Introduction

The academic field of sustainability transitions deals with understanding fundamental societal change processes. The field is rooted in multiple disciplines, including innovation studies, evolutionary economics, institutional theory and complexity theory, and addresses questions of societal change in the face of sustainability challenges. A transition is conceptualised as a fundamental change in regimes; the dominant structure, culture and practices in a societal (sub)system that is the result of a co-evolution of economic, technological, institutional, cultural and ecological developments at different scale levels. Transitions are long term (25–50 years), highly complex and contested and often cut across a variety of domains and stakeholders. Contemporary transitions are often related to sustainability goals in order to resolve a number of persistent problems confronting modern societies (Grin et al., 2010).

In the literature, quite some attention is directed towards experimentation and innovation in sustainable niches as drivers for transitions. The implicit assumption being that unsustainable regimes will break down or open up, as soon as convincing alternatives become available. Recently, attention is shifting towards processes of regime destabilization (Turnheim & Geels, 2012) as especially energy transitions are progressing and facing disruptive and non-linear change: and incumbent regimes are destabilising, but a new regime has not yet formed. The existing multi-level framework or its variations fail to adequately capture this situation and lack the concept to adequately analyze or describe it.

In order to conceptualise this stage of a transition in between an old and new regime, we introduce *transition space*. It is characterized by uncertainties, chaotic changes, tensions and hard choices on which elements of the incumbent regime still have a place in a future regime, and which elements become obsolete or replaced. In transition space, incumbent actors that have so far predominantly been involved in reproducing, strengthening or sustaining the regime, start repositioning in face of transitional pressures, which then accelerates transformative change. Conceptualizing this in-between situation allows to more adequately describe the system and actor dynamics involved.

In this paper, we introduce the transition space concept and illustrate it from the point of view of a proactive incumbent; the largest Dutch distribution grid operator Alliander. Ethnographic fieldwork at the organisation stretching out over a six month period between September 2016 and February 2017 provided deep insight in how a change-minded incumbent navigates transition space, including the uncertainties, tensions and challenges this brings. The main research question in this paper is:

- How does a proactive incumbent navigate transition space?

The article is structured as follows: In section two we present the theoretical underpinnings of our research. We introduce transition space and five dimensions of actor repositioning. Section three describes our ethnographic research approach. Section 4 presents our findings, these are preliminary, as of this writing, the analysis is still in progress. In section 5 we reflect on our findings and relate the insights and lessons learned to transitions literature.

2. Introducing transition space

Transitions are a societal process of addressing persistent problems that can no longer be effectively addressed by (only) optimizing existing structures and practices within a societal (sub)system (Rotmans and Loorbach, 2010). Such complex societal systems are in open exchange with their environment and other systems, e.g. the energy system is embedded in the built environment and directly related to logistics and mobility; all are influenced by geopolitical, economic or demographic trends. Within such systems dominant routines, cultures and structures develop gradually to form so-called regimes. These regimes then create path-dependencies and are continuously adapted and improved through incremental innovations. A transition in such a system can be understood as a radical, structural change from one dominant regime to another that takes place when incumbent regimes are increasingly found to be problematic and alternatives start to compete.

A regime is defined as the "dominant culture, structure and practices in a societal (sub)system" (van Raak, 2016). Transition scholars argue that in order for a transition to take place, the regime needs to open up or destabilize. Such regime destabilization can be caused by external shocks, internal structural problems and bottom up innovations in niches (Rotmans & Loorbach, 2010). Thus, transitions are processes of simultaneous build-up of alternatives, and breaking-down of (parts of) the existing system (Loorbach et al., 2017).

2.2 Regime destabilisation

In times of relative stability, regimes form (more or less) coherent, self-stabilising constellations, meaning that minor perturbations will be incorporated within the regime and it remains dynamically stable over time (Berkhout et al, 2004). When a transition gains traction, a regime comes under increasing stress that might eventually lead to regime destabilisation. Turnheim & Geels (2012; 2013), building on insights from industrial economics, evolutionary economics, neo-institutional theory, and management studies, and a historical case study of the decline of the British coal industry, understand regime destabilisation as resulting from three mutually reinforcing processes:

1. building up of external pressure, which can be both economic (i.e. shrinking or changing markets and supply problems, or competition from new technologies or players) and socio-political (e.g. changes in policy, public opinion, or protests from social movement); these pressures can lead to:
2. performance problems within the regime by undermining resource flows and legitimacy and trigger responses from actors enacting the regime; if pressures and performance problems persist:
3. actors lose commitment to elements of the regime, in turn exacerbating pressures and performance problems.

While the insights on regime destabilisation provide a sound starting point for our purposes here, we argue that holding on to the regime concept means it can describe such a shift up to halfway at best. New vocabulary is needed to describe the state of a system *in between* two regimes, i.e. in the midst of the shift from an old to a new regime. That such a system state exists is also implied in Geels & Schot's (2007) famous figure (figure 1), but as of yet not explicitly conceptualised.

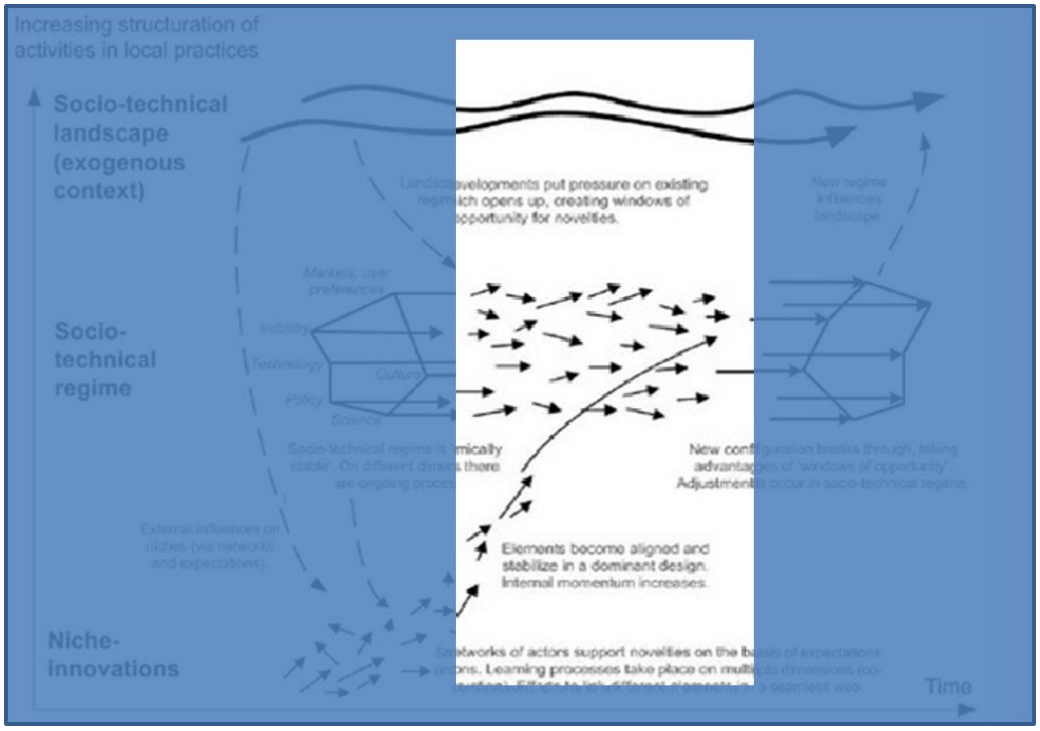

Figure 1 Opening of transition space over the course of a transition (adapted from Geels & Schot, 2007)

2.3 Transition space

We propose to conceptualise this phase of transition in between on old destabilised regime and a new regime in the making as *transition space*. While a regime can be defined as the dominant culture, structure and practices in a societal (sub)system (Rotmans and Loorbach, 2010), in contrast *transition space* is defined by diversity in and misalignments between different cultures, structures and practices at the meso-level of a system. Given that current transitions literature provides few clues on this, transition space is inspired by anthropological studies into *liminality* (van Gennep, 1909; Turner, 1967; Thomassen, 2015) and the *institutional void* introduced by Hajer (2003) in institutional theory.

In transition space both 'old' and 'new' practices co-exist and interconnect in unprecedented ways, new actor coalitions are formed in the process, and ongoing changes in rules and regulations as well as physical (infra)structures keep changing the systemic parameters within which actors operate, while these parameters are itself again influenced by strategic decisions of the actors involved.

The absence of a dominant and aligned set of culture, structure and practices makes transition space both extremely uncertain and volatile, as well as extremely fertile for transformative system change. This does not mean that all elements of the incumbent regime (suddenly) disappear, on the contrary, most of them will remain, but these elements are increasingly challenged by increasing landscape pressures and upcoming niches and become misaligned, i.e. the coherence between them dissolves, opening up the opportunity for radically different (re)combinations.

Transition space is at the same time unstructured and highly structuring, precisely because the lack of structure induces the need to build new structures. Given this lack of clear structures in

transition space pushes agency to the forefront, because in such a context, the strategic decisions made by actors provide the foundations for new regime structures to emerge.

2.4 Incumbent agency in transition space

This coincides with a recent shift in attention in transitions literature towards the role of actors and their agency (see e.g. the special issue on this topic by Farla et al., 2012; Avelino & Wittmayer, 2016; De Haan & Rotmans, 2018). However, an ambiguous picture emerges: Smink et al (2013) and Geels (2014) find that incumbents tend to hamper change. Geels even goes so far as to claim that "regime stability is the outcome of active resistance by incumbent actors." (Geels, 2014: 23). Vleuten & Hogselius (2012) in their study of European liberalisation of energy markets challenge this view by showing that incumbent actors can also drive change. The work of Hengelaar (2017), Hengelaar & Bosman (2017) Bosman et al. (2014) finds that actors might respond differently to transitional pressures and that these diverging strategies might lead to misalignments, or regime fragmentation (Karltorp & Sanden, 2012). Turnheim & Geels (2012; 2013) propose that in regime destabilization actors eventually lose their commitment to elements of the incumbent regime. This implies that they have been supporting the regime up to that point. Thus, although it stays implicit in Turnheim & Geels conceptualisation, it introduces a dynamic view on the position of incumbents.

This insight forms the second pillar of the transition space concept: it allows for (incumbent) actors to reposition over the course of a transition and posits that such repositioning is key to understand transformative change at the meso-level of a societal (sub)system. Destabilisation of an incumbent regime and the opening of transition space forces incumbent actors to reposition, abolishing certain activities that in light of an advancing transition are no longer worthwhile, while developing new activities that provide a better fit. This creates a recursive loop of (perceived) delegitimisation of a shared regime leading to diversifying strategies of actors within the regime that in turn add to the destabilisation and so on.

Building on existing transitions literature and socio-political theory, we introduce five dimensions by which incumbent actors influence and shape their context. These dimensions allow to describe the nature of agency through with actors produce, maintain or destruct cultures, structures and practices in a given system:

- Discourse: actors' problem orientations and expectations for the future of the system (Hajer, 1995; Bosman et al., 2014);
- Roles and relations: "shared conceptions of interactions and relations between actors within a particular community" (Wittmayer, 2016);
- Institutions: the formal and informal rules governing behaviour (Scott, 2001)
- Resources: supplies that can be mobilized by actors to achieve certain goals (Avelino, 2011), specifically we focus on time and money.
- Practices: the routinized daily activities carried out in the organisation (Giddens, 1984)

Mapping activities in these five dimensions allows us to describe how actors interact with a changing context, which strategic decisions they make in anticipation and how that again influences the transition. We propose that when these dimensions are aligned across different actors in a sector, the result is a stable regime. When they become misaligned, for example because actors divert resources from traditional to new technologies, or when they develop new networks outside of the incumbent ones, this might lead to opening of transition space. Thus transition space can be described from an actor perspective as misalignments in discourse, roles & relations, resources,

institutions, and practices. As such an image can be developed of how an (incumbent) organisation navigates transition space.

3. Methodology: organisational ethnography

The aim of this research is to gain a better understanding of transition space from the view of grid operator Alliander, how Alliander deals with and navigates the volatility characteristic of transition space and how discourse, institutions, relations, resources and practices play a role in that. Furthermore, we are interested in how transition space influences internal dynamics and strategic choices of the organisation, which departments come under pressure, and where does resistance arise? Based on this we aim to gain a better understanding of how incumbent actors' agency and transition space mutually constitute and influence each other.

This research applied ethnographical methods as developed in the field of anthropology and organizational ethnography in particular (Ybema et al., 2009). Ethnography starts from the idea that gaining a deep understanding of organizations, the people working there and their activities and sense making processes, requires being 'in the field', spending time with and working alongside the people carrying out the activities of interest. The researcher becomes a student of the world he or she visits and strives to uncover the 'native's point of view' (Hammersley and Atkinson 1995, in: van Hulst, 2008). What differentiates ethnographic research from other research strategies is being physically present in places where people carry out their daily activities and meaning making processes. This allows observing phenomena of interest first hand and from close by. As such, it might allow access to all kinds of data that are otherwise inaccessible to outsiders, including informal or embargoed documents, closed meetings and lunch and coffee machine conversations. Furthermore, ethnographic fieldwork is very suitable to study processes which are unfolding as we speak, such as the energy transition. What makes ethnographic fieldwork both challenging and interesting is that unforeseen things can happen in the field that lead to new insights and research leads to trace further. As such, it requires flexibility of the researcher and research design.

Methods: interviews, participant observation and coffee machine conversation

Case

This research focuses on grid operator Alliander, the largest distribution grid operator in the Netherlands, managing electricity, natural gas and (some) telecom infrastructure (see figure 2).

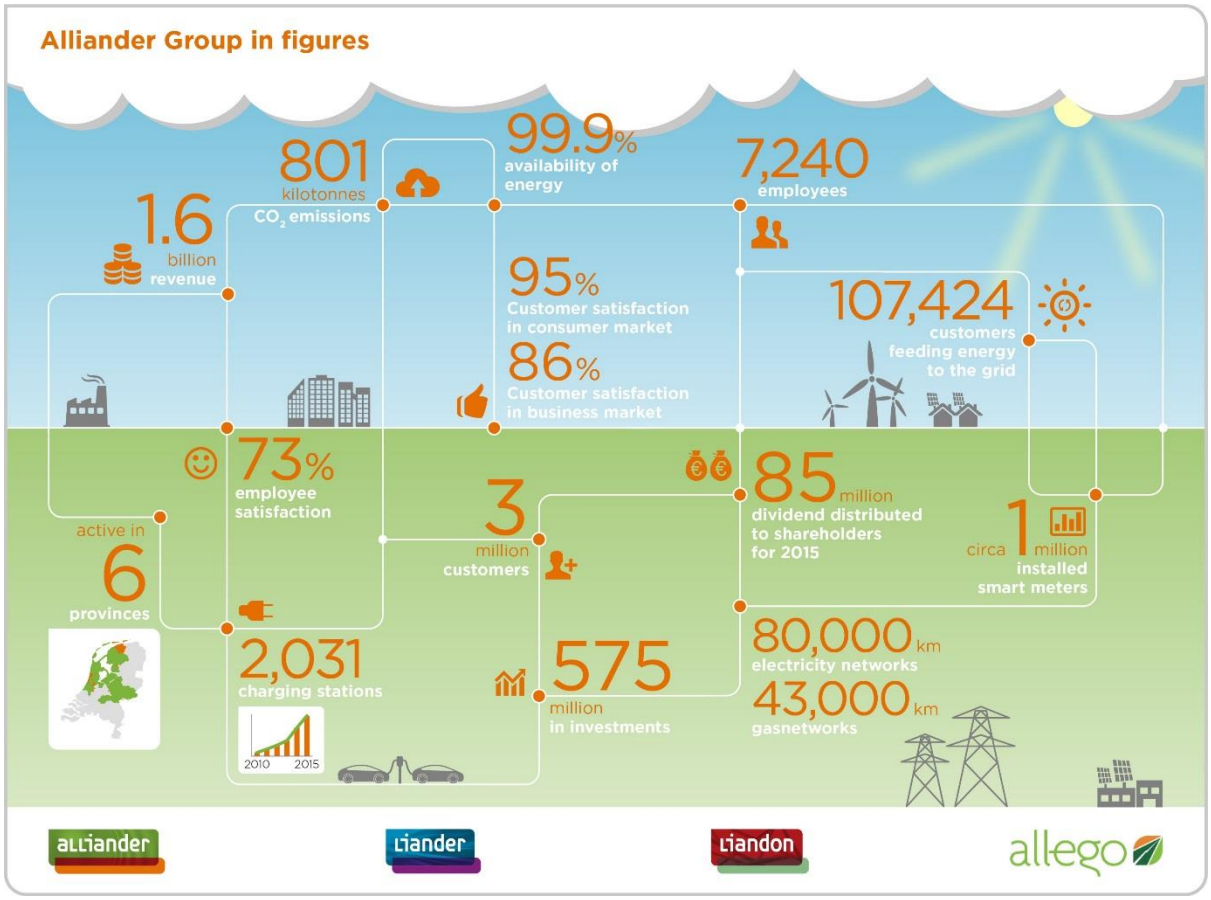

Figure 2 Alliander company profile (Alliander, 2016)

The main data gathering efforts took place during a six month research placement with the Strategy & Innovation department of Asset Management at Liander, the regulated branch of Alliander operating its grid infrastructure. Asset Management is responsible for the management and long term planning of the electricity and gas grids. The Strategy & Innovation department forms the linking pin between the organisation's overall strategic direction which is being formed at the Alliander group strategy department, and the actual grid management for which asset management is responsible. Figure 3 provides the organisation's organogram.

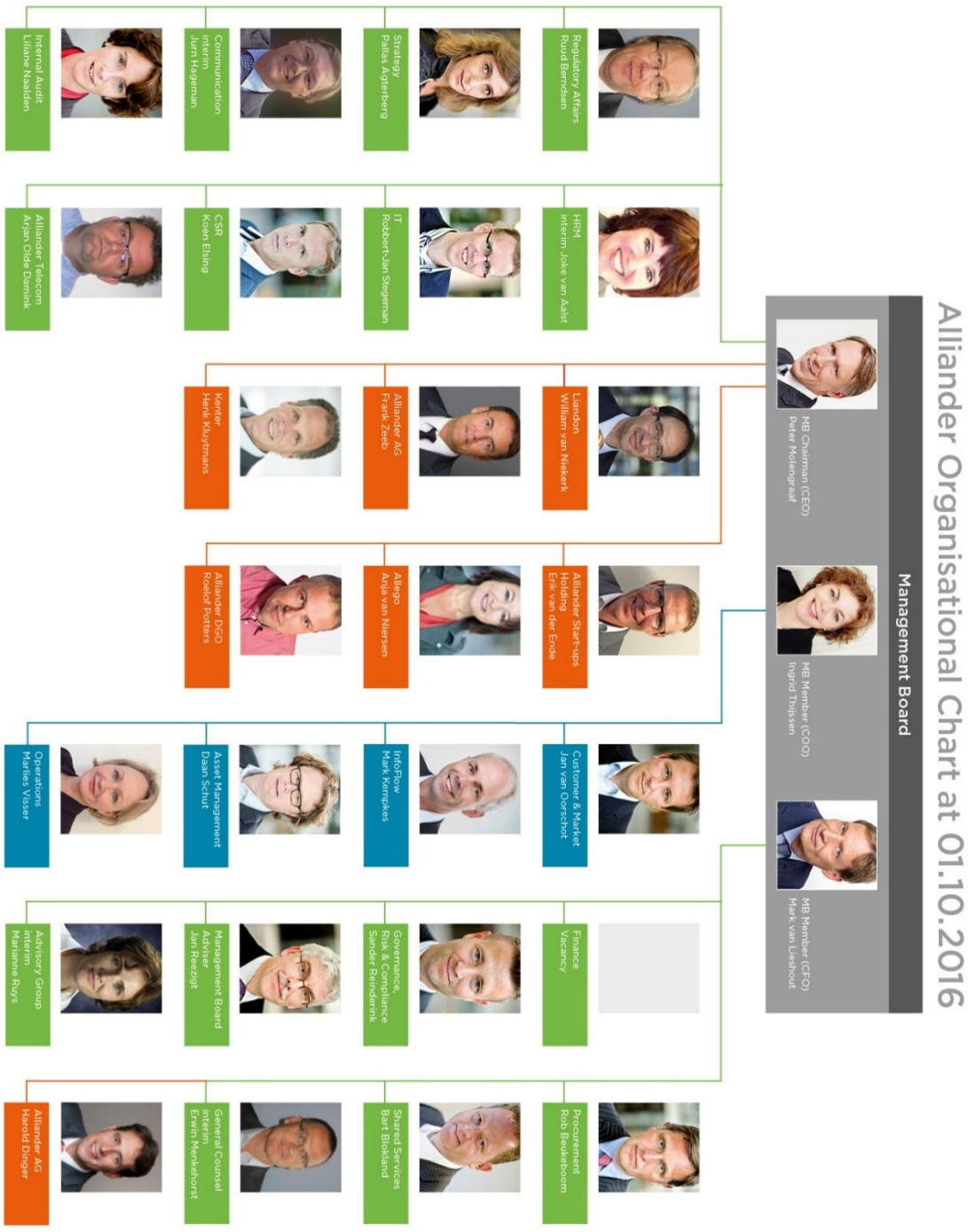

Figure 3 Alliander Organisational Chart

Access to the field

An important issue in ethnographic research is access to the field as this influences how the researcher enters and what can or cannot be observed. In the following we will detail how the first author established contact and gained access. Alliander is a partner in the TRAPESES research project of which this paper (and PhD-thesis chapter) forms part. In May 2015 a meeting was set up between the research team and several interested Alliander employees to further explore potential

cooperation. During this meeting the first author pitched his research interests in destabilisation, which sparked discussion about the future role of natural gas in the Dutch energy system. It became clear that a team within Alliander was working on how to abolish natural gas in the Dutch energy system. A telephone meeting was organised between the first author and a senior strategist responsible for the natural gas and heating strategy within Liander to explore the possibilities of a research internship. It turned out that the strategist and his team were in the midst of highly interesting developments from the theoretical perspective of the research. The strategist in turn became enthusiastic about the idea to have an outsider reflecting on the delicate process of developing and implementing the new natural gas and heating strategy. A starting note was drafted to outline the goals, approach and practical issues concerning the research internship. As such, a research placement was agreed between September 2016 and February 2017 with the Strategy & Innovation department of Liander Asset Management.

Data generation procedure

As outlined above data generation actually already started in initial discussions with Alliander in preparing the TRAPESES research project. These discussions yielded valuable insights on how the grid operator tries to make sense of and strategize in the energy transition. As we are interested in how Alliander is repositioning in the energy transition, we focus on those departments that have decision making power and are able to influence the positioning of Alliander vis-à-vis its environment. As such, the Strategy & Innovation department formed an appropriate starting point and the core empirical work is centred around the research internship at this department. This means that the main contact person, responsible for the gas and heating strategy functions as key contact and 'gate opener' within Alliander. Through this liaison the first author came in contact with the relevant people within and outside Alliander and internal discussion groups and meetings related to the topic. Furthermore, we expected from the outset that the changes, as envisaged in the new gas and heating strategy, will not be uncontested within the organisation. As such, we made an effort to also include the counter voices and resistance and also uncover the challenges and tensions arising from navigating transition space.

Data sources

In generating data, the first author aimed to collect all information he came across with relevance for Alliander's positioning vis-à-vis its changing environment, including:

- (Internal) documents, such as annual reports, strategy documents, working documents, (formal) minutes of meetings, and e-mail conversations;
- On the first day of the research internship, it became clear that the organisation's intranet is a valuable resource for data. It provides internal organogram's which help in navigating the quite substantial organisation (over 7000 employees), and provides a platform for employees and board members to voice their ideas and concerns. Especially identifying employees with a critical voice was done with the help of the intranet;
- Field notes of participant observation in events and meetings attended (see Appendix 2 for an overview). This extensive note taking resulted in about 8 – 16 pages of typed text for each day in the field. Two types of notes are distinguished: 1. A factual description of observations, including notes related to the setting in which meetings take place, the agenda, people attending, the things being said and the nature of interaction. 2. Notes relating to impressions, reflections and questions that certain observations raise.

- Field notes of informal (telephone) conversations. The benefit of 'being there' is that it allows for many occasions to talk to respondents in a more informal setting; over lunch, at the coffee machine, in the hallway after a meeting or during after-work drinks. These opportunities have been engaged in as much as possible, and notes have been taken in the research diary as soon as possible after the informal chat. The same goes for telephone conversations with respondents.
- Interview notes and transcripts. The first author has interviewed 27 people throughout different departments of Alliander (see Appendix 1 for an overview). The respondents were identified through snowballing starting from the first contact persons. The following selection criteria were used in order to have as diverse input as possible:
    - Employees responsible or otherwise involved in development or implementation of the new heating- and gas strategy;
    - Employees operating on the intersection of 'outside' and 'inside' the organisation, e.g. strategy and communication departments;
    - Employees of departments that are influenced by the new strategy;
    - Employees that question or challenge the new strategy.

These semi-structured interviews were carried out according to the interview guideline provided in Appendix 3. Where possible, interviews were recorded and fully transcribed. In few instances the first author decided not to record since he judged that it would influence or inhibit the respondent to speak freely, especially regarding sensitive topics. When the situation is judged such that tape recording is not possible, extensive interview notes were taken and some time to reflect and write down any considerations regarding the interview in the research diary directly afterwards.

Data analysis
This extensive body of research data is analysed using Atlas.ti qualitative research software. The software helps to make the dataset accessible and identify patterns and phenomena of interest across the dataset. As of this writing the analysis is still ongoing.

4. Preliminary findings

Alliander shows itself as an organisation in search of a new role in the context of the societal energy transition and its associated goals. It is therefore a good case of an incumbent that proactively plays into transition space. It is developing several new business units that play a role in shaping a sustainable energy system and at the same time it announced to phase out natural gas in the built environment. As Alliander serves about 3 million households and the use of natural gas in the built environment (heating, cooking, hot water) makes up about 30% of total Dutch energy use (RLI, 2015) this is quite a significant move. At the moment Liander, the regulated branch of Alliander responsible for its grid operations, is working towards operationalising and implementing its new strategy.

In its vision Alliander outlines the changes in the energy system facing the organisation and the strategic directions it pursues in response (see figure 4). What is striking is the rather decentralized future Alliander sees for the energy system. This is reflected in the new role it sees for itself as 'developing and optimising local energy systems'.

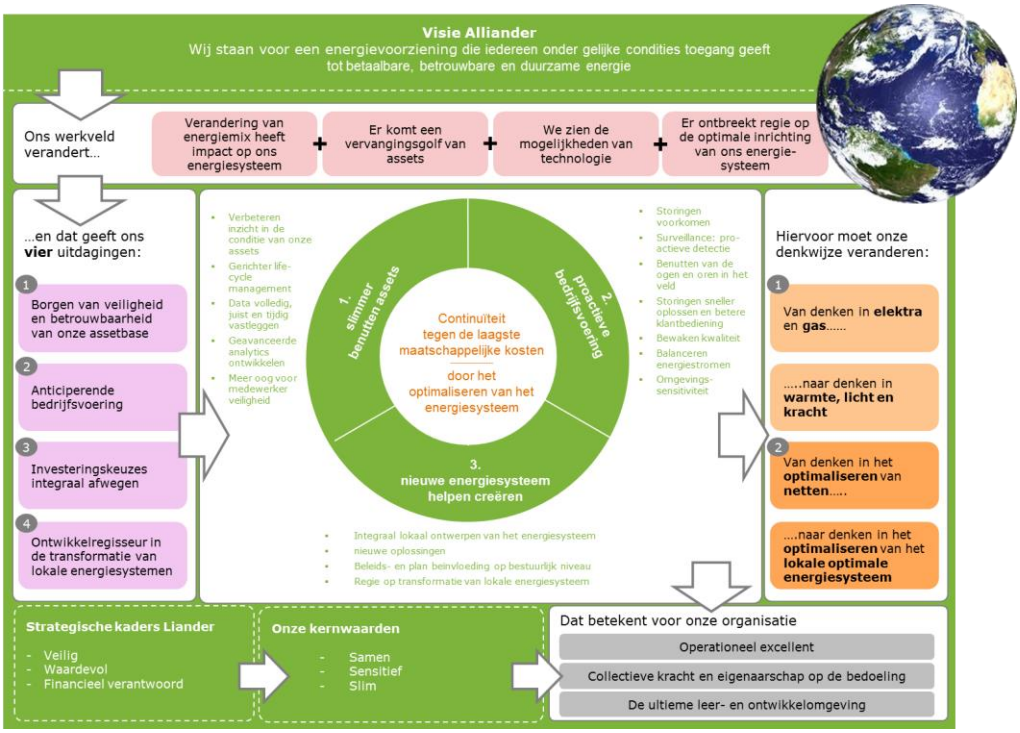

Figure 4 Alliander Strategic challenges, vision and mission (internal document in Dutch)

An important part of Alliander's anticipation of the energy transition is its emerging business areas (EBA) strategy:

> "Over the next ten years, our way of living, working and travelling is set to undergo major changes. Alongside our work as a network manager, we are also making targeted investments in for example electrically-driven transport, sustainable spatial planning and sustainable living. By looking ahead, we can help society address both current energy challenges and adjust our networks in time to the energy needs of the future." (Alliander, 2018a)

At the moment seven EBAs are active, such as Alliander Sustainable Area Development, which co-creates smart energy solutions tailored to local needs and BackHoom which helps residents to make their homes more sustainable. Then there is Allego, an Electric Vehicle charging service company, which used to be an EBA, but has outgrown this status and now operates as a separate entity under the umbrella of the Alliander group (Alliander 2018b).

Alliander developed its EBA strategy in order to build up knowledge, competences and roles that it deems relevant for a future energy system. It is interesting to note that these new developments are consciously organised outside of the existing regulated business in order to avoid the bureaucracy and inertia characteristic of large organisations (interview 13).

Furthermore, with the EBA strategy Alliander challenges both itself and the broader energy market. Within Liander repeatedly some animosity and competition was observed regarding the EBAs. The clearest example is that within Liander at one point employees of Sustainable Area Development (DGO) were discussed as 'cowboys', because they tend to take a more opportunistic approach than the people within Liander. Furthermore, Liander's asset managers fret about whether their existing gas grids are represented adequately, with the appropriate write off periods, in the models DGO uses to plan new sustainable heating solutions for neighbourhoods.

With regards to the broader energy market, Alliander is fighting several battles, some even in court, with traditional energy companies over whether its EBAs intrude on the liberalised energy market. The main objection of these companies is that the EBAs pose unfair competition because they are backed by a natural monopoly on energy grid infrastructure and use its revenues to fund their commercial activities (FD, 2017). In response Alliander claims that it is developing new initiatives which are needed for the energy transition that the market is not (yet) picking up by itself. As such, it aims to catalyse the energy transition, also claiming to be willing to sell off new business as soon as they become economically viable independently. These issues also play out in drafting the 'Law Accelerating the Energy Transition', which provides the legal framework detailing the roles different actors can take in the changing Dutch energy system. It has been adopted on 30th of January 2018 after repeated delays, partly because of the dialectic between entrepreneurial grid operators and traditional energy companies.[1]

The main organisation in the Alliander group is the actual grid operator Liander, which operates in the regulated domain. Liander's main strategic goals are 'operational excellence' and the energy transition, which Liander, other than Alliander's decentralized focus, understands in terms of CO_2-reduction. Furthermore, Liander has embraced a phase out of natural gas as one of its key focus areas (see figure 5). In anticipating this strategic direction, it is developing partnerships with other grid operators, municipalities and local energy initiatives. The Manifesto 'Getting started with living without natural gas' which Alliander prepared with 100 societal partners and presented to the prime minister at the National Climate Summit in October 2016 provides a good example. It is also telling that the text had been changed on instigation of one of the contacts at Liander to include the 'natural' before 'gas' in the title and body of the text, thereby leaving open options for other gaseous substances and thus the existing gas grid to play a role in future heating solutions.

Liander is characterized by a high level of compartmentalization, specialisation and standardization. The whole chain from initiating a plan for a new gas or electricity grid to engineering, development and construction is cut up into small pieces of clearly delineated work. For every piece a different department or team is responsible. Operational excellence in this context means foremost streamlining, optimizing, and protocolizing each step in the chain. In this way Liander operations connected a record number of new gas grid connections in 2016. The record was set mostly because construction picked up again after the recession and Liander was obliged by law until the end of 2017 to connect every request (interview 21).

These characteristics of Liander's operation seem increasingly problematic in the energy transition, because it presents challenges and changes at every step in the operating chain. Actually, the whole chain comes into question, when energy systems will be organised at area / neighbourhood level in an integrated way, as envisaged by the new Alliander strategy, because it would require tailored solutions for every neighbourhood. Current operations is not ready for this.

[1] See also the public hearing for the Law Accelerating the Energy Transition (Wet Versnelling van de Energietransitie) on the 17th of January 2017 to which Alliander also contributed a critical position paper together with other DSOs

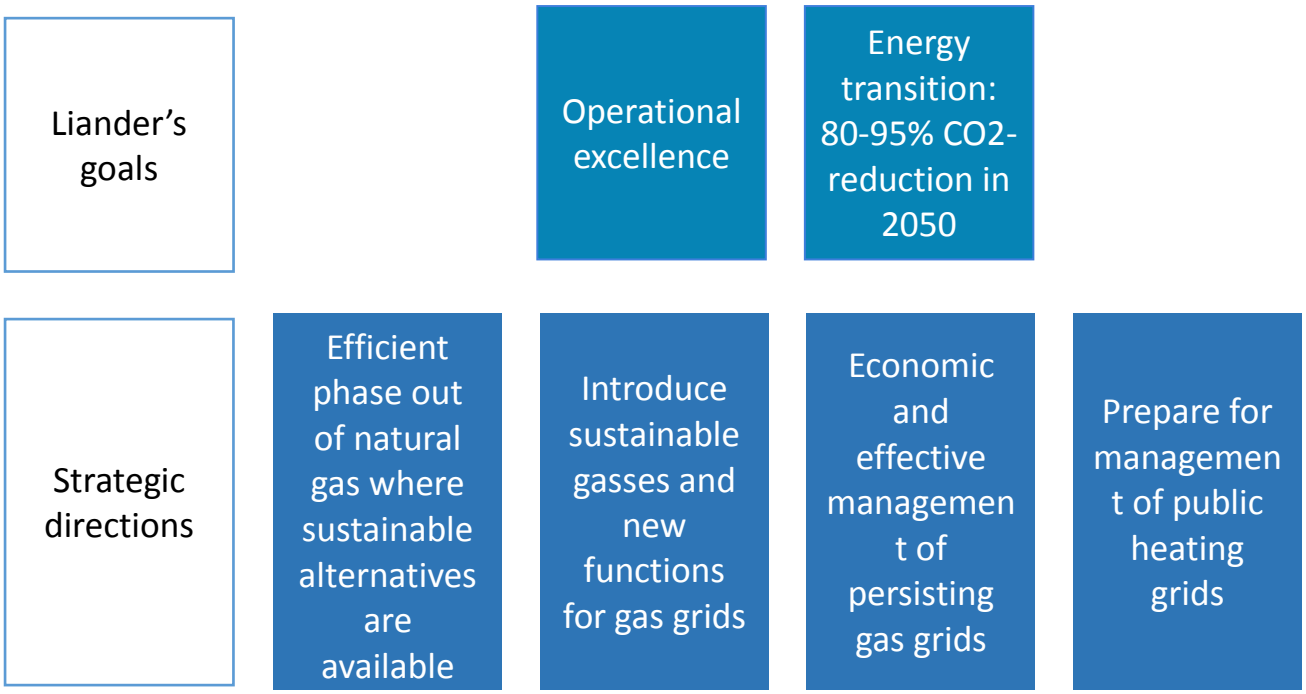

Figure 5 Goals and strategic directions for Liander *(Liander Strategic Asset Management Plan, 2016)*

Dealing with uncertainty

The energy transition creates a great deal of uncertainty for (Al)liander, as it is unclear what the future will bring. This quote captures this uncertainty best:

> *"We just don't know. And we can substantiate that we don't know with about 500 reports that contradict each other. We wrote this down in our IT-vision. That is the toughest thing to do as a strategist, but also the most honest."* (interview 17)

There seem to be two (opposing?) trends within Liander to deal with the uncertainties that a changing energy domain bring. The first approach is to bring in data and data-analytics to get a grip on a changing future. The role of IT and data-driven grid management solutions is growing rapidly and gaining importance within the company (interview 7). Others think that this is an ill-founded approach, because it provides a false sense of security in the context of a transition (interview 1). This stream tends to put more emphasis on experimentation and learning-by-doing along the way as a strategy to deal with such fundamental uncertainty. However, this approach is a hard sell, in an organisation focussed on grid *management*.

Strategic gap

As such, the distance between the strategy departments (we found three of them: Alliander Strategy, Strategy & Innovation of Liander Asset Management, Strategy & Environment of Liander Customer & Market) and the operations seemed rather large. Asset Management's Strategy & Innovation department (S&I), where the first author spend most of his time, works with a rather traditional understanding of strategy making and a technology oriented and linear model of innovation. To put it bluntly: Smart strategists explore the future and write that up in a document. Well-educated innovators develop something new that fits this future outlook. They work this out and then hand it over to another department that standardizes the approach and then it might get

into the protocols which operations is supposed to follow in its work (in practice protocols are hardly read, and new ways of working are very difficult to achieve in this way (interview 24 & 26)).

The most tangible evidence for the distance between strategy and operations is that starting from the Strategy & Innovation department it was rather easy to come into contact with other strategists in the organisation, but it proved quite challenging to develop contacts in operations. The only lead was a former trainee from the department now active in operations. A peculiar career move in the strategists eyes, because most jobs in operations are at vocational level, while trainees, like strategists, are often educated at university level. However, in the end for the energy transition to be implemented, fundamental changes at operations level are needed. Next to the rather linear top-down innovation diffusion process described above, bottom-up deviating from standard practices within the operations department might be another way to realize innovation more directly.

During the research placement at (Al)liander only one such example was found: A young engineer team leader, also a former trainee, got a request to develop a gas grid to connect a new upper-class neighbourhood in the town of Heiloo. The developer of this 'sustainable' neighbourhood installed heat pumps for heating the houses, but promised his buyers that they could still cook on gas. Liander's engineer, with knowledge about the energy transition gained in his traineeship in mind, refused to develop a new gas grid, only for cooking purposes, thereby going against existing practice, protocols and regulations. The developer disagreed and the project was escalated to decision makers within Liander's operations and asset management. They stood by their engineer and told the developer 'no'. While the case was known to several people within the Strategy and Innovation department, they seem to underestimate the importance of this feat. Where they organise scrum teams to diffuse new technological innovations throughout the organisation, the new practices this engineer has developed don't receive any follow-up in terms of diffusing these within operations as the new best practices (interview 24).

Lost in translation

It was interesting to learn at the Groot Werkoverleg Cluster West, a meeting of engineers working in the North-West of the Netherlands, that the engineers first heard about their organisation's plans for the natural gas phase-out through the national news, in which the plans were announced. Only several weeks after, Liander's director construction explained the developments at the engineer's meeting, in his presentation stressing the external developments leading to this decision, while paying little attention to the proactive role Alliander itself played in coming to this decision.

The announced plans immediately lead to uncertainty and questions about the gas engineers' jobs. Will they still be needed when Alliander phases out natural gas? An example is a young engineer encountered at the 'Groot Werkoverleg Cluster West' meeting. He started at Liander as mechanic and moved up to an engineering position. Currently, he is following a training programme in gas technology that he finds quite challenging and puts in a lot of effort. After today's announcements that his organisation is phasing out natural gas, he doubts whether he should continue this education. Other engineers spoken to at the meeting are less worried, they think the phase out will take quite some time, and that they will get different work in the meantime, as an example they refer to a biogas upgrade unit they recently built in Purmerend. Other than some engineers, most strategists think that developing the alternatives to natural gas require much more work, so rather than people losing jobs, they would actually need much more people.

Communication about the transition strategy comes across as fragmented and ad-hoc, without a clear idea on whether and how to involve the employees in the organisation on these quite fundamental challenges. This view is confirmed in several interviews. For example a teamleader of engineers explains that Alliander is rather 'blue'. He illustrates this with the example of moving

house: “The boxes were arranged, a moving truck, new furniture, but nobody thought about how this move will impact the people and how they feel about it. The same thing is now happening with the energy transition” (Interview 26). A consistent narrative about how the transition unfolds and what it means for the organisation is lacking so far. This poses especially challenging for middle management that has to deal with real fears of those they are responsible for (interview 15).

A similar pattern can be observed with regards to the HR. The Director HR explain that as of yet there is no idea of the kind of skills that are necessary for the energy transition and no education plan to make sure that employees develop the necessary new skills. He explains that 95% of efforts are directed at the existing energy system, the energy transition plays only a marginal although growing role (interview 22).

Converts

In the field, several self-proclaimed ‘gasmen’ were encountered who went through a kind of conversion. The converted gasmen have worked in natural gas all their life, but have over time come to believe that the end of natural gas is inevitable. Different insights have contributed to their ‘conversion’. Climate change and the earthquakes resulting from natural gas production in the Northern Province of Groningen are cited as playing a role. One of them reckons that a workshop series in which they had to envisage a neighbourhood without natural gas heating was crucial. While at first the general attitude of the participants in the workshop was: “why should we? That is unrealistic”, over the course of the workshop series their views changed (interview 1).

A close colleague, also a long timer in gas, reflects over lunch that his ‘turning point’ was devastating feedback from Alliander’s CEO on a position paper on the role of natural gas and the gas grid that he prepared together with another colleague in 2014. The CEO told them they were looking at the energy transition from the point of view of natural gas. If they wanted to fairly assess its role, they should take more distance.

Their conversion puts these gasmen in a challenging and simultaneously interesting position. This became particularly clear at a meeting of the International Gas Union in The Hague, which Alliander co-hosted. Foreign colleagues found it hard to fathom what is happening in the Netherlands with regards to the phase out of natural gas. They marvel at the country’s great gas infrastructure that delivers ‘cheap and clean’ natural gas to 98% of Dutch households and powers a large part of industrial activities. At the same time, these converted ‘gasmen’ are respected members of the natural gas community. As such, their conversion might play an important role in the transition. It makes quite a difference whether Greenpeace says we need to phase out natural gas, or whether it is a ‘gasman’ who has worked in gas all his life bringing this message.

Resistance

Next to the converts, a number of employees working in gas were encountered that are annoyed by the new strategy. One of them has written a blogpost on the companies’ intranet as the ‘Gasgeus’[2], detailing his grievances with his organisation’s new direction. His post sparked quite some discussion and is seen as representative for a broader sentiment within the organisation. Interviewing this ‘Gasgeus’ yields a picture of a very passionate and involved employee. He runs an under the radar gaslab where several tests and innovations have been developed, including a new biogas GOS. He agrees with the need for an energy transition, but still sees a role for gaseous substances in a different future. In general, he feels set aside by higher echelons within the organisation who tend the disregard or even attack the role of (natural) gas (interview 19).

[2] Geus is a reference to a historical Dutch resistance movement (cf. https://en.wikipedia.org/wiki/Geuzen)

More broadly 'gaspeople' within the organisation sometimes feel neglected or at a disadvantage compared to their colleagues working on electricity. At some point, a historical dimension to this animosity was discovered when we went for lunch in a luxurious old building on the Arnhem energy campus. When the first author marvelled at the detailed ornaments in the building, one of the companions explained that this used to be the headquarters for the *electricity gentleman* and that the people working with gas, also known as the *gas farmers* were tucked away in a remote part of the campus. Historically, those working with electricity were the better educated and better paid within the grid operations. One can study electrical engineering at university level, but there is no university equivalent of gas technology. In general gas technology is simpler and less high tech and therefore also more reliable and robust, than electrical technology. Current emphasis on all-electric solutions and disregard of gaseous solutions in the energy transition might echo this historical distinction between *electricity gentleman vs gas farmers.*

5. Tentative synthesis and first reflections

After presenting some of our preliminary findings above, we now analyse Alliander's repositioning using the five dimensions as outlined in the second section and reflect on the challenges and tensions arising from navigating transition space.

Discourse
In terms of discourse we found two developments of interest. First we observed differences in discourse on the substance of the energy transition and its preferred direction. The more traditional storyline frames the transition predominantly in terms of the climate problem and sees reducing CO_2-emissions as the main challenge. The other and newer storyline focusses on co-creating sustainable energy solutions with local stakeholders. Also in terms of sense of urgency of the energy transition striking differences were found. One group of respondents shows a high degree of urgency claiming that the transition should happen pretty much yesterday, while others pertain the view that (Al)liander is moving in the right direction but that such changes take time.

Institutions
With regards to formal institutions, we again highlight two developments of interest. The first relates to the misalignments arising between (Al)liander's changing direction and existing rules and regulations, such as the obligation to connect customers to the gas grid and the decreed writing off periods of 40 years for these grids. Furthermore, we observe that (Al)liander is not passively undergoing changes in regulations, but itself lobbies actively. Two lobbying activities stand out:

- (Al)liander played a pivotal role in changing the 'obligation to connect' to the gas grid into a 'right to heat' in Dutch energy law. This change was important to Alliander in order to have regulatory backing when it refuses to connect customers to the natural gas grid;
- Alliander lobbies to become preferred operator of heating grids, which are currently predominantly operated by private energy companies.

Relations & roles
An important observation emerging from the strategy documents of Alliander is the shift in role from a 'pipeline factory' as one of the respondents put it (interview 5), to sustainable area developer in co-creation with local stakeholders. Such a fundamental change in roles goes together with changes in relations with other stakeholders in the energy domain. It becomes clear that Alliander, next to its existing relations with shareholders (municipalities) and customers (energy users), is actively building new alliances with community energy initiatives, sustainable NGOs and building owners, such as housing corporations.

Next to building new alliances, Alliander's repositioning also leads to increasing tensions with traditional energy companies over the boundaries of the regulated domain. The public hearing around the new 'Wet VET' makes this tangible. Alliander, and especially its EBAs, are testing these boundaries in several cases, with developing charging stations for electric vehicles for example. Energy companies claim that such activities belong to the 'free' market domain, and not to the regulated domain, therefore Alliander should not engage in such activities. Furthermore, the public hearing also shows a gap opening between the DSOs (distribution system operators, such as Alliander) and the TSOs (transmission system operators, TenneT and GasUnie). Where the TSOs take a more centralized take on the energy transition, seeing a large role for international interconnections, the DSOs emphasise local solutions and engagement.

Resources

In terms of how resources are directed in the organisation, in particular human and financial resources, we observe that this dimension has not fleshed out yet. The HR Director explains that, although they are increasingly preparing their employees for the energy transition, currently approximately 95% of jobs are directed at running the existing system (business as usual), while only 5% are directed at exploring and preparing for a new role. Furthermore, we observed a gap in understanding the potential impact of the energy transition between operational personnel on the one hand, who are afraid they will lose their jobs when Alliander exits from natural gas, and strategists on the other, who expect much more work needs to be done in developing new energy infrastructure, such as heating grids.

In terms of financial resources, figure 6 gives an overview of how investments are directed. A clear upward trend is visible with regards to investments aimed at radical innovation for the energy transition.

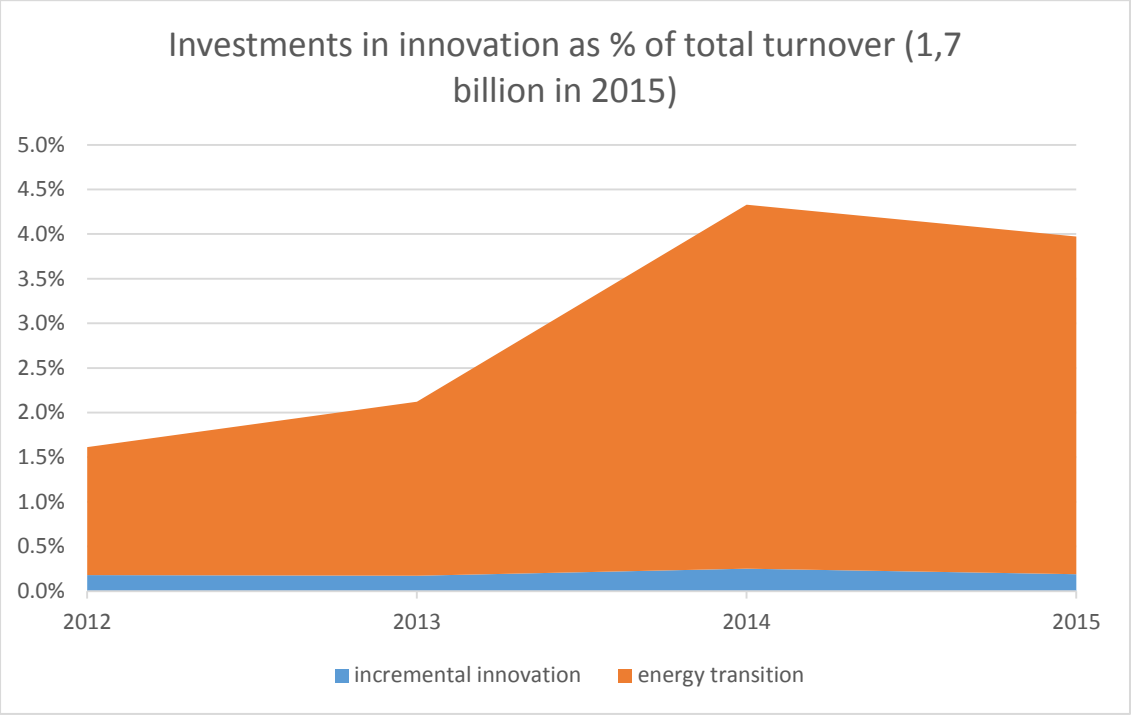

Figure 6 Investments in innovation (Source: Internal document)

Practices

In terms of practices, we observed that there is a clear division of tasks within Alliander, where the new practices are developed mostly in the Emerging Business Areas (EBAs). These new businesses have dileberately been put at arm's length from the traditional regulated operations. Within the regulated grid operator Liander, different departments are working on developing a neighbourhood approach, to help neighbourhoods change their energy systems from natural gas dominated to other energy sources. These approaches are still in experimental form, they have not yet led to routinized practices within the grid operator. In the operations department, focus on efficiency in its traditional role dominates. We did come across one instance of experimentation with changing practices, such as the new Oostzaan neighbourhood in Heiloo. The Liander engineer responsible for this project refused to put in a gas grid, because this was not in line with his understanding of the energy transition. Although this went against existing regulations and practices within Liander, it was accepted by the project developer after some discussion. There were no plans or initiatives within Alliander to standardize this deviating practice for all engineers however.

Reflections

In our reflections we distinguish between internal (within Alliander) and external (with its environment) tensions and misalignments. We admit that this distinction is somewhat artificial, because one result of the energy transition is that these boundaries are shifting.

Internal tensions

The most striking misalignment found was between discourse at the strategic level within the organisation and daily practice in the operations department. While the strategic discourse proposes to exit from natural gas, operations in 2016 installed a record new gas grid connections of the last 5 years. This misalignment increasingly leads to fritcions within the organisation, lobby for adaptation of existing regulations and the emergence of alternative practices within operations to bridge this gap.

Furthermore, we observe misalignments between existing more traditional discourse, roles and practices and new ones emerging in the organisation. The traditional understanding of Liander as a grid operator, with its role in managing energy infrastructure and the very detailed, differentiated and specialized practice of developing and managing grids seems to be increasingly at odds with the new understanding of Alliander as a sustainable area developer, managing the transition towards sustainable energy solutions at neighbourhood level in co-creation with local stakeholders.

It is slowly being realized that such a new role requires fundamentally different skills than the more traditional role. Alliander seeks to develop these skills partly through its EBAs, outside of the traditional regulated domain, and partly Liander is attracting new people with different skillsets, such as the so-called 'gebiedsregisseurs' (area directors). At the same time, this results in some animosity between Liander and some of the EBAs. Also, if the EBAs explore Liander's future, one would expect to come across efforts to learn from their experiences. However, few deliberate learning feedback loops where observed between Liander and the EBAs.

External misalignments

Misalignments in relation to Alliander's environment were found in particular in two domains. First of all, the discursive understanding of the energy transition, where Alliander is promoting a radical different energy future based on local solutions and involvemont of stakeholders, while other stakeholders, in particular the TSOs and traditional energy companies portray a more centralized vision for a sustainable future in which for example offshore wind and large international interconnections play an important role. This also means that Alliander is increasingly partnering and aligning with other stakeholders outside of the traditional energy domain, including local energy

initiatives and housing corporations. This clash in visions for the future energy system becomes increasingly tangible in relation to institutions and institutional work Alliander engages in to help materialize its vision for the future.

Another misalignment, which runs both within the organisation as well as outside it, is the discussion whether the problem is the gas grid, or whether it is the fuel natural gas. Whereas the general understanding of natural gas phase out, includes a phase out of the gas grid, more nuanced voices within the organisation make a distinction between the fuel and the infrastructure. Focussing on the fuel as the problem, instead of the grid as a whole, leaves open several options to reuse or adapt the grid for othter fuels or purposes. A case in point is the (succesful) lobby by Liander to change the wording in the Manifesto from 'gas' to 'natural gas'. This rather subtle change might have large implications, because it leaves open options for other gaseous substances to be used instead of natural gas, and thus for existing infrastructure to remain in place and be used differently.

6. Conclusions and directions for further research

In this paper we introduced the transition space framework to conceptualize the space in between an 'old' destabilised regime and new regime in the making. We illustrate our framework from the perspective of grid operator Alliander that is currently navigating this highly volatile context. While our analysis is still ongoing at the moment of writing, our ethnographic research suggests that although Alliander is a regime player in the sense that its grid infrastructure forms a central part of the traditional energy system, its activities and strategic decisions do not conform to the active resistance to change that current transitions literature supposes for actors operating within a regime context. While indeed a large part of the organisation is still directed at managing existing infrastructure, it is also actively developing new activities directed at anticipating and accelerating the energy transition, as well as preparing a phase out of part of its business which it has come to consider unsustainable.

Reflecting on Alliander's repositioning efforts using the transition space framework, several findings stand out:

- Navigating transition space opens up opportunities for institutional change and new relations and roles vis a vis niches, as well as friction with existing discourse, roles, relations and practices both within the organisation and in relation to its environment;
- Diversity and misalignments could be found in all five dimensions, most notably between discourse at strategic level and operation's practice;
- Parting from existing activities seems to start discursively "exit from natural gas in 2050", actual phase out of practices follows later on. This suggests an ordering in changes in the repositioning dimensions over time: Discourse → relations → institutions → resources → practices

Our research seems to indicate that the transition space concept is useful to capture current volatility of the Dutch energy system and allows for a more nuanced description of the role of incumbents in absence of the stabilising effects of a regime. Describing transition space from the perspective of grid operator Alliander, also proves a fruitful way of better understanding the nature of transition space and the tensions, challenges and opportunities that navigating this space presents to a change-minded incumbent. With our ethnographic approach, it was possible to provide an in-depth account of the transformative activities of Alliander as they unfold. At the same time, it provides deep insight in a single case, which makes findings hard to generalize.

Given that transition space is a concept to describe the meso-level of a system in transition, taking an (incumbent) actor perspective might seem an odd choice to illustrate the concept. While we also explore transition space discursively through a newspaper analysis elsewhere (Bosman et al., forthcoming), we argue that taking an actor perspective to explore this concept is sensible, since the diversity in and misalignments of structures characterizing transition space, puts agency at the forefront. While one can expect that some activities related to fossil fuels might cease to exist over the course of the energy transition, existing grids are generally perceived as still playing a role in a future energy system, as such grid operators play an interesting role in this phase of the energy transition. The strategic decisions such actors are currently taking are pivotal, because they decide on the phase out of certain elements of the old regime, which impacts activities of actors throughout the system[3], while simultaneously contributing to the foundations of a new regime in the making. As such, more research is needed in order to validate the transition space concept. And, while our research took an ethnographic approach, merely observing the phenomena of interest unfolding, further research might shed light on whether the transition space concept might also be used to support (incumbent) actors navigate a highly volatile context in line with the goals of transition management.

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[3] e.g. if Alliander, serving 3 million households, decides not to distribute natural gas anymore, this influences that business model and possibilities of other actors as well)

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Appendix 1

Overview of respondents

1. Sr. Strategist, Liander Asset Management
2. Manager Strategy & Innovation, Liander Asset Management
3. Manager external relations, Liander Asset Management
4. Strategy & Innovation consultant, Liander Asset Management
5. Innovation Manager Energy Transition, Liander Asset Management
6. Innovation manager, Liander Asset Management
7. Consultant datadriven grid mangement, Liander Asset Management
8. Consultant Energy Transition, Liander Klant & Markt
9. Sr. Business Market Analyst, Liander Klant & Markt
10. Sr. Marketeer Strategic Partnerships, Liander Klant & Markt
11. Strategist, Alliander Strategy
12. Manager Alliance Management, Alliander Strategy
13. Director Hoom, New Business
14. General Manager DGO, New Business
15. Manager Energy Transition, Liandon
16. Consultant, Liandon
17. Consultant Strategie & Architectuur, IT
18. Consultant Innovation and realisation, Alliander Advisory group
19. Consultant gas, Liandon
20. Director Regulatory Affairs, Alliander
21. Manager Grid planning, Liander Asset Management
22. Director HR, Liander
23. Technical Trainee Construction, Liander operations
24. Teammanager Construction, Liander operations
25. Senior Communications consultant, Alliander
26. Teammanager Gas, Liander operations
27. Management Trainee, Alliander

Appendix 2 Overview of attended meetings

Alliander internally

- Weekly teammeeting, Strategy & Innovation Department
- Three weekly gas- and heating meeting, Strategy & Innovation Department
- Moving forward together in the heating transition, Alliander Sustainable Area Development and Regulatory affairs Department, 10th of November 2016
- Groot werkoverleg cluster West, medewerkers aanleg gas, 14th of December 2016
- Creative session 'Neighbourhood approach', Realisation & Innovation Department, 15th of December 2016
- Development Area-oriented Approach, Realistion & Innovation Department, 20th of December 2016 & 19th of January 2017

External meetings

- International Gas Union, 12 – 13 October 2016
- Regional Energy strategies, RVO/VNG, 1st of November 2016
- Accelerating the Energy Transition, Ministry of Infrastructure & Environment, 24th of January 2017

Organized meetings

- Governing the energy transition, TRAPESES-project, 19th of January 2017

Appendix 3. Interview guideline (In Dutch)

Introductie:

- Doel van het onderzoeksproject / interview:
    - Onderzoeksstage van drie maanden
    - Verkennen van de rol van de netbeheerder in de energietransitie, met name als het gaat om afscheid nemen van aardgas;
- Verwerking interview: vertrouwelijkheid, anonimiteit, gebruiken quotes

Vragen:

- Kunt u iets vertellen over uw rol met betrekking tot de strategie van Liander?
- Hoe kijkt u aan tegen de energietransitie? Wat drijft de energietransitie volgens u? Welke onderliggende problemen lost het op? Welke nieuwe uitdagingen creëert het?
- Wat betekent dit voor de rol van Liander? Hoe verandert die in de energietransitie?
- Een van de speerpunten van de nieuwe gas- en warmtestrategie is “het efficiënt uitfaseren van aardgas daar waar duurzame alternatieven zijn.” Hoe kijkt u tegen dit speerpunt aan? In hoeverre is dit een gevolg van de energietransitie? En hoe zou het verwezenlijken van het speerpunt de transitie beïnvloeden?
- Wat betekent de energietransitie in termen van relaties? Hoe reageren relaties binnen en buiten de organisatie? Ervaart u enthousiasme of juist weerstand en uit welke hoek? Zijn er bestaande relaties die verdwijnen als gevolg, bv met bepaalde leveranciers, of klanten etc.?
- Wat betekent de energietransitie in termen van allocatie van middelen (tijd en geld) binnen de organisatie? Welke activiteiten worden gedivesteerd? Zijn er afdelingen waar wordt bezuinigd of die worden gesloten? Hoe gaat u hiermee om?
- Zijn er nog mensen binnen of buiten Liander die ik verder zou moeten spreken met betrekking tot dit onderwerp, of zijn er bepaalde bijeenkomsten die wellicht relevant zijn om te bezoeken?