



Resituating the Local in Cohesion and Territorial Development



House in Bedum, damaged by earthquakes (Photo: © Huisman Media).

Case Study Report
Northeast Groningen
Confronting the Impact of Induced Earthquakes,
Netherlands

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Abbreviations

BTW	cluster of municipalities of Bedum, Ten Boer and Winsum
CVW	Centrum voor Veilig Wonen
EBN	Energiebeheer Nederland
ERDF	European Regional Development Fund
EU	European Union
EZ(K)	Ministerie van Economische Zaken (en Klimaat)
FES	Fonds Economische Structuurversterking
GBB	Groninger Bodembeweging
GGD	Gemeentelijke Gezondheid Dienst
HRA	Hazard and Risk Assessment
HSSM	cluster of municipalities of Hoogezand-Sappemeer, Slochteren en Menterwolde (merged into municipality of Midden-Groningen on 1-1-2018)
KNMI	Koninklijk Nederlands Meteorologisch Instituut
MEDAL	cluster of municipalities of De Marne, Eemsmond, Delfzijl, Appingedam and Loppersom
NAM	Nederlandse Aardoliemaatschappij
NCG	Nationaal Coördinator Groningen
Nm ³	Normal cubic meter (volume of gas under standardized conditions)
OVR	Onderzoeksraad voor Veiligheid
PGA	Peak Ground Acceleration
RUG	Rijksuniversiteit Groningen
SodM	Staatstoezicht op de Mijnen
TCMG	Tijdelijke Commissie Mijnbouwschade Groningen
UMCG	Universiteit Medisch Centrum Groningen

Executive Summary

Background

This case study report analyses spatial justice in the wake of frequent earthquakes that occur in the region of Northeast Groningen, the Netherlands. These earthquakes are man-made, induced by the extraction of natural gas in the region. While they have a maximum magnitude of only 3 to 4 on the Richter scale until now, they cause severe damage due to their shallow depth of about 3 km, the instable clay underground in which they occur, and the vulnerable brick houses that were never meant to withstand earthquakes.

Northeast Groningen is a peripheral, mostly rural region. As such, it has its fair share of typical problems, such as an aging and declining population, a relatively high unemployment rate and a low education of the labour force. The specific problems related to earthquakes, however, are unique to the region. Therefore we choose to focus the case study on this issue, rather than on regional development policies in general.

The extraction of natural gas in Northeast Groningen started in 1963 after the discovery of the enormous 'Groningen field'. As the legal owner of natural underground resources, national government granted the exploitation rights partly to a dedicated company – the already existing Nederlandse Aardoliemaatschappij (NAM) which is a 50-50% partnership of the multinational oil companies Shell and ExxonMobil. Policy making by the Dutch State in the 'gas economy' lies exclusively with the ministry of Economic Affairs and Climate (EZK).

The first earthquake that was considered by some, but not by NAM, as being related to gas extraction occurred near Assen, south of the main gas field, in 1986. Since then, well over 1300 earthquakes have been registered (GBB, 2019) only in Northeast Groningen. A turning point in many respects was the earthquake near the small village of Huizinge in 2012 which caused extensive damage and forced authorities to respond. We therefore take this earthquake as a starting point for the Action as considered in this case study.

Spatial justice in this case concerns the consequences of the earthquakes, which are several, and which are addressed by multiple policy measures that have varied considerably over the relatively short period since 'Huizinge 2012'. Accordingly, **the Action** refers not to a single policy, but to the collective of policies and other measures to assess, to compensate for and to repair earthquake damage (curative) as well as to prevent further damage (preventive).

Initially, this involves primarily the **distributional dimension** of spatial justice. People in the region feel deprived from their right to personal safety, health and financial security. This has called for *curative* measures such as financial compensation of damage to houses and businesses property, compensation of value depreciation of houses, loss of income, and treatment of mental health problems related to the earthquakes. Alongside curative measures, it has also called for *preventive* measures including reinforcement or replacement of buildings that are deemed unsafe, the prevention for health problems, and last but not least policies addressing the cause of the earthquakes itself, i.e. reduction of gas extraction.

While the distributional dimension of spatial justice still is at the hearth of the earthquake problem, the focus has gradually shifted to the **procedural dimension**. Rather than the distributional dimension itself, the many new policy measures and new institutions that have been implemented to address the distributional dimension are now at the core of feelings of, discussions on and protests against spatial injustice.

Findings

The case of the earthquakes in Northeast Groningen may be a very interesting one from a researcher's perspective, but from a citizen's perspective it is deeply sad and embarrassing. Sad, for the people in the region; embarrassing, mainly for the national government of the Netherlands. Our analysis shows that spatial injustice is broadly experienced in the region. This entails both distributional injustice and procedural injustice. While injustice is experienced within the region, the overwhelming feeling is one of Northeast Groningen versus both the State and the oil companies who all tend to evade their liability for consequences of gas extraction.

In terms of **distributional injustice**, numerous damages have indeed been assessed many buildings have been repaired or reinforced. Nevertheless, these accomplishments are not nearly as many as are considered necessary. Moreover, there is widespread dissatisfaction with the way in which these have been achieved. There is a large arrears in the assessment of damage claims, and in many cases a clear reluctance to compensate for damage since 'Huizinge 2012'. With regard to reinforcement, uncertainty exists among home owners due to changing assessment methods of the risk for future damage, and with regard to replacement housing or to the price they receive for their house. Further worries exists about replacement of houses and even monuments by cheaply build standardized buildings.

Regarding **procedural injustice**, it is important to note that while the Action primarily aims at distributional injustice, the measures taken are largely of a procedural nature. Due to uncertainties and inconsistencies that characterize the measures taken with regard to damage, reinforcement and replacement, new procedures and institutions are introduced regularly, while the existing ones mostly stay in place as well. The result by now is an extensive and highly complicated institutional framework that is experienced as being imposed on the region by the national government, and absorbs most of the time and funding available but is nevertheless widely considered ineffective, inefficient and unfair. Individual people that have been hit by earth quakes often find themselves trapped in an almost Kafkaesque situation. This, rather than earthquake damage per se, now seems to be the main source of anger, fear and anxiety. By way of explanation, the procedural dimension of the Action as discussed here can in fact be considered to be counterproductive because it has further contributed to feelings of spatial injustice. On the background, some regulations around gas extraction that were already implemented since the 1960s are now increasingly perceived as unjust by many, particularly the distribution of the revenues. Over the decades the Dutch state has cashed in around 250 to 300 billion Euro on the Groningen gas resources, but has invested a negligible share of this impressive amount of money in the region itself.

A more formal perspective on the Northeast Groningen case reveals some characteristics that may partly explain how the situation evolved to this point. First and foremost, the main promoters of the Action are all found within the region while the main inhibitors are located outside the region. These latter are the actors that are responsible for the damage, and future risks for more damage, but that also control decision-making with regard to both gas extraction and the Action. Hence, those responsible for the Action are the least willing to implement it.

Whereas the ministry of EZK has imposed a multitude of policy measures on the region, making the position of national government rather ambiguous over time, local and regional stakeholders lack participation and empowerment with regard to implementation of the Action. The latter is mostly true for informal stakeholders (mainly protest groups), but to a certain extent also for the Province of Groningen and the 'earthquake municipalities'. Consequently, the distrust in national government that is more interested in gas revenues than in protecting people is widespread in the region. Moreover, in the

end national government depends on most of the funding of the Action on the NAM, a company owned by multinationals whose shareholders have limited interest in this peripheral area. As a result, the Action does have small, local effects on distributional injustice, but does not altogether seem to develop spatial justice in a single clear direction until now. It has partly shifted the attention to distributional injustice to the procedural aspects.

Outlook

The final episode in this story starts with the planning of a Nationaal Programma Groningen. This will be much broader than the Action as discussed here. The NPG addresses the earthquake dossier in connection to the more general problems of population decline, ageing, energy transition and regional development, as was advised by the Commissie Meijer already in 2013. Especially the energy transition is seen as a main opportunity for the Province of Groningen, and institutions and businesses in the area already have a large experience in this field.

Fears exist in the region, however, that the much broader scope of the NPG will lead to a shift of attention from damage compensation and reinforcement to more broad projects, and to increased competition for funding between stakeholders within the area. It may do little to solve the acute problems many people in the earthquake region experience; the funding of the NPG is explicitly not intended for damage compensation and reinforcement, and the programme would reduce the role of the NCG to a mainly administrative one (EZK, 2018).¹

On 5 March 2019, Dutch Parliament unanimously decided that a parliamentary investigation will be held on the Groningen case. This is the most comprehensive means parliament has to investigate cases in which it assumed policy failure. During the interviews conducted for this case study, interviewees were mostly positive about the perspective of such a parliamentary investigation, if only because it would imply recognition and the need for accountability. No timeframe has been set for the investigation, however, but it is unlikely to begin before 2020. Somewhat ironically, the ministry of EZK announced that priority should now be given to the actual damage compensation and reinforcement operations.

¹ <https://nationaalprogrammagoningen.nl>.

1. Introduction

The Dutch are familiar with the forces of nature in the form of wind and, particularly, water. Earthquakes, however, are extremely rare and only natural to the southern province of Limburg; buildings collapsing and earthquake drills virtually unheard of. Yet this case study report deals with exactly this: it analyses spatial justice in the wake of frequent earthquakes that occur in the region of Northeast Groningen, the Netherlands. Moreover, these earthquakes are man-made, induced by the extraction of natural gas in the region. While they have a maximum force of only 3 to 4 on the Richter scale until now, they cause severe damage due to their shallow depth of about 3 km (against 10 km for the typical tectonic quake), the instable clay underground in which they occur, and the vulnerable brick buildings that were never constructed as earthquake proof.

Northeast Groningen is a peripheral, mostly rural region. It has its fair share of typical problems, such as an aging and declining population, a relatively high unemployment rate and a low education of the labour force. These problems may be more severe than in most regions within the Netherlands, but they are not unique to the region. The specific problems related to earthquakes, on the other hand, are. Therefore we choose to focus the case study on this issue, rather than on regional development policies in general.

Gas extraction and earthquakes

The extraction of natural gas in Northeast Groningen began in 1963 after the discovery of the enormous 'Groningen field'. National government granted the right to exploit the field to a dedicated company, the Maatschap Groningen, which was owned by Energiebeheer Nederland (EBN), itself a 100% state company, and by the Nederlandse Aardoliemaatschappij (NAM), a partnership of Shell and ExxonMobil that already exploited some smaller oil and gas fields. Sale and distribution of the gas were also largely in the hands of state companies (GasTerra and Gasunie respectively), with participations of EBN and NAM. Despite the complexity of this construction in fact only three actors are involved: Shell, ExxonMobil and the Dutch State. The latter effectively means the ministry of EZK, as even today no other ministries are involved in either the gas extraction or the earthquake dossier (Int. 8).

Over the decades the gas from Groningen earned the Dutch state an estimated amount of around 250 to 300 billion Euro from different sources. Gas revenues amounted to up to 10% of the national government's income in recent decades (Stiller, 2018: 161) even mentions a share of 25% in the 1980s), making them an indispensable source of income for the State. Dutch society shifted from coal gas to natural gas within a few years, while a large portion of the gas was exported for relatively low prices. Revenues from the Groningen field largely paid for the expansion of the Dutch welfare system in the 1970s (Stiller, 2018: 161). Financial benefits for the region were minimal, however (Commissie Meijer, 2013:16).

In 1986, the first earthquake that was considered as being related to gas extraction occurred near Assen, south of the main gas field; since then, well over 1300 earthquakes have been registered in Groningen (GBB, 2019). A turning point in many aspects was the earthquake near Huizinge in 2012. Before 2012, national government and the NAM paid only little attention to the earthquakes in Northeast Groningen and were relatively generous when compensating for the then much smaller damage. The Huizinge quake, however, caused extensive damage and forced authorities to respond. We therefore take this earthquake as a starting point for the Action as considered here.

Spatial justice and the Action in Northeast Groningen

Spatial justice in this case concerns the consequences of the earthquakes, which are several, and which are addressed by multiple policy measures that have varied considerably over time. Accordingly, the **Action** refers not to a single policy, but to the collective of policies and measures to compensate for and repair earthquake damage (curative) as well as to prevent further damage (preventive).

Initially, this involved primarily the **distributional dimension** of spatial justice, as people in the region felt deprived from their right to safety, health and financial security. This called for curative measures such as financial compensation of damage to houses and businesses, compensation of value depreciation and loss of income, and treatment of mental health problems related to the earthquakes, and for preventive measures including the reinforcement or renewal of buildings that are deemed unsafe, the prevention of health problems, and policies addressing the cause of the earthquakes itself, i.e. the gas extraction.

While the distributional dimension of spatial justice still is at the hearth of the earthquake problem, the focus has gradually shifted to the **procedural dimension**. This is partly due to exactly those policies that have been implemented to address distributional injustice, but have resulted in a very complex institutional framework that is experienced as being imposed on the region by the national government, and is widely considered ineffective, inefficient and unfair. In other words, the implementation of elements of the Action itself further contributed to feelings of procedural spatial injustice. Apart from this, some regulation around the gas extraction itself has been perceived as unjust by many, particularly concerning liability, the ownership of the gas and the distribution of the revenues.

The effects of the earthquakes more or less affect the entire case study area, whereas the responsibility for both the gas extraction itself and for the measures for compensation and prevention of damage (i.e. the Action) all lay with stakeholders outside the region. As a result, spatial justice in Northeast Groningen is not primarily about differences within the region, but of a region that is to a large extent united against the injustice that is imposed on it by the national government and the oil industry.

Connection to national and European policy strategies and academic discourse

While in this report we apply a relatively narrow definition of the Action, the problems with gas extraction and induced earthquakes are related to a range of policies and institutions concerned with broader **national policies**. These are, notably, regional development and energy transition. The first because, apart from the specific issues discussed above, Northeast Groningen also is a peripheral and relatively poor region. The second because termination of the gas extraction in Groningen will require the Netherlands to look for alternatives as soon as possible, either other sources of energy or imported gas. The latter should be of a different composition than gas from the Groningen field and can only be used in Dutch households when mixed with nitrogen. In addition to these challenges, termination of the gas extraction confronts the national government with a large decrease in income, as well as with possible claims from Shell and ExxonMobil.

In contrast to this, we found no reference – neither in literature nor interviews – of any **EU policies** addressing the issue of earthquake damage in Groningen (Int. 2, 6). Projects in the region may be funded by structural funds such as the ERDF, but these are not related to the specific topic discussed here.²

² In fact the gas extraction only proved a disadvantage when it comes to EU funding, as Eurostat tend to wrongly attribute all revenues to the Province of Groningen, making it one of the richest regions in Europe on paper.

Finally, the absence of a coherent **academic discourse** can be noted (ORV, 2015: 64; Brandsma *et al.*, 2017: 20-1; Int. 1). While some research is carried out on for instance the geological situation, the health effects of the earthquakes and the effects on the housing market, this is done in a rather ad hoc way and mainly (with the exception of a body of research carried out at the University of Groningen) by non-academic institutions such as the meteorological institute (KNMI), the safety board (OVR) or the Public Health Service Groningen (GGD). Meanwhile, much remains unknown about these induced earthquakes vis-à-vis natural quakes that have been studied much more intensively over time.

2. Methodological Reflection

An enormous body of literature and research exists concerning the earthquakes in Groningen. Also, interviews proved more difficult to plan, not only due to distance and available time, but also because of a certain weariness with the repeated rounds of research – apparently without consequences – in the region. Indeed, in a few cases we were confronted with reluctance or refusal to give another interview ‘while nothing really happens’, which we have to admit is understandable. In fact, this was also the main reason not to pursue the organisation of a workshop in Groningen. Therefore, rather than on the number of interviews, we focused on covering all main perspectives: regional and local government, health, legislation, economy and various interest groups. Nonetheless, most stakeholders that we did approach were willing to discuss the issues at hand often in detail and at great length.

Although the concept of spatial justice is not an easy one to explain to interviewees, we did not meet large problems regarding this. This is probably due to the fact that feelings of injustice of the region versus the national level (rather than within the region) have existed in the region for a long time. This said, we here refer to a sufficient basic understanding of the concept of spatial justice, rather than a sophisticated academic understanding.

Finally, given the nature of the topic it should not come as a surprise that interviewees tended to be emotionally involved. Several interviewees mentioned that they had (sometime extensive) earthquake damage occurred to their own homes or working places (Int. 3, 5 and 9). Yet the tendency to talk ‘off the record’ was very limited. We as researchers felt this engagement as well, more so than in most projects.

3. The Locality

3.1 Territorial Context and Characteristics of the Locality

The locality, or case study area, in which the Action takes place consists of ten (as of 1 Jan. 2018) municipalities in the province of Groningen: Groningen, De Marne, Winsum, Bedum, Ten Boer, Midden-Groningen, Eemsmond, Delfzijl, Loppersum and Appingedam.³ This is an approximation of the area considered most vulnerable to non-natural earthquakes, covered by the Meerjarenprogramma Aardbevingsbestendig en Kansrijk Groningen (NCG, 2015: 64). The exact area is demarcated on the basis of Peak Ground Acceleration (PGA) contours. Thus, the main elements of the Action take place in the area within the 0.1g PGA contour (which in practice amounts to most of the area), the 0.2g contour or the 0.3g contour⁴. Since these contours themselves are widely disputed, and changing over time, the exact area in which an element of the Action takes place is not in all cases unambiguous.

Table 1 presents the basic socio-economic characteristics of the case study area. Where appropriate, it differentiates between the city of Groningen and the remainder of the area, which is largely rural. Figure 1 shows the municipalities involved.

Name of Case Study Area	Northeast Groningen
Size	1,738 km ²
Total population (2016)	367,505 (of which ca. 200,000 in the municipality of Groningen)
Population density (2016)	211 inhabitants/km ² for the entire area (2,549 for the municipality of Groningen and ca. 100 for the other municipalities).
Level of development in relation to wider socio-economic context	Disadvantaged within a region that for the largest part lags within the Netherlands.
Type of the region (NUTS 3-Eurostat)	Intermediate (but with large internal differences)
Name and Identification Code of the NUTS-3 area, in which the locality is situated (NUTS 3 Code(s) as of 2013)	NL111 (Oost-Groningen), NL112 (Delfzijl en omgeving) and NL113 (Overig Groningen).
Name and Identification Code of the NUTS-2 area, in which the locality is situated (NUTS 2 Code(s) as of 2013)	NL11 (Groningen)

Table 1: Basic socio-economic characteristics of the area (Source: Statistics Netherlands; Eurostat)

³ Due to an ongoing process of merging municipalities the number of municipalities involved has been decreasing from 12 to 9 over the period studied, while the area involved stays the same.

⁴ Peak Ground Acceleration is used as this is a more accurate criterion to estimate earthquake damage than the Richter scale, as it measures the actual acceleration on the surface. PGA is expressed as g (gravity) with $1g = 9.81 \text{ m/s}^2$. The Nationaal Coördinator Groningen (NCG) makes use of PGA contours that correspond to an imaginary earthquake of magnitude 5, calculated by the Koninklijk Nederlands Meteorologisch Instituut (KNMI). These calculations are updated regularly, meaning that the PGA contours based on them may change over time. Moreover, NAM and SodM calculate PGA on the basis of a different model, thus resulting in different PGA contours.

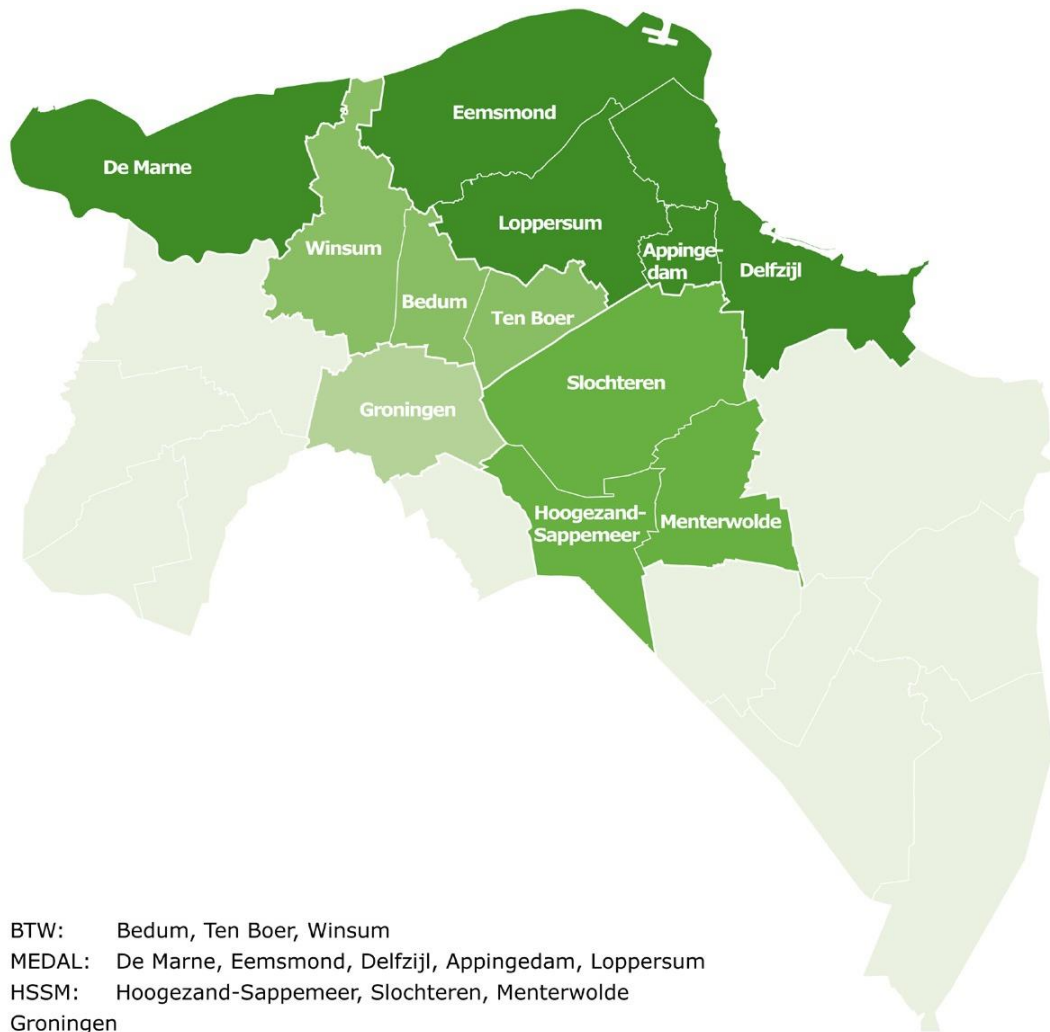


Figure 1: Location of the case study area and its sub-regions (municipalities as of 31-12-2017). Shades of green indicate the various administrative sub-clusters mentioned below and do not represent the degree of vulnerability to earthquakes (Source: NCG, (2015: 64))

3.2 The Locality with regards to Dimensions 1 & 2

Analytical Dimension 1: Perception of spatial (in-)justice within the locality

Northeast Groningen is a peripheral region within the Netherlands and severely suffered from industrial decline in the 1960s and 1970s, when for instance a large part of the strawboard and potato flour industry disappeared, while planned investments in for example chemical industry lacked behind expectations. The discovery of natural gas brought some direct and indirect employment to the region, but gas extraction could never provide the large-scale employment as some other types of mining. Otherwise, the gas extraction brought little direct income (Heite (in: RUG, 2019: 57) mentions a share of less than 2% of the total revenues of 300 billion Euro). According to the Dutch Mijnwet (Mining Act) from 1810, all mineral resources are owned by the Dutch state, while the land owner (in Groningen typically farmers) only receives compensation for the use of their land. Local and regional authorities also received no fee; when such a fee was indeed introduced later, it did not apply retrospectively

In this context, it is remarkable that when the Fund Economic Structural Reinforcement (Fonds Economische Structuurversterking) that was fed directly by gas revenues existed between 1995 and 2011 less than 1% of these funds were invested in the region of Groningen itself (Commissie Meijer, 2013: 16; Int. 4). For decades, this distribution was somewhat reluctantly accepted; with hindsight, however, this is where the first feelings of spatial injustice originated (Int. 4). The situation changed dramatically, however, when the first earthquakes occurred, and even more so when they became increasingly frequent and damaging. These problems – and the way they were dealt with – became larger and in fact incomparable to the ‘regular’ problems of a peripheral region, due to the strong feelings of uncertainty, frustration, fear and anger and loss of trust in the government they brought about (NCG, 2015: 17).

Spatial injustice related to the earthquakes in Northeast Groningen manifests itself in many ways, which affect people’s right to safety, economic security, health, and even the right to be taken seriously by one’s government. Various effects of the earthquakes mutually influence each other and are hard to disentangle. At the same time, they are partly addressed by different policy measures. Despite this, we will try to describe the main impacts of the quakes and how they are perceived as spatial injustice.

Distributional spatial injustice

First, distributional spatial injustice concerns **material damage** to buildings and infrastructure such as dikes. Numerous houses and other buildings in the area have been damaged and in some cases demolished (see cover photo). The numbers involved are considerable: Postmes *et al.* (2016; 2017) calculated that the population in the area that suffers earthquakes amounted to 410,000 people, one sixth of which reported a single damage to their houses, and another sixth multiple subsequent damages. The Groninger Bodembeweging (GBB) confirms that as of February 2019, over 85,000 people in the area have reported multiple damages, while a total of 101,313 claims have been filed since the Huizinge quake in 2012.⁵ Over 100 buildings have been demolished because of earthquake damage.⁶ Earthquake damage and the danger of demolition is a particular risk as well for the **cultural heritage** in the area, which includes numerous monuments (notably many medieval churches). In the cases of businesses whose premises were closed, **loss of income** may be added to this.

A second type of damage is the **decrease in value** of houses. This does not just concern houses that have been damaged. Ultimately, value depreciation may affect as much as 100,000 home owners and housing associations (Int. 5). Due to the earthquakes, the perception of Northeast Groningen as a residential area has deteriorated, leading to a distorted housing market with lower prices and a significant number of houses that are unsaleable. This is hard to quantify, as the decrease in value is additional to the effects of being a peripheral region and a shrinking population, and varies considerably between locations. De Kam (2016: 3-4) estimates the total decrease in value at 954 million Euro, an average of 3%. Locally, however, value decrease may be as high as 11%. This is disputed by NAM, based on research by Bosker *et al.* (2016). In fact these studies probably are too optimistic, as their estimations are based on actual sales, thus neglecting the houses that are unsaleable. For home owners, value depreciation or the inability to sell their house may cause financial insecurity and even (occasionally) mortgage issues as the value of the collateral is less than the loan; for municipalities, it means lower real estate tax revenues.

The earthquakes have severely damaged the image of Northeast Groningen not just as a residential area, but also as a place to invest. This is reflected in a **deterioration of**

⁵ GBB: <https://www.groninger-bodem-beweging.nl>

⁶ As of 31 January 2019, <http://database.hetverdwenengroningen.nl>

the entrepreneurial climate. Again, this reinforces the problems of unemployment and stagnation that hampered the development of the region in the first place.

Procedural spatial injustice

In addition to the experience of distributional injustice, there is a wide-spread and increasing perception of procedural injustice. This includes the feeling of being powerless, of not being taken seriously. These feelings have evolved over time, largely due to the policies and measures that were taken and the way they were implemented. These will be discussed under Dimensions 2 and 3; for now, it suffices to say that the procedures for both the compensation of damage and the preventive reinforcement of buildings are very lengthy and complicated, and are experienced as highly unfair (NCG, 2016: 8).

Apart from the specific measures taken, an almost general distrust has developed in the NAM and the national government (NCG, 2015: 17). The perception in the region is that, at least until recently, the real intention of the national government has always been to maximize the revenues from the Groningen field; for the NAM, being an oil company, this seemed even more obvious. Due to the arrangements made within the Maatschap Groningen, an increase in the gas extraction in a certain year not only means proportionality higher, but also disproportionality higher revenues for the State. This, while the State typically receives around 75% of the revenues, this increased to over 90% when the gas extraction peaked around 2013. This means the State has a double incentive to increase gas extraction.

During the first decade of the gas extraction the NAM provided a fair compensation for all damage done, even with regard to the first earthquakes. However, when it became clear there would be more frequent quakes, the NAM denied (and even ridiculed) every relation between the earthquakes and the gas extraction; even now, after years of damaging earthquakes, it is reluctant to acknowledge an unambiguous relation.

Already in 2013, the Commissie Meijer (2013: 18; 24) concluded that this attitude of the NAM eroded not just peoples' trust in the NAM and the national government, but also the acceptance of the gas extraction itself. It concluded that the situation in Groningen had the potential to escalate and required extraordinary measures to restore the relation between the region and the national government.

Mental and health effects

The experience of distributional and procedural spatial injustice leads to a range of secondary effects in the form of stress, anger, fear, anxiety and eventually health problems. Damage to your house, reinforcement of your house and the need to move temporarily or permanently, worries about the safety of your house or the impossibility to sell and move, even the demolition of your house all can cause enormous stress, which is reinforced by the lengthy and complex procedures and feelings of injustice. Gas extraction and the consequent damages have increasingly taken control over many people's lives; both psychologically and in terms of behaviour. People are reported to have to spend up to 30 hours a week on their damage claims (Int. 8). OTB (2016: 74) reports that one third of the inhabitants in the region does not feel safe at home. People do not dare to go on holiday anymore and children do no longer stay overnight with grandparents who live in an 'earthquake municipality'. A particular striking image in this regard are the children hiding under the table during an earthquake drill at school (Figure 2).

Most people are able to cope with these problems reasonably well. This is different, however, for people who experience multiple damages due to successive earthquakes (Int. 3, 8). This group is significantly more likely to experience unhappiness, despair and mental problems (GGD Groningen, 2017; Stroebe *et al.*, 2018). Another risk group consist

of people already struggling with problems such as a divorce, disability or unemployment (Int. 3), implying that the ability of people to cope with the impact of earthquake damage partly depends on their socio-economic status as well. Psychosocial problems may initially occur at the individual level, but in time may erode the resilience of communities as well (OTB, 2016: 74).

On the whole, a significantly larger share of people in the earthquake region suffer from health issues compared to other regions (Int. 3). The problems observed are comparable to the problems that typically occur after a natural disaster (In. 8); with regard to Northeast Groningen we may indeed speak of a 'disaster in slow motion'.



Figure 2: Earthquake drill on primary school de Zaaijer in Delfzijl, 12 December 2016 (Photo: © Jan Zeeman).

Differences within the region, between regions and between levels of government

The occurrence, the impacts and the unequal spatial distribution of damage in the area due to earthquake is common knowledge. Regional press takes note of it on an almost day-to-day basis (Perlaviciute *et al.*, 2017: 2), several books appeared on the issue (e.g. Brandsma *et al.*, 2017 and Stiller, 2018) and almost each resident of the area knows about (other) victims, if not know them personally. It is illustrative in this respect that several of our interviewees mentioned they also had earthquake damage at home or in their working place (Int. 3, 5, 9).

Do stakeholders also have an explicit awareness of these issues in terms of spatial (in)justice? The answer depends on the component and level of scale that one takes into consideration. At the intra-regional scale, both the distributive and procedural component of the impacts of the earthquakes are not understood in terms of spatial justice. Damages caused by earthquakes are distributed unequally in the area, but that is as such not considered a 'territorial distribution of any form of social injustice' (Madanipour *et al.*, 2017: 18). On the contrary, there seems to have developed a general sense of solidarity in the province with the victims, also in the areas that do not or less suffer from earthquakes. As

to the procedural component, there is much anger, in retrospect, that the procedures to divide the revenues of gas extraction have always been developed and controlled by the national government, that the procedure (and certain involved actors) have become increasingly shadowy, and that the region has barely shared in the revenues – neither directly nor indirectly.

Accordingly, this is not primarily a case of spatial injustice within a region as between Northeast Groningen and the national government. However, there are instances in which injustice is experienced within the region as well. These are minor compared to the overall issue, but nevertheless should be mentioned.

First, there is the difference between the municipalities most vulnerable to earthquake damage (see Figure 1) and those that are less (or not at all) vulnerable. Municipalities that experience only minor damage tend to disassociate themselves to some extent from the issue, in order to avoid the label of ‘earthquake municipality’ (Int. 6, 8). This is true for some smaller rural municipalities, but also for the city of Groningen.

Differences are experienced as well between individuals or groups that are more or less able to defend their interests and deal with for instance NAM, because they are more articulate or educated, or have a larger influence due to sheer size. Examples are the city of Groningen, which successfully claimed 68 million Euro for the reinforcement of the new Forum building which was still under construction, the home owners and housing associations united in the Stichting Waardevermindering door Aardbevingen Groningen (Stichting WAG), which in a class action successfully claimed compensation of value reduction, or some articulate individuals who have featured in reportages and discussion on the earthquake damage (Int. 1, 5). Yet, while this may be perceived as ‘those people who can take care of themselves’, there may be spin-offs to broader groups; the claims by WAG, for instance, may have positive implications for all similar cases not involved in the class action (Int. 5).

Finally, difference occur between home owners and renters (Int. 1, 7). The latter feel less represented (although they are represented in the Groninger Gasberaad, an association of a wide range of regional stakeholders), as damage claims focus on the interest of the owner of the building – in the case of rental houses typically the housing associations. Nonetheless, it is the renter who has to cope with the inconveniences of damage and repair, anxiety or even fear.

Analytical Dimension 2: Perception of policies and policy measures ⁷

A large part of the perceived injustice in Northeast Groningen is related to the way public authorities have dealt with the impact of the earthquakes. Section 4 will discuss the various policy measures that make up the Action in this case, as well as their implementation. This section, on the other hand, will focus on the more general approach taken by various stakeholders, and its effects on spatial injustice in Northeast Groningen.

The two main elements of the Action in Northeast Groningen are the compensation and repair of earthquake damage (i.e. curative measures) and the reinforcement of buildings that are considered unsafe (preventive measures). These are to a large extent different trajectories, which involve largely the same stakeholders, although sometimes in different roles.

Compensation and repair of earthquake damage started before reinforcement, right when the first earthquakes occurred. At the time compensation by NAM was rather generous, but this changed when damage became more frequent and extensive. The NAM

⁷ The initial title of this section referred to ‘policies for development and cohesion’, but these as such are not the focus of the Action as discussed here.

often denied any relation of damage to earthquakes, and until today its successor organisations in the assessment of damage sometimes use outlandish excuses to avoid paying compensation, which are often experienced as downright insulting (Int. 9).⁸

The main problem is the independence of the damage assessment. Initially this was done by NAM itself, an obvious case of the auditor marking his own paper (Int. 1, 4, 9). Subsequent changes aimed to make damage assessment more individual, but for a long period assessors still worked for a 'daughter' of NAM (i.e. CVW), paid by NAM and assessing according to a format defined by NAM. This type of conditioning even influences the current assessors who have been 'trained' under the NAM regime (Int. 4). The general picture is that of experts negotiating with people who often do not have specific expertise on the topic, about the damage to their house, the quality of the repairs, or even the sale, demolition and rebuilding of it (Int. 1). With each change in the procedure, time was lost and complexity added. Claims have to be transferred, information is lost (Int. 4). In effect, there was a serious arrears of already about 18,000 damage claims at the time of the interviews (January 2019).

Reinforcement of unsafe buildings was initially based on inspection of buildings within certain Peak Ground Acceleration (PGA) contours, demarcating the area considered most vulnerable to earthquakes (see Section 3.1) (NCG, 2015; 2016). This caused discussion about specific case of damage just outside these contours. Moreover, different PGA calculations exist, which are regularly adjusted. Also, as certain parts of the gas field – notably the main field near Slochteren – were closed, extraction in other parts increased, causing the earthquakes to 'move' accordingly.

Since 2018, reinforcement is based on a computer model, the Hazard and Risk Assessment (HRA).⁹ This still leads to feelings of injustice, as for instance identical houses in a row may receive very different assessments. Also, HRA outcomes often contradict the results of previous inspections and the agreements and plans based on these (Int. 2, 9). This again increased uncertainty for home owners and entrepreneurs.

Many in Northeast Groningen suspect these changes mainly aim to extend the gas extraction, reduce the number of houses that have to be reinforced and rebuilt houses at a bargain price, at the costs of the regions cultural heritage. These suspicions are fed by specific decisions by the national government, notably the decision in 2013 to increase the level of gas extraction to a record high despite an advice from Staatstoezicht op de Mijnen (SodM, the Dutch Mining Safety Board) to strongly reduce it for safety reasons, and the decision in 2018 to put the reinforcement of houses temporary on hold. The latter was announced not long after the national government decided that the extraction of gas would be phased out (Int. 3, 9). Whether or not there are reasonable grounds for the decision to postpone the reinforcement operations is still a matter of debate, but the message to the region was again one of financial considerations dominating over safety and well-being (Int. 2).

Several interviewees also suggested these continuous changes in the procedures are a way to buy time while actually not doing anything meaningful (Int. 4, 6, 7). The series of studies commissioned by the minister of EZK in 2013 (rather than following the advice by SodM to significantly reduce gas extraction) are widely seen from this perspective as well. With respect to the seeming reluctance of the minister at present, interviewees suggest national government may be overwhelmed by the consequences of the decision to phase out the extraction of gas, notably a substantial loss of income and a confrontation

⁸ Examples, some of them quite recent, are 'your horse/couch/neighbour is too heavy', 'all houses from the 1970s have cracks' or 'your daughters have been in the shower for too long'. An overview (in Dutch) can be found at <https://aardbevingeningroningen.net/2015/12/04/het-grote-nam-smoezenboek/>

⁹ Regionally known as the 'killer robot'.

with Shell and ExxonMobil about the costs of damage compensation and reinforcement, and for the considerable amount of gas that will remain unexploited (Int. 2).

An effect of these complex and continuously changing procedures and institutional arrangements is that filing a damage claim or getting a decision on the reinforcement one's house is a lengthy, very complicated process that tends to occupy people – who are no experts per se – for a long time, makes them lose hope and control (Int. 1, 4, 6, 8). The Commissie Meijer (2013: 25) based their advice partly on the Treaty of Aarhus, which concern the access of citizens to appeal procedures; a fundamental right which it considered at risk in the Groningen earthquake dossier.

Since then, things have not improved in this respect. Increasingly, it seems that not earthquake damage per se breaks people's spirits, but the almost Kafkaesque situation in which they find themselves trapped (Int. 4; De Kam & Raemaekers, 2014: 6; RUG, 2019: 57). We may conclude that measures that (at least nominally) aim to solve distributional injustice actually increase procedural injustice, i.e. that part of the Action as discussed here can in fact be considered to be counterproductive.

The groups of people who are affected by earthquakes blame the procedural component of the Action to be highly unjust. They do not, however, attribute their anger to local authorities. On the contrary, it is a rather generally shared opinion that the provincial and municipal authorities in Groningen are 'on their side' in a common struggle with stakeholders on the higher levels of the national government and NAM. In this respect the fact that local and regional authorities have no financial stake in the gas extraction at all, and thus are assumed to have no other main interest than the safety and well-being of the population – in sharp contrast to the enormous financial interest of the national government – is very important. This is a main reason local and provincial authorities are widely trust, while the national government is perceived as to take sides with NAM (Van der Voort & Vanclay, 2015: 5; Helmich, 2018: 16) whose main economic interest it shares.

In fact the role of especially local authorities is not as might be expected. They are not involved in the assessment and repair of damage, and do not have knowledge on the damage cases in their municipality (see Section 4.2). In the case of reinforcement, municipalities are supposed to make an action plan for temporary housing and rebuilding of unsafe houses, but in terms of which houses are considered unsafe they cannot deviate from the HRA model. This is not always understood by inhabitants, who look to the municipality for support (Int. 9).

Table 2 summarizes the findings related to Dimensions 1 and 2. It is clear that spatial justice in Northeast Groningen is experienced on different levels, both distributional and procedural.

scale	distributional injustice	procedural injustice
Northeast Groningen vs. national government / Netherlands	<ul style="list-style-type: none"> Northeast Groningen disadvantaged in a number of ways: damage, income loss, image, value, health, heritage etc. solidarity of Groningen vs. national government 	<ul style="list-style-type: none"> until ca. 2012 denial 2013: record level of extraction after 2013 institutional maelstrom: new institutions, organisations, criteria, measures, capacities
within Northeast Groningen	<ul style="list-style-type: none"> very local inequality due to reinforcement criteria NCG: area-based approach (PGA contours) TCMG: object-based approach (HRA) 	<ul style="list-style-type: none"> local approach to reinforcement, based on external assessment perception of injustice among similar cases, but overall trust in local authorities local authorities not involved in damage claims

Table 2: Overview of Dimensions 1 and 2.

4. The Action

4.1 Basic Characteristics of the Action

Organisation of the gas extraction

A description of the Action in Northeast Groningen is impossible without a basic understanding of the specific way the gas extraction in the Netherlands has been organized. After the discovery of the Groningen gas field in 1959, national government granted the right to exploit the field to a dedicated company, the Maatschap Groningen. This is owned for 40% by Energiebeheer Nederland (EBN),¹⁰ itself a 100% state company, and for 60% by the Nederlandse Aardoliemaatschappij (NAM), a combination of Shell and ExxonMobil¹¹ that already exploited some smaller oil and gas fields. Both Shell and ExxonMobil are publicly traded companies whose strategy is likely to be defined to a large extent by shareholder value. Despite their different shares in terms of ownership, NAM and EBN both have 50% control over the Maatschap. Sale and distribution of the gas are also largely in the hands of state companies (GasTerra and Gasunie respectively), with participations of EBN and NAM (Figure 3).

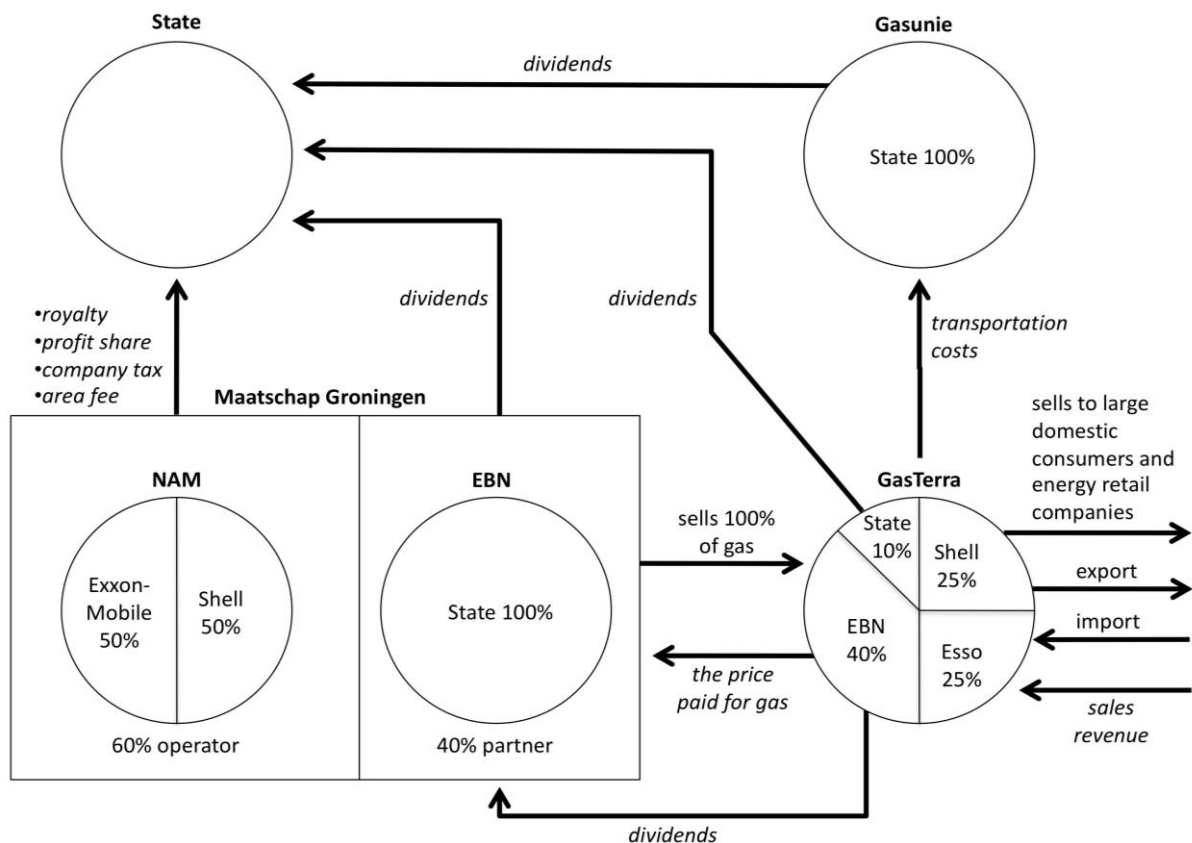


Figure 3: The actors and money flows (italic) involved in gas production (Source: combination of Figures 4 and 5 from Van der Voort & Vanclay, 2015: 4-5)

¹⁰ Then named Staatsmijnen.

¹¹ Then named the Bataafsche Petroleummaatschappij and Standard Oil of New Jersey respectively.

As Figure 3 shows, despite the complexity of this construction in fact only three actors are involved: Shell, ExxonMobil and the Dutch State. The latter effectively means the ministry of EZK, as no other ministries are involved in either the gas extraction or the earthquake dossier. Nonetheless, the precise involvement of the state and the decision-making by ministry of Economic Affairs particularly has been rather unclear until recently, as some of the mutual agreements were deemed highly classified.

As Figure 3 shows, the State gets by far the largest part of the revenues from the Groningen field. These comes as a regular profit share, company taxes and dividends. Altogether, the State's share in the revenues from the Groningen field is about 75%, but increases to as much as 95% when the level of extraction is increased; thus, the State has a double incentive to raise the extraction level.

Outline of the Action, 2012-2019

As mentioned in Chapter 1, we consider the earthquake near Huizinge in 2012 as the starting point of the Action as analysed in this case study. This is to some extent an arbitrary decision, as earthquakes had occurred many times before, but at the same time there are good, and broadly accepted, reasons to consider the Huizinge quake a turning point. With a force of 3.6 on the Richter scale (Koster & Van Ommeren, 2015: 123), this was the heaviest quake until then, causing extensive damage and forcing authorities to respond. It started a long and winding road to a solution of the problems, which has proved for many in Northeast Groningen to be quite dissatisfactory and frustrating.

After the Huizinge quake, SodM in 2013 published a report forecasting more and possibly stronger earthquakes, and advising a strong reduction of the level of gas extraction to 12 billion Nm³ a year. In sharp contrast to this advice, the then minister of EZK Henk Kamp, insisting that no absolute scientific evidence for the cause of the quakes was available, commissioned a series of detailed studies. Many in Groningen considered this a way to buy time, the more so while Kamp increased (rather than decreased, as advised) the level of extraction to 54 billion Nm³ in 2013. The latter decision in particular led to strong feelings of anger and distrust in national government, that last until today.

Unsatisfied with this response of the national government, the Province of Groningen installed an independent committee – the Commissie Meijer – to investigate the problem and propose policies. Its report, published in 2013 and still relevant today, noted an alarming level of feelings of unsafeness, anxiety and distrust and presented a long list of suggestions along three lines: 1) providing safety and perspective to inhabitants and businesses in the area; 2) improving the quality of the living environment; 3) providing a sustainable economic perspective (Commissie Meijer, 2013: 6-7). The first of these largely corresponds to the Action as defined in this case study. It entailed measures to reinforce buildings, improve the procedures for compensation of damage and measures to compensate for the value depreciation of buildings. In addition, the report proposed the installation of a 'Dialoogtafel', a platform of the various levels of government, the NAM and a range of stakeholders and interest groups, most notably the Groningen Bodem Beweging (GBB). The Dialoogtafel was succeeded after only one year by the Groninger Gasberaad due to internal conflicts, which did not include national government and the NAM. It also led to the establishment of a dedicated government agency, the Nationaal Coördinator Groningen (NCG), to deal with the problems in the region itself.

In the end almost none of this worked out well, in ways that will be discussed in later chapters. Three main problems were, and remain today, the inspection and compensation of damage, the assessment of buildings that need to be reinforced, and the compensation of value depreciation. Inspection and assessment was done by subsequently the NAM (which also caused the damage), the Centrum voor Veilig Wonen (CVW), the Tijdelijke Commissie Mijnbouwschade Groningen (TCMG) and soon the Instituut

institutions in which citizens have to find their way (Figure 4).

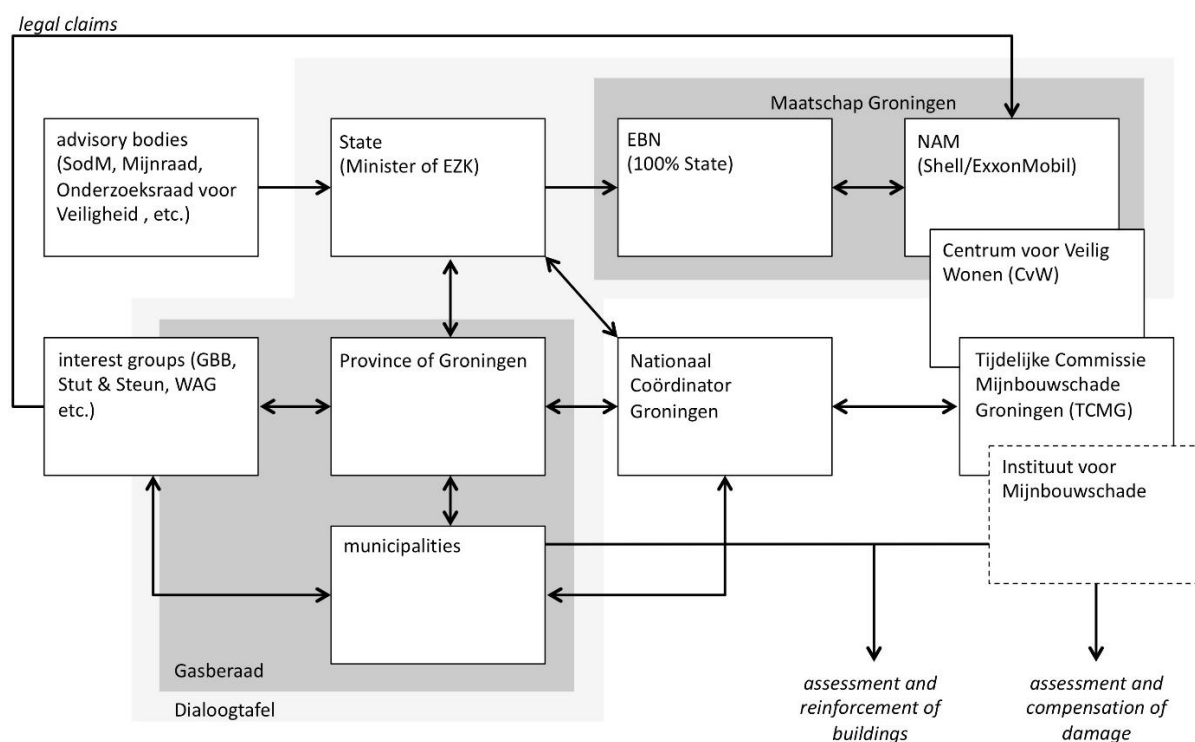


Figure 4: Overview (non-exhaustive) of the main actors involved in the earthquake dossier.

Meanwhile, after the increase in 2013 the gas extraction was gradually reduced and while numerous smaller quakes occurred, there was some hope that the situation might stabilize. In this context the earthquake near Zeerijp on 8 January 2018 was quite a blow, as it showed that the situation had not significantly improved. In fact, although the quake near Zeerijp was slightly weaker than the Huizinge quake with 3.4 on the Richter scale, ground acceleration was considerably higher (SodM, 2018: 2). SodM once again repeated its advice from 2013, to reduce the gas extraction to 12 billion Nm³ and to close the sources around Slochteren in the most vulnerable part of the region (SodM, 2018). This was followed by the official decision by Eric Wiebes (who had succeeded Henk Kamp as minister of EZK in 2017) to not only reduce the extraction to 12 billion Nm³ as soon as possible, but to terminate extraction from the Groningen field entirely by 2030. This was however, quickly followed by the decision to halt and reassess the reinforcement of buildings. Not surprisingly then, feelings in Groningen quickly changed between celebration, frustration and most of all confusion.

The final episode in this story involves the planning of a Nationaal Programma Groningen, a national programme not unlike the one in Rotterdam.¹² This would be much

¹² See the case study report on Rotterdam. However, all stakeholders in Rotterdam South shared a common diagnosis of the problems in this city district, which makes it relatively easy to formulate

broader than the Action as discussed here, addressing regional development and sustainability of the region, and would reduce the role of the NCG to a mainly administrative one (EZK, 2018; Int. 2). Only an outline has been presented so far.

Figure 5 presents a timeline of the Action from the founding of the NAM in 1947 until the present.



Figure 5: Timeline of the gas extraction and the Action.

policy approaches. Merely establishing a Nationaal Programma because it works in Rotterdam does not imply that it will be successful in any way in Groningen.

4.2 The Action with regards to Dimensions 3-5

Analytical Dimension 3: Coordination and implementation of the Action in the locality under consideration

The process of implementation of the Action in the region is different for the curative and the preventive components of the impacts of gas exploration. As to the coordination and implementation of payment of compensation for damages - the curative component - stakeholders in the locality are hardly involved. Until the severe earthquake near Huizinge in August 2012, payment of compensation for damage was fast and generous by the NAM as the causative agent of the earthquakes. NAM gave as little publicity as possible to these payments (Int. 1, 4). The situation changed fundamentally after the Huizinge earthquake in the sense that both number and magnitude of damage claims significantly increased: 'Huizinge' was indeed the turning point in this respect. In response, a trend of ever more rejections of claims by inhabitants of people affected by earthquakes became obvious, some for very creative but not very convictive arguments (Int. 4). In the region, the opposition to the idea that the NAM was 'the butcher who inspected his own meat' increased.

Following this growing opposition, a Dialoogtafel was installed as a discussion platform for all main stakeholders.¹³ This was the first action in the a series of adjustment of the institutional structure of compensation by means of the foundation of new organisations (see the timeline in Figure 1) and implementation of new procedures. According to some, this rapid sequence of institutions without analysing why the previous ones failed, and in some cases even without abolishing these, seems (!) a deliberate political strategy as a way out: "one can raise the impression to work actively on a solution and emphasise that a new institution needs some time to getting started in order to cover up the lack of a radical solution. An effect is the rapid increase of the number of untreated claims due to delay caused by transfer of files to new institutions" (Int. 4).

Overall, this process of adjustments since 2012 has meant a gradual shifting of responsibility for compensation from NAM to the ministry of EZK. But apart from these two non-local stakeholder, new local and regional platforms that have been founded alongside since 2012 to defend the interests of the communities and their inhabitants in the region have not been enabled played a significant role in the coordination and implementation of the Action in the locality. The Dialoogtafel was dissolved by the NCG – ironically, the foundation of NCG was one of the initiatives of the Dialoogtafel – little more than a year after its installation due to a fundamentally different expectation by its participants of what it should accomplish. Most of the local platforms that participated (next to NAM, EZK, the Province and municipalities), including Groninger Bodembeweging, Groninger Dorpen, housing associations and SME organisation, "expected that compensation of damage should be settled at the Table, while NAM and EZK were willing to inform the local platforms about what they did and why but not to change what they did" (Int. 4).

This unequal 'balance of power' has not changed fundamentally since the termination of the Dialoogtafel. Local platforms have been included in discussions and negotiation with NAM and EZK about compensation but always played a subordinated role in the coordination of how damage can be compensated, in spite of the shared observation by most interviewees that they are a relatively well united front against NAM and EKZ. One local platform, the Foundation WAG, had little confidence in these negotiations and attempted to be compensated for the loss of value of its members' property by legal means, successfully as it now turns out. It is illustrative that NAM has attempted – in vain – to persuade

¹³ This was modelled after the Dialoogtafel dealing with problems related to the growth of Schiphol Airport.

WAG to leave the legal means and to come also to the negotiating table with EKZ to make a good deal (Int. 5).

Where the local platforms of citizens play a subordinated role in the dossier of damage compensation, municipalities play no role at all. Illustrative for this the quote by an alderman of one of the earthquake municipalities that “we even had to read it in the newspaper that the current minister Wiebes had decided to stop gas extraction” (Int. 9). Accordingly, due to privacy regulations, local governments don’t even know exactly who of their citizens suffer damage to their dwellings. That is reported to them only in case of dwellings that have become too unsafe to live in any longer. “Those citizens feel abandoned by their local governments but these are not informed about their damage” (Int.8).

Apparently, the local government plays a more active role in coordination and implementation of one type of preventive measures of the Action: reinforcement of dwellings to prevent damage from future earthquakes. It is a new responsibility of municipalities to make a detailed reinforcement plan that indicates which dwellings are eligible for reinforcement. But these are at best elaborations of the results of the use of computer models selected and implemented by others. Initially, the responsibility to decide which houses should be reinforced lied with the NCG who used a model (NPM) that applied an area oriented approach: larger areas within municipalities were indicated and all dwelling in these areas were inspected if they were eligible for reinforcement or not. With the termination of the NCG, the ministry of EZK decided to switch to a an object oriented approach by implementing another methodology, the earlier mentioned HRA. According to Int. 9, “the minister and his organisation expected that this would substantially reduce the number of dwellings to be eligible for reinforcement”. The effect could be that houses that were already inspected and were declared eligible for a certain level of reinforcement were assessed again, with the dual effect of delay of actual reinforcement work and the possibility that could be decided for a less thorough type of reinforcement. This is a similar effect that occurs occasionally with commitments made for compensation of damage due to continuously changing procedures and criteria.

For both compensation and reinforcement, of the ways how the Action has been ‘implemented’ has led to increased anger and despair among inhabitants in Northeast Groningen. Notably, in the municipality of the interviewed alderman (Int. 9), Appingedam, the selection of the dwellings eligible for reinforcement were highly similar for both methodologies. That made it relatively (!) easy for local government to stand up to honour all commitments that were already made to individual home owners. With success, the organisation responsible for evaluation of reinforcement plan – SodM – approved its plan recently.

Analytical Dimension 4: Autonomy, participation and engagement

At the lowest level, i.e. the local population of the municipalities that are most affected by earthquakes, participation in decision making with regard to the two dimensions of the Action is being done by local and regional interest groups. The first of these, the Groninger Bodembeweging, was set up in 2009. Its main objectives are to stand up for the interests of inhabitants whose dwelling are damaged by earthquakes, and to give publicity in the Netherlands as a whole to the problems related to gas extraction (Helmich, 2018). The number of such platforms has increased considerably since the severe earthquake near Huizinge in 2012, indeed the turning point in this dossier.

Most interest groups are set up autonomously by concerned or angry citizens. Some are still operating independently but quite a few have joined forces in the umbrella organisation Foundation Groninger Gasberaad. It was founded with the termination of the Dialoogtafel on the newly set up NCG’s initiative. NCG felt the need to create a partner in dialogue and the organisation themselves felt the need to continue join forces because

they were too small to operate individually. Gasberaad now also includes other types of organisations, such as housing associations, farmers and employers. In addition to interest groups set up by citizens, Kerk en Aardbeving is a spin-off of a non-gas extraction related institutions, the church. In addition to those directly and exclusively concentrating on protesting against the impacts of gas extraction (Figure 6) and calling for implementation of the Action, others have a more general scope and are not geographically limited to the affected municipalities. For those, for instance Groninger Dorpen the impacts of earthquakes is an additional item.

Taken together, the member groups of the Gasberaad and all other interest groups cover a wide range of specific objectives and scopes. In general, they respects each other's specific interests and opinions. There is some resentment now and then, for instance with Stichting WAG that only advocate home owners by legal means, but at the end of the day they support each other and work together closely when possible because they all share the common interests of a rapid, fair and generous implementation of the Action, against the partly (and previously almost completely) conflicting interests of the national government and NAM. In addition, they share anger and distrust to national government and NAM for the way how these deal with the Action (various Int). The range of interest groups that focus on the Action is very broad but, on the other hand, relations with other groups or Actions from outside the region are not found.

The quite close cooperation within the region, in spite of mutual differences, also includes local and regional authorities. These work together with a range of organisations and interest groups, such as health care organisations (Int. 3, 8), higher education, churches and employers, many of these also united in the Groninger Gasberaad (Int. 4). Cooperation between national government and other levels of government, on the other hand, is characterized by a long term distrust and lack of transparency. The province and municipalities occasionally join legal cases against EZK.

The various interest and viewpoints of interest groups are articulated through information, discussion and debate meetings with both levels of government in the region - municipalities (Int. 9) and the province (Int. 1) - and with NAM. Such meetings with the minister have not been organised yet: the minister himself decides when he plan to visit the region, and when he does, "he speaks 'spontaneously' with two inhabitants in order to be able to say 'damage control' in his next meeting with Parliament about the gas dossier" (Int. 9). After the severe earthquake near Huizinge in August 2012, the then minister Kamp only visited the region in January 2013 and suggested that the region better considered earthquakes 'a fact of life' (Int. 5). Under the Wiebes regime things seem to have improved somewhat at least in terms of intentions (if not always results) (various Int.) but very much damage has been done to the mutual trust. In addition to such meetings in the region, the viewpoints are articulated in the regional press, in court (Stichting WAG) and through organised protest like a big candle demonstration in the province's capital city.

Due to communication with interest groups, less formal stakeholders, the formal stakeholders, most in particular NAM, receive place-based knowledge that they can take into consideration in their decision-making with regard to the Action. At those meetings, there are opportunities for the interest groups to put new topics and questions on the agenda (Int. 1), and even to generate alternative options – such as a 'general amnesty' (Int. 4) arrangement for all people who suffer from damage. But place-based knowledge is also transferred by other means. A fine example is a tour of villages in the region means for managers of NAM organised by the Association Groninger Dorpen (Int. 7). It is beyond the control of local informal stakeholders however, if and what formal stakeholder has the intention to do with their input. That became already clear at the Dialoogtafel where NAM and EZK showed themselves willing to share information and to explain what they did but reluctant to change what they did.

And even about sharing of information, NAM and the national state were and still are quite selective. Crucial information about the agreements in the construction of actors and money flows involved in gas production (Figure 3) has been confidential already since its early days in the 1960s. Confidential, meaning secret, not only for the interest groups and others in the region but even for Dutch Parliament (Stiller, 2018).



Figure 6: Protesters at a gas extraction location near Blijham (Photo: © Huisman Media)

At this point, it can be no surprise that the fairness of procedures with regard to implementation is quite low. Local interest groups are dependent on the willingness of the two main formal stakeholders to what information they want to share and to what they do with their input in the discussions. Gasberaad is also financially dependent on EZK and will most probably lose its funding next year (Int. 4). Hence, their role is mainly reactive rather than proactive, if not in the procedure per se then in the outcomes. And in cases that a fair deal have been made with the managers of NAM, these can be weakened or undone by 'The Legal', the legal department of Shell, one of the two parent companies of NAM (Brandsma *et al.*, 2017). In addition, we can conclude that there is a pretty extreme power (im-)balance between many local and regional stakeholders, especially when not formal, and the national government and NAM. In fact, this is one of the reasons for anger and distrust at the root of the feeling (and reality) of spatial injustice. Accountability, finally, is a problem as NAM is reluctant to be accountable, while the national government for a long time denied involvement (Stiller, 2018). Now it is formally arranged with the ministry that it is accountable on behalf of NAM. However, we have signals that in practice this is not yet the case (Int. 5).

Analytical Dimension 5: Expression and mobilisation of place-based knowledge and adaptability

As mentioned in the Introduction, earthquakes is an unknown phenomenon in the Netherlands and insofar they occur these are not man-made. Until the first one in the area of gas extraction in the northern part of the country. Moreover, these first earthquakes – the very first one that was connected to the gas extraction, in 1986 – were infrequent and of a low magnitude. As made clear, things changed with the Huizinge earthquake now 6,5 years ago. Even in case of significant efforts to conduct research to the typical context in relation to gas extraction, place-based knowledge would still be limited. Research has been done, on the structure and conditions of the subsoil, on the housing market (Int. 5; OTB, 2016), on socio-psychological health problems (Int. 3, 8), but the region is nevertheless still ‘underserved’ with research, at least with serious and independent research according to academic standards (Int. 1).

Probably most research has been commissioned, and funded, by the NAM and by the minister of EZK. The emeritus professor of the Groningen University that we interviewed qualified the studies paid by NAM as fluff (Int. 1). The bundle of 14 studies ordered by former minister Kamp as a response to the earthquake at Huizinge in 2012 became a source of irritation in the region, first and foremost because a relation between gas extraction and earthquakes had been denied officially until then, which implied that no policies where necessary (e.g. Stiller, 2018). In an interview (Brandsma *et al.*, 2017), he commented that he just took over the dossier from his predecessor after a change of government and that he needed more information to be able to take good knowledge-based decisions. Although he underlined the quality standard of the studies and denied that the two multinationals in oil industry, in the region labelled ‘the oils’, have had any control on problem statement and methodology of these studies, the all-time record of 54 billion Nm³ of gas extracted in 2013 lead the region to suspect that he attached more importance to the ‘oils’ and to the State coffers than to the safety and wellbeing of the Groningers (ORV, 2015: 7). Which he categorically denied in that same interview...

Compared to NAM and the ministry, local interest groups have much less money available to commission research on their own behalf. Nevertheless, a body of place-based knowledge that obviously proved negative impacts of earthquakes on health conditions (Int. 3, 8) and on the housing markets (OTB, 2016; Int. 5) has been collected in their interest by professional academic researchers at Universities (Groningen, Delft) and other knowledge institutions (GGD, UMCG). The extended research programmes by GGD, partly together with the Groningen University, started with a request by NCG Hans Alders almost immediately after installation (Int. 3, 8). Although carried out by academic standards, results are sometimes still disputed by NAM (Int. 1) that ordered contra-expertise by other researchers (Int. 1).

There is no reasonable doubt that both organisational and individual learning has occurred in the region during the almost seven years of discussion, research projects, meetings, books and items on an almost daily basis in the regional press. It is quite impossible to have a reliable assessment of place-based knowledge that is lacking, but one should take into account that NAM and the ministry are quite reluctant to make information that they consider confidential public. Int. 4 emphasized that minister Kamp defended his reluctance to rapid reduction of gas extraction by pointing at the obliged security of supply, domestically but also to foreign buyers in surrounding countries. But it was impossible to assess the weight of this obligation because the contracts with foreign buyers were classified confidential.

5. Final Assessment: Capacities for Change

Synthesising Dimension A: Assessment of promoters and inhibitors (in regards to the Action: dimensions 3 to 5)

If we refer to the Action as the whole of the curative and preventive measures with respect to the damage caused by the earthquakes in the case study area, the main promoters can be found within and the main inhibitors outside the region. Promoters are the people and businesses suffering from earthquake damage in any form, interests groups representing them, and local and regional authorities (including water boards). The main inhibitor is the NAM, i.e. Shell and ExxonMobil. However, a number of issues complicate this seemingly simple pattern.

First, the position of the national government, mainly represented by the ministry of EZK, is rather ambiguous. Until 2013, EZK could clearly be considered among the inhibitors alongside the oil companies. Its policies were primarily based on the interest of gas exploitation and not on the safety of the population (ORV, 2015: 7). After 2013, measures were taken to compensate for damage, and to prevent further damage, but these were perceived in the region as slow and ineffective (Int. 4; Int. 7). Especially after 2017, with Wiebes replacing Kamp and the earthquakes generating increasing publicity and outrage, EZK seems to adopt a role as promoter. Gas extraction is reduced much further and will be terminated in the foreseeable future. On the other hand, measures for the reinforcement of buildings have been slowed down, and the compensation of existing damage is still not dealt with in an efficient way, nor – in the regional perception – in a fair way. This suggests that also in recent years, national government has been a reluctant promoter at best, and one that in Northeast Groningen is clearly still considered an inhibitor.

Second, the main inhibitors in this case study are the actors that are responsible for the damage (as they are responsible for the gas extraction) and that control decision-making with regard to both the gas extraction and the compensation and prevention of damage (i.e. the Action): the oil companies and the state respectively. In other words, those responsible for the Action are the least willing to implement it. Even if the state (EZK) wants to adopt a role as a promotor, as suggested above, it most likely needs the NAM (i.e. the inhibitor) to pay for the compensation and prevention of damage (Int. 5). However, agreements regarding this are classified even today.

Finally, if we look at the implementation of the Action so far, it is striking that while the problems regarding earthquake damage started primarily as a case of distributional spatial injustice, the approach taken by the Action has been mainly a procedural one. As a result, organisational and procedural costs now absorb most of the time and money available, while hardly any progress seems to be made in solving the distributional injustice. Moreover, the procedural framework that individuals involved in damage compensation or reinforcement of buildings has become so complicated and inefficient that it actually can be said to contribute to procedural injustice.

Synthesising Dimension B: Competences and capacities of stakeholders

A wide range of formal and informal stakeholders are involved. The first include the local, regional and national levels over government, government agencies such as the NCG, CVW and TCMG, and the oil companies Shell and ExxonMobil. Informal stakeholders include individuals affected by the earthquakes as well as a variety of interest groups. Figure 7 shows an indicative schedule of formal and informal stakeholders according to their roles as promoters and inhibitors.

A lack of participation and empowerment of informal stakeholders – and to some extent of formal stakeholders as well – is an important element in the problems of North-east Groningen. Decisions with regard to the gas extraction, such as where and how much to extract, are formally made by the minister of EZK, although it is widely assumed that Shell and ExxonMobil have an important say in this as well. But again, these arrangements are highly confidential. It is clear, however, that neither formal nor informal stakeholders within the region are involved in this decision-making process.

In the case of the Action itself, i.e. the measures with regard to the effects the earthquakes, regional stakeholders are formally involved. In practice, however, many indications point at a lack of participation and empowerment on all levels. This entails individuals involved in a damage claim or reinforcement operation. It also concerns the interest groups and local and regional authorities who left the Dialoogtafel because they did not feel they had any significant influence in the discussion. Even municipalities often feel taken by surprise or put on the spot by national policies; in the case of damage to houses they have no formal involvement at all – in fact municipalities do not even have disposal of formal knowledge about the cases of damage in their jurisdiction – although they tend to be addressed by inhabitants experiencing problems with compensation.

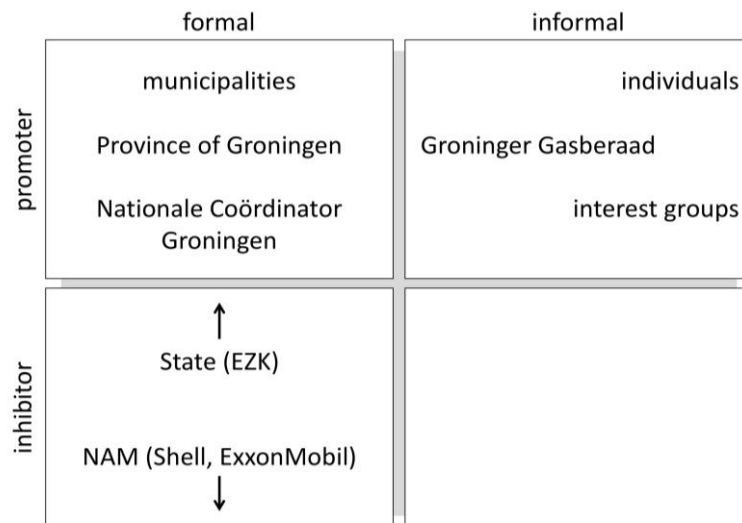


Figure 7: Main formal and informal promoters and inhibitors of the Action

If we comprehend both dimensions A and B, we see a lack of participation and empowerment of the (formal and informal) promoters of the Action, and a concentration of decision-making power and financial means among the inhibitors and more ambiguous actors. Behind this is, of course, a clash of interests. Those stakeholders that largely control decision-making with regard to the Action also have an interest in maximizing the extraction of gas, as they wish to maximize their revenues. This includes NAM, but for a long period the State as well. Those stakeholders that lack participation – let alone control – have an interest in minimizing the extraction, as they suffer from the consequences.

On the whole, there seems to be a severe imbalance of competence, capacity, means and willingness of the main stakeholders involved in the Action. Nonetheless, it is far from certain that an alternative approach based on local knowledge and led by local stakeholders would be viable. For one thing, the financial means required for the Action could only come from the State and, eventually, the NAM. While these could in theory be solved by providing to the region as a lump sum, the technical complexity of gas extraction, damage repaid and reinforcement measures would remain a problem.

Synthesising Dimension C: Connecting the Action to procedural and distributive justice

The mismatch between interests, capacities and decision-making power is reflected in the policy measures taken in the context of the Action. We consider them measures, rather than a comprehensive policy, as they are in fact for a large part ad hoc responses to the failure of previous ones: new institutions to complement existing ones, new auxiliary bodies in the form of arbiters or additional inspection teams, and a constant reassessment of safety criteria. At least until very recently, when the focus shifted to the larger aim of energy transition, national government seemed to lack a clear long-term perspective on the problems in Northeast Groningen.

The above points at a distinctly procedural approach. Regional promoters of the Action mainly aim to shift the focus back to distributional injustice – compensating damage and preventing further damage – but as we saw they largely lack the decision-making power and the means to define the Action. National government, on the other hand, tends to apply a mostly procedural approach as sketched above. Nominally, these measures address the distributional injustice as mentioned above, although their true intentions are widely doubted in the region due to the general distrust in the national government and the NAM. Regardless, we observe that in effect this procedural approach in many aspects contributes to procedural spatial injustice, by making procedures increasingly complicated and incomprehensible, while it is not sufficiently effective in solving distributional injustice.

In the cases where damage is being repaired and houses are being reinforced, measures obviously affect spatial justice on a small scale. They may discriminate between villages, streets or even neighbours living in identical row houses, decisions often experienced as seemingly random and unfair. On the whole, the Action does not seem to develop spatial justice in a single clear direction until now.

To be fair, the attention of national government for the problems and the safety of people in Northeast Groningen has indeed increased in recent years. Yet, still it fails to express this in an unambiguous policy strategy concerning all aspects of the issue. In addition to this, any new policy initiative faces the almost total lack of credibility of EZK in the region.

6. Conclusions

What is being achieved in terms of delivering greater spatial justice?

The preceding chapters analysed the problem of earthquakes in the Dutch region of Northeast Groningen. These quakes are induced by the extraction of natural gas, and cause extensive damage, fear and anger. Measures to compensate for this damage and to reinforce unsafe buildings so far have been unsuccessful and extremely cumbersome, adding to the strong feeling of injustice in the region.

The case of the Groningen earthquakes and the resulting Action may be a very interesting one from a researcher's perspective, but from a citizens' perspective it is deeply sad and embarrassing. Sad, for the people in the region; embarrassing, mainly for the national government of the Netherlands. Our analysis shows that spatial injustice is widely and deeply experienced in the region, in particular by citizens, whether or not organised in associations and interest groups. This widely felt experience entails both distributional injustice and procedural injustice. While injustice is experienced within the region, the overwhelming feeling is one of Northeast Groningen versus the State and the oil companies.

Spatial justice in this case concerns the consequences of the earthquakes, which are several, and which are addressed by multiple policy measures that have varied considerably over time. Accordingly, the Action does not refer to a single policy, but to the collective of policies and measures to compensate for and repair earthquake damage (curative approach) as well as to prevent further damage (preventive approach). The promoters of the Action are all located in Northeast Groningen: local and regional authorities, as well as other formal and informal stakeholders in the region. The main inhibitors, on the other hand, are Shell, ExxonMobil and – at least until recently – national government, which are all external to the region. We focused on the Action as it evolved since the earthquake in Huizinge in 2012. This particular earthquake can be considered as a turning point in many respects, because it caused extensive damage and forced the authorities on various levels to respond.

In terms of **distributional injustice**, numerous damages have indeed been assessed and repaired and many buildings have been reinforced or repaired. Nevertheless, these accomplishments are not nearly as much as is considered necessary by those directly or indirectly affected by the earthquakes in terms of damage to housing, but also in terms of mental health. Moreover, there is widespread dissatisfaction with the way in which the procedures, assessment, financial compensation and physical repairs have been handled. There is a large arrears in the assessment of damage claims, and in many cases a clear reluctance to compensate for damage. With regard to the reinforcement or replacement of damaged housing, prolonged uncertainty exists among home owners due to changing assessment methods and the price they receive for their house (either the market price or the redemption money paid by NAM). Besides, there are deep concerns about replacement of longstanding houses and even monumental housing by cheaply built, standardized dwellings that would negatively affect local historical values and the related sense of identity of residents.

Regarding **procedural injustice**, it is important to note that while the Action primarily aims at the compensation and prevention of distributional injustice, the measures taken are largely of a procedural nature. Because the measures that are actually taken with regard to damage and reinforcement tend to be insufficiently effective and efficient, new procedures and institutions are introduced regularly, while the existing ones mostly stay in place as well. The result by now is an extensive, inconsistent and highly complicated procedural framework that absorbs most of the funding that is actually intended for

compensation of damage and reinforcement of buildings. Individual citizens often find themselves trapped in an almost Kafkaesque situation, because this complexity is increasingly inhibiting their efforts to 'receive' justice in terms of the aforementioned mechanisms of compensation, repair and further damage prevention. This, rather than earthquake damage per se, now seems to be the main source of anger, fear and anxiety, which means that **part of the Action as discussed here can in fact be considered to be counterproductive.**

Our analysis of the Northeast Groningen case reveals some characteristics that may partly explain how the situation evolved to this point. First, the main promoters of the Action are all found within the region, while the main inhibitors are located outside it, both in spatial and administrative terms. The position of national government has been rather ambiguous over time; at least in recent years it took various measures to promote the Action, but these tended to be rather ineffective and inefficient, and were alternated with measures that were perceived as clearly inhibitive to the Action. A prime example of this is the important decision to terminate the gas extraction, which was quickly followed by the putting on hold of the reinforcement operation. As a result, uncertainty continues to exist distrust in national government remains, or even become more widespread in the region.

At least until very recently, when the focus shifted to the larger aim of energy transition, national government seemed to lack a clear long-term perspective on the problems in Northeast Groningen. In addition to this, there is a lack of participation and empowerment of local and regional stakeholders with regard to the Action. This is mostly true for informal stakeholders, but to a certain extent also for the Province of Groningen and the municipalities. Moreover, in the end most of the funding for the Action has to come from NAM as the exploiter of the gas field – i.e. from the main inhibitor of the Action – either directly or via the national government.

The mismatch between interests, capacities and decision-making power is reflected in the policy measures taken in the context of the Action. The main inhibitors in this case study are the actors who are responsible for the extraction and, hence, for the damage and who control decision-making with regard to both the gas extraction and the compensation and prevention of damage (i.e. the Action). In other words, those responsible for the Action are the least willing to implement it. As a result, while the Action does have small, local effects on distributional injustice – as some houses are repaired or reinforced and other are not – but on the whole it does not altogether seem to develop spatial justice in a single clear direction until now. Over time, the way in which the action has evolved, has partly shifted the attention to distributional injustice to the procedural aspects.

What are the policy changes ahead for bigger impact?

So far, as has been analysed in the preceding sections and chapters, a rather ineffective approach of 'muddling through' characterizes the Action as defined here. Admittedly, the earthquake dossier is very complex, and 'muddling through' can be a fruitful approach in cases like this if it brings about, and is based on, incrementalism, learning and the acceptance of new insights (cf. Lindblom, 1959). Our analysis of the case study, however, has revealed that the action is characterised rather by ad hoc measures taken before any learning, or even consolidation, has taken place (Int. 9). The rather negative insights drawn from Dimension 5 also point in this direction. This includes for instance the lack of sufficient independent research on various aspects of the causes and impact of the earthquakes, or the fact that some of the contracts and agreements involved are still classified information. This makes it difficult for regional stakeholders to assess statements by the national government or NAM. It also includes the rapid succession and accumulation of

institutions involved in for instance the assessment and compensation of damage, often lacking the proper capacity and capability.

With respect to the Action, in a narrow sense, it is unclear what policy changes ahead will bring. Relations between Northeast Groningen and 'The Hague' (a commonly used acronym for the national government, which is both spatially and mentally considered to be at a significant distance) have grown sour to an extent that concrete progress and demonstrable achievements are probably needed before trust can start to grow again, while the level of distrust in itself hardly contributes to a fruitful cooperation in the near future.

In recent years, however, the problems in Northeast Groningen have increasingly been considered in a wide policy context, i.e. as part of the regional economic development of the area, as part of the transition of other sources of energy, and with respect to a new financial balance of the national budget without gas revenues. This was advised by the Commissie Meijer already in 2013.

The Nationaal Programma Groningen (NPG) that is currently in preparation should be seen from this perspective as well. It addresses the earthquake dossier in connection to the more general problems of population decline, ageing, energy transition and regional development. The NPG aims to foster investments in the region in for instance innovation, sustainable energy and education (EZK, 2018: 23-42). It has an initial budget of 1.15 billion Euros, which should be increased by the cofounding of projects, and which is not intended for the compensation and repair of damage or the reinforcement of buildings. The role of the NCG will probably be reduced to a more administrative one, and its activities may be included in the new NPG (EZK, 2018: 60).

Not much is known about the NPG yet. The fact that it is inspired on the Nationaal Programma Rotterdam-Zuid does not guarantee its success, as the situation in the two cases is rather different. For one thing, an unambiguous shared focus among all stakeholders involved is lacking compared to the Rotterdam case. The fear exists, therefore, that the much broader scope of the NPG may bring about competition between stakeholders within the region or a transfer of attention and funds from the repair of damage and reinforcement operations to more general aims (Int. 8), i.e. from individuals to projects. On the other hand, there are hopes that the NPG may also address issues that have received too little attention so far, such as health issues (Int. 8).

Almost as an epilogue to the analysis in the preceding chapters, Dutch Parliament unanimously decided on 5 March 2019 that a parliamentary investigation will be held on the Groningen case. In the Dutch context, such a 'parlementaire enquête' is the most comprehensive means parliament has to investigate cases in which it assumed policy failure. Individuals involved can be summoned and heard under oath.

During the interviews conducted for this case study, interviewees were mostly positive about the perspective of such a parliamentary investigation (Int. 7, 9), if only because it would imply recognition and the need for accountability. No timeframe has been set for the investigation, but it is unlikely to begin before 2020. Somewhat ironically, the ministry of EZK announced that priority should now be given to the actual damage compensation and reinforcement operations.

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8. Annexes

8.1 List of Interviewed Experts

Nr.	type interviewee	Institution	Date
1	emeritus professor	University of Groningen	29-11-2018
2	policy advisor	Province of Groningen	8-1-2019
3	researcher – public health physician	Municipal Public Health Service	9-1-2019
4	secretary	interest group uniting a wide range of societal organisations from the earthquake area	9-1-2019
5	regional civic actor	interest group of home owners	9-1-2019
6	regional civic actor	regional branch of bank / business network aimed at regional development	24-1-2019
7	adviser/project employee	association of villages in Groningen / interest group uniting a wide range of societal organisations from the earthquake area	24-1-2019
8	project manager	Municipal Public Health Service	24-1-2019
9	alderman	municipality	25-1-2019

8.2 Stakeholder Interaction Table

Type of Stakeholders	Most relevant 'territorial' level they operate at	Stakeholders' ways of involvement in the project (What do we gain, what do they gain)
Local politicians	Local	Took part in interviews
Local administration	-	
Associations representing private businesses	Regional	Took part in interviews
Local development companies/agencies	-	
Municipal associations	Provincial	Took part in interviews
Non-profit/civil society organisations representing vulnerable groups	Regional	Took part in interviews
Other local community stakeholders	-	
Local state offices/representations	-	
Regional state offices/representations	-	
Ministries involved in (national or EU) cohesion policy deployment	-	
Cohesion Policy think tanks (national/EU-level)	Not applicable	
Primary and secondary educational institutions	-	
Colleges and universities	Provincial/national	Took part in interviews; provided contacts for further interviews
Social and health care institutions	Provincial	Took part in interviews; provided research data and contacts for further interviews
Cultural institutions and associations	-	
Media	National/regional	Study of press articles and databases, particularly of <i>Dagblad van het Noorden</i>

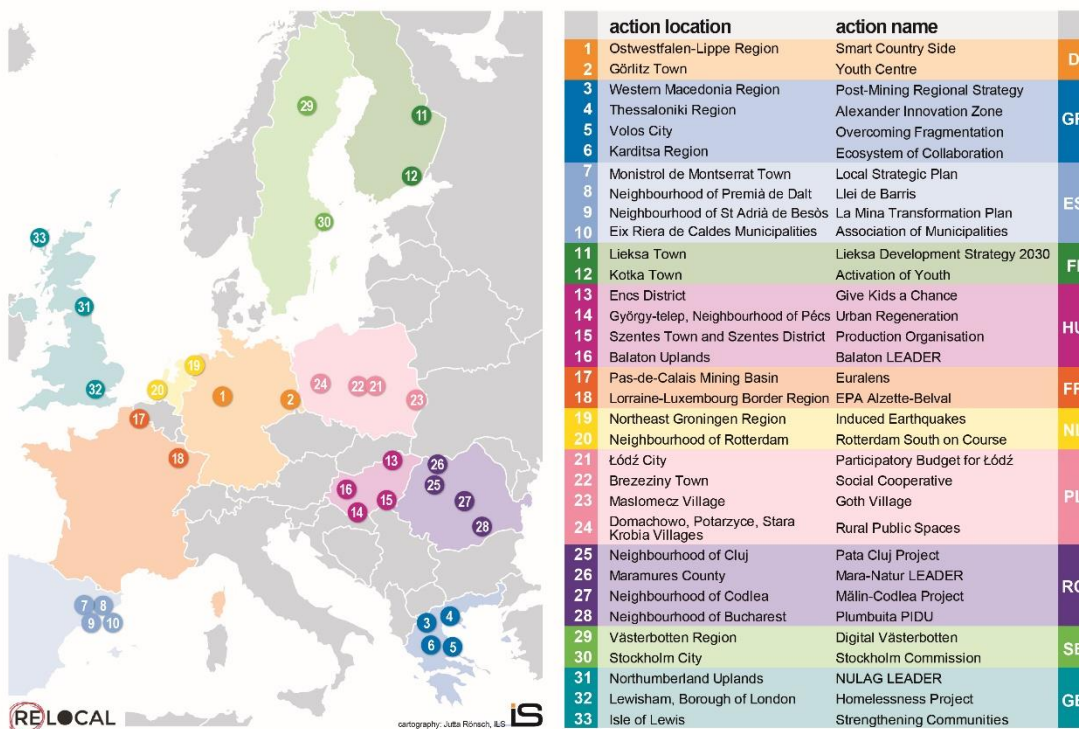
In view of the nature of our case study, stakeholders were involved that are not included in the table, notably the Provincial administration.

The RELOCAL Project

EU Horizon 2020 research project ‘**Resituating the local in cohesion and territorial development**’ –RELOCAL aims to identify factors that condition local accessibility of European policies, local abilities to articulate needs and equality claims and local capacities for exploiting European opportunity structures.

In the past, especially since the economic and financial crisis, the European Social Model has proven to be challenged by the emergence of spatially unjust results. The RELOCAL hypothesis is that **processes of localisation and place-based public policy** can make a positive contribution to spatial justice and democratic empowerment.

The research is based on **33 case studies** in **13 different European** countries that exemplify development challenges in terms of spatial justice. The cases were chosen to allow for a balanced representation of different institutional contexts. Based on case study findings, project partners will draw out the factors that influence the impact of place-based approaches or actions from a comparative perspective. The results are intended to facilitate a greater local orientation of cohesion, territorial development and other EU policies.



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