

Kennisplatform  
Leefbaar en Kansrijk Groningen

# Insight into Impact

The Societal Consequences  
of Gas Extraction in Groningen  
and Ways of Thinking for the  
Future

Willemijn Schreuder,  
Nienke Busscher,  
Tom Postmes, Aziza Zijlstra,  
and Ena Vojvodić



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# Introduction

In the province of Groningen, gas extraction has led to induced earthquakes. This has had a tangle of societal consequences affecting many across provincial borders, from the level of individuals to the national government. Developments in the gas extraction case are quite complex: they change quickly and the societal impacts are diverse and wide-ranging. The Dutch government has set up a complex system of institutions and regulations to deal with these consequences, but still the trust of residents in the Dutch government and its ability to deal with such complex issues has been severely damaged. The complexity is also due to the many different areas in which consequences are felt, including economics, politics, liveability, health, and safety. The aim of this publication is to provide an overview of all these different societal impacts. This is relevant for those wanting to learn about societal impacts, and how failing to address them creates even larger challenges.

This publication is written by the Knowledge Platform (*Kennisplatform Leefbaar en Kansrijk Groningen*). The Platform was established to gather and disseminate knowledge about the societal impact of induced earthquakes in the Northern Netherlands and to stimulate knowledge utilisation in mining policy. The Platform collects both scientific and practical knowledge by reviewing recent literature from different disciplines and by keeping in close contact with many different stakeholders. We take stock of what is known, whether there are knowledge gaps, and whether follow-up research is needed. Our audience is broad and includes industry, government, civil society, and research.

The Knowledge Platform periodically gives an overview of the state of (scientific) knowledge through easily accessible and publicly available knowledge overviews. These publications focus on various themes: from participation of residents in the reinforcement of their house, the economy and the liveability of villages, to the governance aspects of this case study. These are written for a wide public, from residents to policy makers and scientists. Three publications were released in the past (Sluiter *et al.*, 2018; Busscher *et al.*, 2020; Hupkes *et al.*, 2021).

The most recent knowledge overview was published in Dutch in November 2023: *Inzicht in impact: De maatschappelijke gevolgen van de gaswinning en denkrichtingen voor de toekomst*.<sup>1</sup> It builds on previous knowledge and extends it by integrating 70 sources published between August 2020 and mid 2023.

<sup>1</sup> Schreuder, W.E., Busscher, N., & Postmes, T. (2023). *Inzicht in impact. De maatschappelijke gevolgen van de gaswinning en denkrichtingen voor de toekomst*. Groningen: Kennisplatform Leefbaar en Kansrijk Groningen. ISBN: 978-90-9037857-2

The present publication is an extensive summary in English of this fourth knowledge overview, enriched with a concise background of the history and issues involved. It starts with a **list of key stakeholders and concepts** to navigate this publication better. Then we provide a **concise background** of the previous developments in the gas extraction case (Chapter 1). After that we give an **overview of the research findings** per theme distilled from the knowledge overview (Chapter 2), followed by a **reflection** on how to understand these new insights (Chapter 3). Finally, we provide a **visualisation of the Groninger identity** and the issues surrounding safety and damage through interviews with residents and photographs of them and the region (Chapter 4).

This extensive summary is an adaptation of the original knowledge overview's literature review. Both the reflection and the interviews that are part of 'Visualising Impact' are translations. The remaining sections were written for the purpose of this publication.



# About Us

The Knowledge Platform was established in 2018 by different partners and is accommodated at the University of Groningen, the Netherlands. We are a small research group with researchers from different disciplines. As a Knowledge Platform we focus on mapping these different aspects of societal impact of the gas extraction in Groningen. We connect scientific and practical insights by consistently staying in touch with all concerned stakeholders. We are impartial and do not take a position on policy issues. Our core values are connecting science to practise, knowledge sharing, and stimulating the use of societal insights in policy. Additionally, we map knowledge about restoring relationships and trust and we work on the lessons that can be learned from the gas extraction case in Groningen for the approach to large scale (mining) projects in the province, the Netherlands, and elsewhere. We share this knowledge by — among other things — organising events like knowledge cafés and conferences. We are also available for consultation and giving lectures about the state of knowledge of this case study.

# List of Key Stakeholders and Concepts

## **CBS — Centraal Bureau voor de Statistiek**

Statistics Netherlands — An autonomous administrative body that compiles statistics on a wide range of important societal topics through their own surveys and existing government and business registries.

## **Commissie Bijzondere Situaties (now: Vangnet Bijzondere Situaties)**

Special Situations Committee — An independent organisation that, since 2014, serves as a safety net for residents who suffer serious damage and/or reinforcement combined with other financial and/or medical issues as a result of gas extraction.

## **CVW — Centrum Veilig Wonen**

Centre for Safe Housing — A private company established by the NAM that was active between 2014 and 2019 to deal with and assess damage claims and execute the reinforcement of buildings for safety reasons independently of the NAM. Later the TCMG, IMG and NCG appropriated most of its tasks.

## **De Mijnraad**

The Mining Council — An advisory body to the EZK, they advise on proposed policy or changes to mining laws and regulations.

## **Dorpenaanpak**

Village-approach — An area-oriented approach to reinforcement per village. This means that, rather than looking only at individual properties, a broader view of the area's needs is taken into account during reinforcement (including, among others, infrastructure, social cohesion, and the appearance of the village).

## **EBN — Energie Beheer Nederland**

Energy Control Netherlands — A state-owned energy company working on three core areas: the gas transition, the heating transition and carbon capture, and transport and storage systems.

## **EZK — Ministerie van Economische Zaken en Klimaat** Ministry of Economic Affairs and Climate Policy

**Gasgebouw**

A public-private partnership with multiple legal entities including NAM, EBN, and EZK that jointly made strategic decisions regarding gas extraction.

**GBB — Groningen Bodem Beweging**

Groningen Ground Movement — A social movement organisation that draws attention to the earthquake problems in the region. They help people impacted by gas extraction by providing information and advocating for the residents.

**GGB — Groninger Gasberaad**

Groningen Gas Council — A collective of social organisations, each aiming to ensure involvement of residents and organisations in planning and implementing activities regarding damage, reinforcement and future prospects for Groningen.

**GGD — Gemeentelijke Gezondheidsdiensten**

Municipal Health Services — A regional Dutch authority for public health. The GGD falls under the responsibility of the Ministry of Public Health, Wellbeing and Sports.

**Gronings Perspectief**

A research group at the University of Groningen that, since 2016, independently monitors the population's health, well-being, and safety regarding the earthquakes.

**IMG — Instituut Mijnbouwschade Groningen**

Groningen Mining Damage Institute — An independent governmental organisation (under EZK) responsible for handling several claims in Groningen related to the gas extraction since 2020. This includes claims concerning physical damage, immaterial damage, and real estate depreciation. Additionally, 'acutely unsafe situations'<sup>2</sup> are also reported to IMG.

**Immateriële schaderegeling**

Immaterial Damage Scheme — A compensation scheme introduced by the IMG for residents that live, or have lived, in the earthquake region. With this scheme, the IMG financially compensates the psychological, emotional, and other intangible impacts that residents may experience as a result of the earthquakes and the additional stress, anxiety, loss of quality of life or disruption to daily life. First, only residents above 18 could apply, but from October 2023, the compensation has also been made available for people under 18.

**Libau**

An independent knowledge organisation for spatial quality and cultural heritage in Groningen and Drenthe.

**NAM — Nederlandse Aardolie Maatschappij**

Netherlands Petroleum Company — A company established in 1947 by Royal Dutch Shell and the American corporation ESSO, occupied with gas and oil production on Dutch soil and the Dutch continental shelf.

<sup>2</sup> Residents can report acutely unsafe situations when they think their house is structurally unsafe because of the consequences of gas extraction. When such a situation is reported, IMG will let the residents know within 48 hours whether their house is safe or not. If necessary, precautionary measures will be taken.

**NCG — Nationaal Coördinator Groningen**

National Coordinator Groningen — A public agency responsible for the reinforcement of homes and other buildings in Groningen to secure safety according to safety standards. The NCG falls under the central government (first the Ministry of Internal Affairs and Kingdom Relations, now the Ministry of Economic Affairs and Climate Policy) and cooperates with the five affected municipalities in Groningen and the Province of Groningen to coordinate and execute the reinforcement operation.

**Nij begun**

New Beginning — A 50-point plan for the future of the region presented by the Cabinet to the government. It includes measures on the topics of damage, reinforcement, sustainability, and social and mental well-being. Additionally, it proposes an economic agenda, giving Groningen a central role in the field of energy, health, and (agricultural) innovation.

**NPG — Nationaal Programma Groningen**

National Programme Groningen — A cooperative programme between the national government (Ministry of Economic Affairs and Climate Policy and the Ministry of Internal Affairs and Kingdom relations), the Province of Groningen and affected municipalities that aims to invest in the future of Groningen by working together with residents and companies.

**Parlementaire enquête aardgaswinning Groningen**

Parliamentary Committee of Inquiry into Natural Gas

Extraction in Groningen — An inquiry that investigated the government's handling of gas extraction in Groningen. A Committee established by the Dutch Parliament investigated this from February 2021 to February 2022 by inspecting documents and through interviews and public hearings under oath with a wide range of stakeholders, including representatives of government bodies, oil companies, and civil organisations. This allowed the Committee to get a clear picture of the decision-making regarding gas extraction and its consequences.

**SPG — Sociaal Planbureau Groningen**

Social Planning Office Groningen — An independent knowledge centre for social issues in the region. They work for municipalities, provinces, social organisations, business owners, and residents on relevant themes such as poverty, earthquakes, the energy transition, and more.

**SodM — Staatstoezicht op de Mijnen**

Dutch State Supervisor of Mines — A regulatory agency (under the EZK) responsible for the supervision of human safety and ecological quality in the production of energy and usage of subsoil, with an advisory role on mining activities to the Ministry.

**TCMG — Tijdelijke Commissie Mijnbouwschade Groningen**

Temporary Committee Mining Damage Groningen — A temporary committee that was responsible for handling damage claims between 2018 and 2020 in the

transition from the handling of damage claims under private law under CVW/ NAM towards the handling of damage claims under public law by IMG.

#### **Toukomst**

Gronings for ‘future’ — A program under NPG in which residents were asked to submit ideas for the future of Groningen. Based on residents’ votes and project ideas, a panel of 20 *Groningers* advised the board of the NPG on which projects to include and how to divide the available funds (100 million euros) resulting in the Toukomst Programme. Currently, the projects in this programme are being implemented.

#### **TwG — Tijdelijke Wet Groningen**

Temporary Groningen Act — A temporary legal framework for regulating the repair and compensation of mining damage and the restoration of buildings in Groningen to national safety standards.

#### **Typologieaanpak**

Typology-approach — An approach to reinforcement in which houses of a similar type receive a standardised assessment.

#### **Versterking**

Reinforcement — The process of strengthening buildings according to safety standards, in this case, due to the gas-extraction induced earthquakes. This

can be done, for example, by removing hazardous objects (e.g. chimneys), placing support beams or steel constructions, or attaching constructions (e.g. walls, roofs and floors) to one another.<sup>3</sup>

#### **Waardedalingsregeling**

Depreciation scheme — A scheme that has been executed by the IMG from 2021 to compensate homeowners in the gas extraction area for falling house prices due to gas extraction issues.

#### **Wisselwoningen**

Temporary housing — These houses are built specifically for housing residents that need to leave their home while reinforcement measures are implemented or when residents acutely need to leave their home for safety reasons. The houses are usually built on the fringes of the villages and cities. The quality of buildings varies, they are not meant for permanent stay, and are often container-like.

<sup>3</sup> For more examples and detailed explanations of reinforcement measures, see the catalogue of measures from the NCG, available at <https://www.nationaalcoordinatorgroningen.nl/versterken/documenten/publicaties/2022/12/12/groninger-maatregelencatalogus>

# Concise Background of the Groningen Gas Extraction Case

Before we summarise the findings of the knowledge overview, we shortly want to provide some historical context. In the province of Groningen gas has been extracted since 1963 by The Netherlands Petroleum Company (*Nederlandse Aardolie Maatschappij*, NAM). Due to the soil composition, gas extraction in Groningen causes earthquakes and soil subsidence. So far there have been more than 1.600 earthquakes. The Northern Netherlands has historically not been seismologically active, so buildings are not built to withstand earthquakes well. The induced earthquakes are ongoing and damage to buildings is also continuously reported. The issues cause deterioration of liveability in the region and diminish well-being of residents. It can be hard to fully understand the impact of the gas extraction and its consequences on residents and the region. For this reason, this publication also includes a visualisation of the impact in Chapter 4.

Authors: Aziza Zijlstra  
& Ena Vojvodić



As a consequence of gas extraction, many buildings in Groningen need damage repair or structural reinforcement — or both — while others need to be completely demolished and rebuilt. For each of these procedures, a complex system of institutions and procedures has been put in place. Since 2020, physical damage has been handled by the Groningen Mining Damage Institute (*Instituut Mijnbouwschade Groningen*, IMG). In total, more than 267.400 claims for physical damage have been made. Now, over 20.000 damage claims are still in progress at IMG.<sup>4</sup> Besides that, there have also been over 115.000 claims for real estate depreciation, more than 70.000 claims for immaterial damage, and over 3.000 reports of acutely unsafe situations. The reinforcement operation has been handled by the National Coordinator Groningen (*Nationaal Coördinator Groningen*, NCG) since 2020. In total, 27.449 objects (e.g. houses, churches, and schools) are included in the reinforcement program.<sup>4</sup> Of those 27.449 objects, only 10.000 now comply with the safety standards, either because they were reinforced or because they were found to be safe during assessment (NCG, 2023). During the reinforcement or demolition procedures, almost all residents have to leave their house. They can stay in temporary housing that is built specifically for this purpose, so-called *wisselwoningen*. In addition to IMG and NCG, National Program Groningen (*Nationaal Programma Groningen*, NPG) was set up in 2019 as a compensation fund to invest in the future of Groningen. The NPG invests their initial capital of 1.15 billion euros in different projects that should benefit one or more of their four ambitions: economy, work and learning, liveability, and nature and climate.

The consequences of gas extraction in Groningen reach far beyond the physical damage to houses, they also impact the daily lives of people living in the region. The continuously changing guidelines and policies are difficult to understand and navigate. Furthermore, the well-being and health of residents is impacted by various factors: the experience of earthquakes in themselves, the presence of (recurring) damage, insecurity, having to live in a house that has been declared unsafe without knowing when it will be reinforced, being forced to move to temporary housing, constant construction work, inexplicable differences among residents, and much more.

<sup>4</sup> Status on 31 December 2022, see the IMG dashboard for the current status of all compensation schemes, available at <https://www.schadedoormijnbouw.nl/dashboard>

<sup>5</sup> These objects are within the NCG reinforcement scope. The scope includes: building assessments ('batches'), outcomes of the Hazard and Risk Assessment (HRA) model and the now active Seismic Threat and Risk Analysis (SDRA) model, and additional buildings emerging from the enrichment of these models, as well as buildings submitted by municipalities or individuals through different procedures. For more information see Adviescollege Veiligheid Groningen available at: <https://adviescollegeveiligheidgroningen.nl/sites/default/files/2023-02/Adviesrapport%20ACVG%20Buiten%20de%20scope.pdf>



Decades after the first seismic activity, it has become clear that the damage to the well-being of residents and the deterioration of liveability of the area are not just the consequences of these seismic activities. They partly (or perhaps largely) result from the way in which both the operator and the government have tackled matters concerning damage, safety, and the needs of residents. Tackling these layered problems has become very complex and continues to cause tension between all parties involved, including the governmental entities. For a deeper insight on previous developments and impacts of extraction in the province, we refer to the previous English summary.<sup>6</sup>

In order to establish the facts in the Groningen case and to understand how decisions regarding extraction and its consequences were made, the Dutch parliament unanimously decided to have a parliamentary inquiry into natural gas extraction in Groningen. A parliamentary inquiry is the most far-reaching method at the disposal of the Dutch Parliament to inspect the work of the government. After closed-door preliminary interviews, public hearings with — among others — representatives of government bodies, oil companies and civil organisations and documentation inspection, the results were published in five books *Groningers before Gas (Groningers boven gas)*, comprising over 2000 pages, in February 2023.<sup>7</sup> The Committee concluded that “interests of the people of Groningen were structurally ignored during gas extraction” (Tweede Kamer der Staten-Generaal, 2023b, p. 11). In addition to this primary conclusion, the Committee also wrote down ten conclusions about what went wrong in Groningen and eleven recommendations on how to improve the situation (see Appendix A for the complete list).

<sup>6</sup> Available at <https://www.kennisplatformleefbaar.nl/en/stand-van-kennis-2021>

<sup>7</sup> The English summary of the parliamentary inquiry report (with a summary of relevant historical events) is available at [https://www.tweedekamer.nl/sites/default/files/2023-02/Groningers-before-gas\\_conclusions-and-recommendations.pdf](https://www.tweedekamer.nl/sites/default/files/2023-02/Groningers-before-gas_conclusions-and-recommendations.pdf)

In response to the inquiry report, in April 2023, the Cabinet proposed fifty new measures in *Nij begun* ('New beginning' in *Gronings* dialect) to better manage the situation and bring prosperity to the region. These measures address damage and reinforcement, social and mental well-being, economic perspective, and a better government (see Appendix B for an overview of all measures). The Cabinet also includes three measures to future-proof houses in Groningen and Noord-Drenthe, where energy poverty is the highest in the Netherlands due to a combination of low household incomes and the characteristics of houses (TNO, 2022).<sup>8</sup> The total package of fifty measures invests substantial financial resources in the region (namely 20 billion euros over a period of 30 years). The fact that these 50 changes and intentions need to be integrated in a complex dossier with a long history, leads to the question: what impact is this going to have?

The Dutch government intends to close the gas field indefinitely in October 2024. The phase-out of gas production from and closure of the Groningen field was already announced in 2018; since October 2022 the Groningen field was "op waakvlam" — meaning only the minimum amount of gas was extracted to keep the existing infrastructure running. As of the 1st October 2023 there is no extraction, but the field can be reopened in extraordinary circumstances, such as multiple consecutive days of extremely cold temperatures (–6,5 degrees Celsius). The closure will become definitive in October 2024.

<sup>8</sup> Measure 28 states that homes that are not yet reinforced will be prepared for being completely natural-gas free during the reinforcement procedure. Measure 29 states that (financial) incentives will be provided to make homes in Groningen and Noord Drenthe sustainable. Measure 30 states that the scope of the existing subsidy for general home improvement will be expanded.

For a considerable amount of time, issues concerning gas extraction were seen and presented as a regional problem that, for most Dutch citizens, was far from their daily reality. It was seen as 'bad luck for those that live there'. But the way in which safety and local residents were dealt with was below standard. We believe that this is not exclusively a local issue: the handling of residents and public interests in the Groningen case mirrors what is happening elsewhere in the Netherlands (and internationally), where economic and industrial interests are aligned with those of the state and where local residents are marginalised. Thus, we want to emphasise that this knowledge overview is also relevant for citizens outside of Groningen, as these problems can also occur and develop elsewhere. It is essential to learn lessons from this situation and to thoroughly analyse it, especially if our society wants to successfully transition to sustainable energy.

# Overview of Research Findings

1  
Experiences of Damage and  
Reinforcement, Safety, and  
Restoring Relations

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2  
Health and Well-being

27

3  
Governance, Policy, and  
Communication

30

4  
*Groninger* Identity, Image,  
Cultural Heritage, and  
Landscape

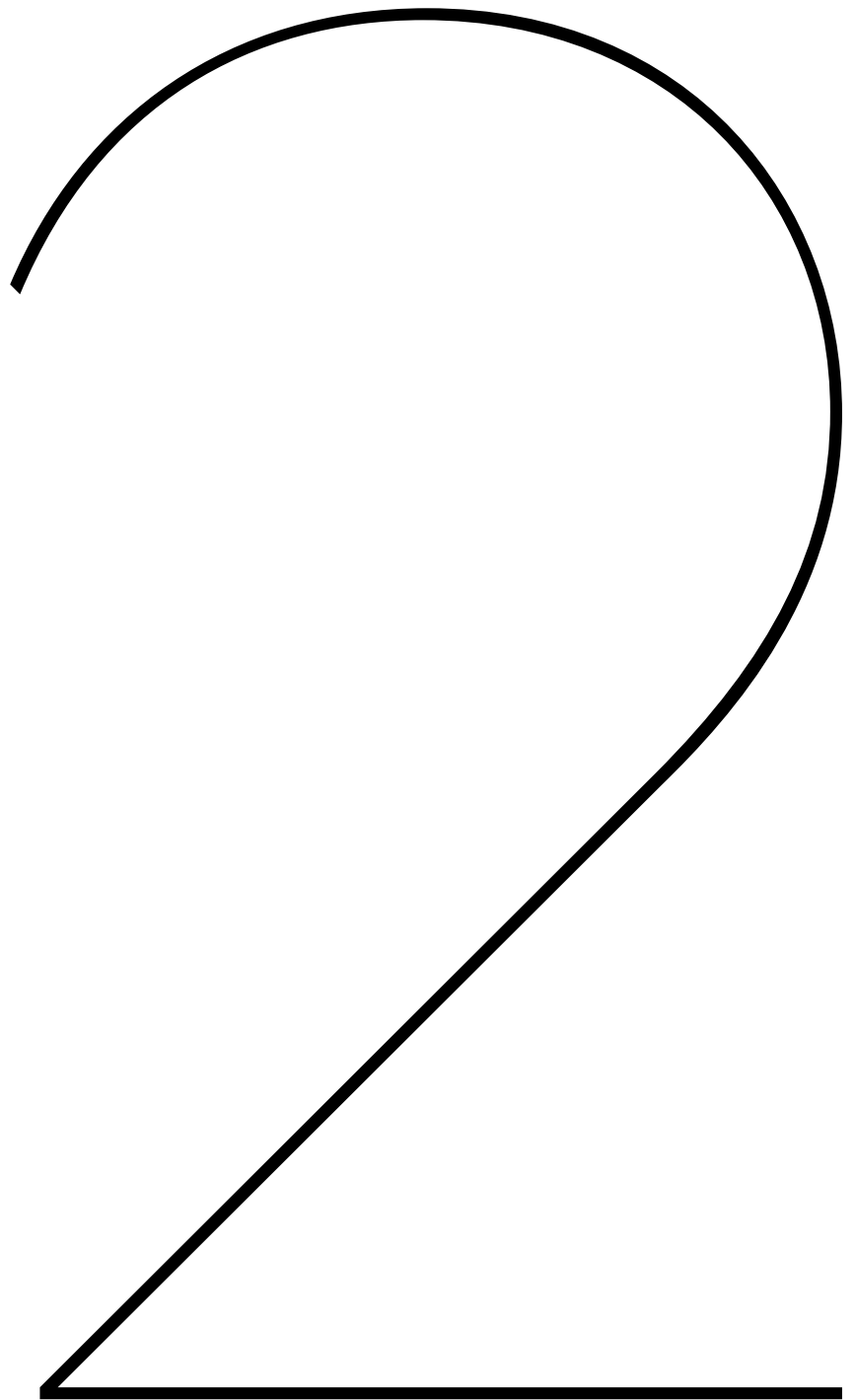
34

5  
Economy, the Housing  
Market, and Investment  
Needs

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6  
Liveability and the Living  
Environment

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# Introduction

We structure this overview based on six themes (or impact areas), which follow from the international social impact assessment guidelines and literature (Vanclay, 2002). We broadened some of them to include important recent developments, for example the investment plans for the region and the attention for the preservation of spatial quality and the landscape. We discuss these six themes in an order that seems logical to us for telling the story, but we note that all six are equally important in principle. As is to be expected, all themes are intertwined. They are:

Theme 1. Experiences of Damage and Reinforcement, Safety, and Restoring Relations

Theme 2. Health and Well-being

Theme 3. Governance, Policy, and Communication

Theme 4. *Groninger* Identity, Image, Cultural Heritage, and Landscape

Theme 5. Economy, the Housing Market, and Investment Needs

Theme 6. Liveability and the Living Environment

For the literature study of this knowledge overview we built on the knowledge from the previous knowledge overviews. The overview includes scientific publications from international journals, scientific reports, and reports of authorities involved. We consulted various (scientific) publications between August 2020 and mid 2023. We used various search engines (such as Google Scholar and SmartCat). All publications were checked for relevance, read and the most important findings were summarised and compared with each other. In addition, the review includes “grey literature”: a variety of (research) reports, annual reports, websites, (regional) news articles, policy documents that are openly available, and interviews with researchers and experts. Therefore, the literature discussed is plentiful.

## 1

# Experiences of Damage and Reinforcement, Safety, and Restoring Relations

**Authors: Willemijn Schreuder & Nienke Busscher**

**The consequences of gas extraction have had a major impact on residents. How do these experiences affect residents? What are the experiences of youth growing up in Groningen? And what is needed to restore and improve the relation between the government and citizens?**

Residents who encounter damage, like cracks in their walls, or whose house needs to be reinforced often feel unsafe, frustrated, and powerless. Research by *Gronings Perspectief* shows that the sense of safety of all residents, regardless of the extent of damage to their home, decreased significantly in 2022 (Dückers et al., 2023). At the same time, risk perceptions among residents increased. Especially residents with houses with one, or multiple, damage claim(s) felt more unsafe and perceived more risks than residents without damage (Dückers et al., 2023; Stroebe et al., 2021a, 2022). Experiencing an earthquake also decreases residents' sense of safety, but this restores in a 6- to 12-month period when there are few earthquakes. Moreover, residents' sense of safety is also affected by the side-effects of damage and mitigation in their daily life. Residents worry about the future, the durability of their house, the financial risks, and the distressing experience of (going through) an earthquake. Notably, residents with damage are particularly concerned about the 'everyday' risks such as having to keep repairing the house, getting stuck in processes, procedures, and regulations, and having to (temporarily) vacate the house, whereas residents without damage worry about catastrophes such as the danger of collapse (Stroebe et al., 2021a). As long as the damage is not too complex, residents have fairly good experiences with claiming damage compensation. It is important to note that many residents receive good service, despite the known flaws in the system. However, residents in complex situations (e.g., owners of cultural heritage objects, small businesses) or residents with very complex damage to their houses, often experience frustration and a sense of being overlooked by government and agencies.

Furthermore, experiencing a reinforcement trajectory is very burdensome for residents (Pot et al., 2022; Stroebe et al., 2022). Residents experience disruption due to slow procedures, years of insecurity, and lack of clarity



about the safety of their house. The reinforcement operation makes residents aware of the unsafety of their house or raises new concerns (Stroebe *et al.*, 2022). The additional stress, insecurity, and instability mark the lives of families. It is important to note that the psychosocial impact of the reinforcement can differ from one resident to the other. Those most vulnerable to stress are those who are already vulnerable due to age (e.g. elderly, children, non-self-reliant), circumstances (e.g. poverty), or their situation (e.g. agrarians, owners of cultural heritage) (Dückers *et al.*, 2023). Powerlessness and frustration are experienced by not just residents, but also professionals (Stroebe *et al.*, 2020). They find it difficult to explain (new) decisions to residents because of continuously changing guidelines and policies. Additionally, a lack of trust, especially between regional and national government, influences their work (Stroebe *et al.*, 2020).

## Stress, insecurity, and instability mark the lives of families

In research and policy, the impact on children and young adults is receiving more attention. Children and young adults experience a physical and mental burden as a consequence of the gas extraction problems (Kinderombudsman, 2022; Zijlstra *et al.*, 2019, 2022). They feel unsafe and are burdened by parents' worries about the consequences of gas extraction. As a result, they experience various health problems similar in nature to those of adults, such as sleeping problems, anxiety disorders and depression. Additionally, children and young adults are worried about people around them, feel like the government is not treating everyone equally, and have a lack of faith in the ability of the government to solve problems (Zijlstra *et al.*, 2022). Some children have even indicated that they grew up lonely because their parents were occupied by dealing with damage and reinforcement. There is a growing awareness of the importance of offering perspective for the future to the young generation in the region (Kinderombudsman, 2022; Tweede Kamer der Staten-Generaal, 2023b). The Municipal Health Services (*Gemeentelijke Gezondheidsdiensten*,

GGD) pays extra attention to youth services, the childline (*Kindertelefoon*; a phone line children can contact when they want to talk to someone) is used to answer questions children have, and the IMG and the NCG work on information material specifically designed for children. Additionally, from October 2023, the IMG has made compensation for immaterial damage available for this group.<sup>9</sup> For residents above 18 that live, or have lived, in the earthquake region, this immaterial damage compensation was already introduced by the IMG in November 2021 (*immateriële schaderegeling*). With this scheme, the IMG financially compensates the psychological, emotional, and other intangible impacts that residents may experience as a result of the earthquakes and the additional stress, anxiety, loss of quality of life or disruption to daily life (IMG, 2022).

## Handling of the gas extraction problems has severely eroded trust

The handling of the gas extraction has severely eroded trust of residents in the national government, industry, and other institutions involved. Residents feel unheard and lost in a web of institutions, whilst some government regulations suggest a certain distrust in residents (Nationale Ombudsman & Kinderombudsman, 2017; Nationale Ombudsman, 2021). The Council for Public Administration (*Raad voor het Openbaar Bestuur*, ROB) explored what is needed to restore and improve the relation between the government and citizens (ROB, 2022). They observe that the government has lost authority due to a cognitive shortage (few experts remain within the government, many tasks have been outsourced), a moral shortage (reduction of government action to neutral technocratic-rational thinking thereby suppressing unwanted (societal) insights), and a societal shortage (the government does not know what is going on in society and what residents need). To repair authority and trust, the ROB advises the govern-

<sup>9</sup> IMG. (2023, 23 October). 'Vergoeding immateriële schade vanaf vandaag ook voor kinderen en jongeren t/m 17 jaar van start.' Available at <https://www.schadedoormijnbouw.nl/nieuws/vergoeding-immateriele-schade-vanaf-vandaag-ook-voor-kinderen-en-jongeren-tm-17-jaar-van-start>

ment to invest in ability, reliability, and commitment. To restore ability, the ROB suggests stimulating long-term thinking, attracting enough experts (by experience) to close the gap between policy and implementation, and supporting fact-finding in the current digital age. To restore reliability, the government should delve deeper into underlying norms and values of policy because government action is, by definition, never neutral. To restore commitment, the ROB advises the government to give citizens — and especially certain groups of citizens — more influence and control. It is important to seriously take into account all different perspectives in policy making processes.

## 2

## Health and Well-being

**Author: Tom Postmes**

**The gas extraction and its consequences impact the health of residents. What is the influence on the health and well-being of residents? Can immaterial damage be compensated? And what institutions are set up to support the health and well-being of residents?**

Research into health and well-being of *Groningers*<sup>10</sup> reveals that mitigation efforts and regulations meant to relieve residents in practice have the contrary effect. The multiannual research by *Gronings Perspectief* shows that residents with multiple damages to their homes and residents whose homes have to go through the reinforcement process, are notably less healthy (Dückers et al., 2023; Stroebe et al., 2019a, 2021a). The key reason for this is that damage and reinforcement strongly reduce people's sense of safety in their home: a form of chronic stress (Stroebe et al., 2021b). Moreover, residents' sense of safety is severely impacted directly after a heavy earthquake (Stroebe et al., 2022). The health complaints that stem from earthquake-, damage-, and mitigation-related chronic stress often remain underreported in professional healthcare, as people are slow to seek help (De Kraker-Zijlstra et al., 2021; Dückers et al., 2021; Postmes et al., 2016). Among the groups particularly at-risk are households in so-called "complex situations", that often reported damage before 2015 or even before 2010: here problems of mental, financial, and/or social nature may co-occur.

<sup>10</sup> With regards to the impact on health and well-being, we see that research is mostly aimed at residents from the province of Groningen. We signal that the problems do not stop at the border of the province. Residents in Noord-Drenthe and Friesland also face damage and the accompanying bureaucracy. However, this has not been thoroughly researched (yet).

Even in less complex situations, the experience of damage and reinforcement can be highly stressful and create a sense of insecurity. It is important to understand the multiple factors involved. The handling of damage and reinforcement is interwoven with the private life, family life, and/or work life, leading to many residents experiencing chronic stress. This expresses itself in different ways. Residents endure uncertainty, and a significant burden as a result of, for example, time-consuming procedures for both damage claims and reinforcement (Stroebe *et al.*, 2022). Residents are reliant on government agencies to assess and acknowledge their issues, which often entails dealing with unclear and ever-evolving procedures. This dependency consequently erodes their self-sufficiency, leading to feelings of powerlessness and hopelessness on a psychological level. Even when these processes go smoothly, they can still place significant demands on residents, requiring them to invest time, vacate their homes, make intricate decisions, and often contribute financially. Local poverty and low literacy levels render residents particularly vulnerable, as they do not always know their rights and can lose track of important matters. Children and young individuals also experience stress and are impacted by their parents' stress (Zijlstra *et al.*, 2019, 2022).

## **Handling of damage and reinforcement is interwoven with the private life, family life, and work life**

The best way forward for residents would be an approach in which their hardship is acknowledged and they encounter honesty, security, and tranquillity in their personal trajectories and the broader environment (Stroebe *et al.*, 2022). However, in the current context and system, a calm trajectory cannot be provided either at the individual or at the systemic level. The

system of institutions and regulations has become very complex due to the stacking of regulations, mitigation efforts, and numerous pilots to try doing things differently. As a result of this institutional complexity, many agencies with different perspectives and interests struggle to work together. In practice this means that institutions cannot put resident's individual trajectories and needs centre stage, because they are too busy with themselves and each other (see Bovenhoff *et al.*, 2021; Stroebe *et al.*, 2020). We note that the research on this is a few years old now, but more recent case studies suggest this situation has not changed much yet (Pot *et al.*, 2022). According to Van der Veer *et al.* (2021), healthcare professionals can help at three levels. At a micro level by listening to and acknowledging the experience of residents. At a meso level by bringing groups of residents together to create unity in recognition and acknowledgement. At a macro level by asking policy makers to call attention to these issues.

## Residents need acknowledgement of their hardships

As we mentioned earlier, the IMG compensates the psychological, emotional, and other intangible impacts that residents may experience as a result of the earthquakes with a financial compensation for immaterial damage (IMG, 2022). The amount depends on individual circumstances and can be 1.500, 3.000 or 5.000 euros. In total, the IMG paid out around 55.7 million euros for immaterial damages in 2022. Unfortunately, the new scheme has not been received well by residents (IMG, 2022). According to the IMG, this is mainly due to the high rejection rate of 37 percent. Residents believe that the IMG does not take the impact of the reinforcement operation sufficiently into account when determining immaterial damage (Nationale Ombudsman, 2022).

In recent years, many initiatives have been set up to support residents on the health front: the *Commissie Bijzondere Situaties* (aimed to investigate

and solve complex situations), *Geestelijke Verzorging Aardbevingsgebied* (GVA; mental caretakers for people in the region), *Stut en Steun* (resident support organised by civil society organisations *Groninger Bodem Beweging* and *Groninger Gasberaad*), earthquake-coaches and/or –consultants (appointed by the municipalities), the *Aardbevings Academie* (an academy to educate caretakers), and the *Interventieteam* (dedicated to smoothing out complex situations concerning damage and reinforcement) (Busscher *et al.*, 2022). Additionally, the different agencies in the gas extraction case also try to assist residents with resident facilitators and many different programmes and schemes have been set up to deal with complex situations. We believe that a clear overview of supply and demand of care is missing (Busscher *et al.*, 2022). Therefore, despite the many initiatives, it is unclear whether the available care meets the demand.

# 3

## Governance, Policy, and Communication

**Authors: Willemijn Schreuder & Nienke Busscher**

**Many governance system changes have been initiated since 2018. To what extent have these changes brought about improvement? What could be done better? We conclude that the complexity of the web of agencies, regulations, and procedures that was created in recent years to deal with the consequences of extraction is still a major concern.**

In line with the previous knowledge overview, we note that there is still a mismatch between the regulations for damage repair and reinforcement and the needs of residents. In particular those with complex damage often do not experience the new protocol for damage claims and/or adjusted regulations for safety as progress for their living situation. Therefore, both the ever-evolving policy and the implementation of damage repair and reinforcement, still have a major impact on the well-being of affected residents. It is increasingly recognised that this is a disastrous crisis-situation. Different researchers describe this as a ‘creeping crisis’ (Boin *et al.*, 2021; van Duin, 2021; Kuipers & Wolbers, 2021; Verdoes & Boin, 2021). What strikes us is that the current approach is still very focused on developing technocratic systems for safety norms, risk assessment, financial control, and technical measures, which are too often not meeting residents’ needs. There is a need for a concept of safety beyond standards and risks.

For residents, living safely means more than having the knowledge that your house probably will not collapse. They also care deeply about live-able neighbourhoods and sustainable recovery from mining damage. To safeguard different people's values, engaging with local communities is important (Langley et al., 2020).

## A concept of safety beyond standards and risks is needed

There have been many changes in recent years for the assessment of damage and thus the award of physical compensation by the IMG. These changes have brought improvements and (new) challenges. The Temporary Groningen Act (*Tijdelijke Wet Groningen, TWG*), which was introduced in 2021, was meant to ensure expeditious, generous, fair, and independent handling of damage claims. In practice, however, it does not yet appear to be possible to reach this standard when the damages are complex and extensive (Boot et al., 2022; Gerdes et al., 2023). When handling new and relatively simple damage claims, we do see that the above components are present (Boot et al., 2022).

With regards to the reinforcement operation there have also been important changes in terms of policy and implementation. The three main changes are the introduction of *reassessment (herbeoordelingen)*, the *typology-approach (typologieaanpak)*, and the *village-approach (dorpenaanpak)*. Reassessments were introduced due to the assumption that eventually stopping the gas extraction will lead to less (heavy) earthquakes making the required reinforcement measures lighter (Rijksoverheid, 2020). People are asked if they want their house to be reassessed based on the new norms. In practice, houses are therefore reassessed more often, leading to delays, additional pressure, and uncertainty for residents. Besides lighter reinforcement measures, the need for an area-oriented approach and swift reinforcement have also been recognized. The *typology-approach* was announced in 2021 as a method that would bring a huge acceleration and cost reduction to the reinforcement, because

it made it possible to give houses a strongly standardised assessment. However, it was a method that had to be newly developed and was not validated. In hindsight, the *typology-approach* is not suitable for many houses because they are atypical in essential elements making them hard to be assessed based on a model.<sup>11</sup> For the reinforcement operation, significant acceleration is needed to meet the 2028 deadline for completion. The *village-approach* (an area-oriented approach to reinforcement per village) could, over time, help with accelerating the reinforcement operation and will in time be used for the entire reinforcement operation. A pilot of the *village-approach* started in four villages: Garrelsweer, Zeerijp, Wirdum, and Leermens. Together with residents, the constructors, the NCG, and the municipality of Eemsdelta have made a reinforcement plan for the entire village. However, this pilot showed that problems occurring all around the reinforcement operation also happened here and caused delays (Wientjes, 2022).

Professionals themselves have attributed the slow progress in the gas extraction case to a host of obstacles, among which the lack of mandate for local authorities and agencies to make decisions (Bovenhoff *et al.*, 2021; Stroebe *et al.*, 2021b). The responsibilities and the way in which costs are shared are often unclear. This leads to excessive inspections, assessments, and negotiations, with considerable overhead costs as a consequence. There are diverse recommendations from the literature to improve the relation between damage and reinforcement and to make the handling of repair and reinforcement in general more humane. For years many parties have been asking for a holistic approach to damage and reinforcement (Hupkes *et al.*, 2021; Busscher *et al.*, 2021). A practical way to do so is the 'one-stop-shop' concept where damage and reinforcement are approached in a coordinated and holistic way for the resident (Bröring, 2021). This would give residents peace and clarity. Moreover, all parties involved in the gas extraction case, such as the IMG, NCG, National Program Groningen (*Nationaal Programma Groningen*, NPG), but also municipalities, the Province of Groningen, and the national government should be more aligned with each other on these issues.

According to the literature, clearly assigning responsibilities between different institutions and governmental layers is a precondition for an area-oriented approach within the reinforcement operation (Bovenhoff *et al.*, 2021; Busscher *et al.*, 2021; Nationale Ombudsman, 2022; Puister & Kieft, 2021; Stroebe *et al.*, 2021b). Other preconditions for an area-oriented approach referred to in literature are restoring relations and trust (Busscher *et al.*, 2021;

<sup>11</sup> Algemene Rekenkamer. (2022). 'Kosten schadeafhandeling Groningen blijven oplopen.' Available at <https://www.rekenkamer.nl/actueel/nieuws/2022/05/18/kosten-schadeafhandeling-groningen-blijven-oplopen>



Pot *et al.*, 2022; Puister & Kieft, 2021), and making a well-considered trade-off between speed and quality (Bovenhoff *et al.*, 2021; Busscher *et al.*, 2021; Puister & Kieft, 2021). At the moment, 2028 is seen as a strict deadline, which puts pressure on resident participation and the quality.

## **More reflection is needed on the handling of the gas extraction case**

With these preconditions in mind, several practical improvements can be made to enhance resident involvement in the reinforcement operation, such as transparent communication about what residents should expect and independent advisors for all residents to unburden them (Puister & Kieft, 2021). With regards to the handling of damage, improvements could be made in terms of accelerating procedures and informing residents in a timely and understandable manner. This can be done by, for example, communicating from a place of recognition and understanding instead of procedures, and by improving the independence of the experts (Gerdes *et al.*, 2023).

It remains of great importance to (better) monitor whether the current and future policies succeed in limiting the negative impact of the problems due to gas extraction for residents. There should be more space and time for reflection on how problems caused by gas extraction are handled within and between institutions, agencies, and governments. This would be worthwhile to determine what does and what does not work. With the publication of the parliamentary inquiry report and the measures that followed in the Cabinet response, new changes have been initiated that are meant to improve the situation for residents (Rijksoverheid, 2023; Tweede Kamer der Staten-Generaal, 2023b). These new measures should stimulate all parties to coordinate better and initiate and simplify procedures to improve matters for residents. There is a real dilemma here: on the one hand such changes are necessary but the risk is that, despite good intentions, they would create new delays, insecurities, and inequality.

# 4

## Groninger Identity, Image, Cultural Heritage, and Landscape

**Authors: Willemijn Schreuder & Nienke Busscher**

**The province of Groningen has a rich cultural heritage with thousands of heritage objects. What are the new developments in terms of (cultural) heritage and area identity? How is Groningen perceived? Which characteristics does the ‘Groninger identity’ have and how can it be maintained?**

The reinforcement operation, but also the energy transition, will have a major impact on the spatial quality of villages and neighbourhoods in Groningen. This could lead to a loss of the unique image and cultural heritage of Groningen. Figure 1 and Figure 2 show the change in unique identity prior to and after needed reinforcement measures and demolition.



Figure 1. Before the reinforcement measures

Source: Libau (2021) (used with permission)

Lately, an increasing number of (governmental) institutions and professionals work on stimulating and developing policy and sharing knowledge on heritage and spatial quality. This should help to consider the preservation and enhancement of the historical and spatial features of the region in combination with the reinforcement operation and other spatial developments.

To understand the impact of damage to houses and the reinforcement operation on the area identity and place-attachment, we will first explain these concepts based on the literature (Berenschot, 2021; Provincie Groningen, 2017; Willems-Kruize *et al.*, 2022). Area identity is determined by the unique combination of physical, cultural, and historical features that define an area and differentiate it from other places. In the province of Groningen, you can think of the dikes, iconic farms, and churches, among other things. This (cultural) heritage tells us something about the genesis of an area and creates a sense of home, pride, and connection with the area. Place-attachment refers to the emotional and social bond people have with a particular location. It is shaped by, among other things, personal experiences, shared history, cultural significance, family ties, and community interactions.



Figure 2. After the reinforcement measures and demolition

Source: Libau (2021) (used with permission)

The perceptions of Groningen among *Groningers* (people from Groningen) and non-*Groningers* (people not from Groningen) are monitored yearly with the ‘image monitor’ by the NPG (NPG, 2022). This has shown that *Groningers* are proud to live in Groningen and find Groningen attractive to live, study, recreate, grow up, and grow old in. They are less enthusiastic about Groningen as a place for work and entrepreneurship. However, they are optimistic about the future development of this perception of Groningen. Non-*Groningers* are less positive about Groningen as an area for, among others, work, studying, entrepreneurship, and recreation. Interestingly, *Groningers* expected non-*Groningers* to be much more negative about Groningen than they actually were (Alsem et al., 2021; NPG, 2022).

## **Cultural heritage creates a sense of home, pride, and connection with the area**

The local identity of *Groningers* is strongly connected to earthquakes and continued feelings of marginalisation (Moolenaar, 2020). The impact of mining adds to existing social hierarchies and contradictions, in particular the traditional (geographical) distribution of wealth and power, the differences between centre and periphery, and the opposition between urban and rural (or in Gronings dialect: *Stad en Ommelaand*). This manifests itself in feelings of cultural and political marginalisation. In her research, Moolenaar (2020) concludes that earthquakes have enhanced these existing feelings of marginalisation. Additionally, according to Cuppen et al. (2020), these feelings of marginalisation in the Groningen gas extraction case have also created reluctance toward new energy projects among these communities.

Concerns for the impact of ground movement on image, area identity, and heritage are increasingly translated into policies for conservation and restoration. These policies differentiate between various types of (cultural) heritage, such as national monuments and UNESCO world heritage sites.<sup>12</sup>

<sup>12</sup> For a full list and explanation of the different types of heritage, see the website of Erfgoedloket Groningen: <https://erfgoedloketgroningen.nl/kennisbank/verschillende-soorten-erfgoed/>

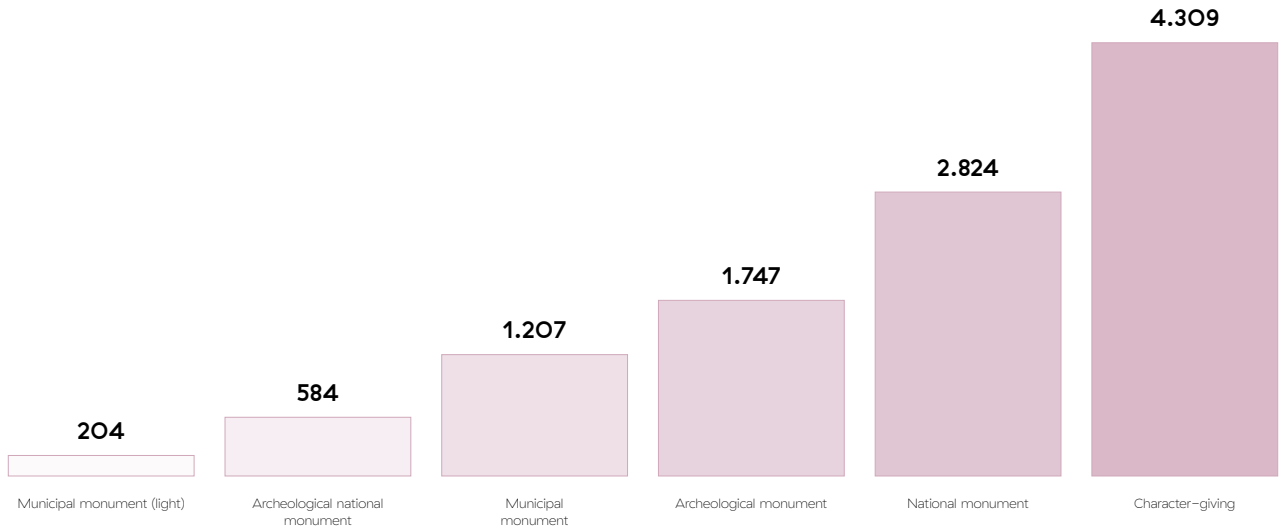
**The Erfgoedmonitor includes 10.875 objects**

Figure 3. Distribution of heritage objects, according to heritage status, in the province of Groningen

Source: Provincie Groningen (n.d.)

One of these types of heritage are so-called character-giving buildings — these buildings are unique and important for a village's appearance. Municipalities can attach the label 'character-giving' (*karakteristiek*) to such buildings when they consider them essential for the identity of an area, although these buildings are not protected under monumental status. The reinforcement operation encouraged municipalities to do so because many properties were threatened by demolition due to mining damage and unsafety. By designating buildings, demolition can be avoided. There is a provincial monitor of heritage objects, aimed at assessing the state of heritage across the province, which includes almost 11.000 objects (see Figure 3).<sup>13</sup>

<sup>13</sup> Available at <https://destaativangroningen.nl/erfgoedmonitor.html>

In the course of our research, we came across a dizzying number of plans, regulations and institutions on international, national, provincial, and regional levels working on the preservation of heritage in combination with the reinforcement of houses. For example, on an international level, the Province of Groningen participated in the international knowledge exchange on cultural heritage in rural areas through the European MOMAR project (Models of Management for Singular Rural Heritage). On a national level, Groningen was designated a NOVI-area under the National Strategy on Spatial Planning and the Environment (*Nationale Omgevingsvisie*), meaning that national and local governments are making efforts to work jointly and programmatically on an area-based approach. On a provincial level, the *Erfgoedprogramma* (heritage program) was launched in 2017 in which many parties together work toward preservation and renovation of (cultural) heritage in the province. Additionally, the Province of Groningen made a quality guide, which describes the area identity and unique qualities of different parts of the province.<sup>14</sup> Moreover, diverse means offering help to owners of heritage objects were set up, such as diverse subsidies for restoration projects, a heritage desk that offers free information and support and an advisory team that can answer complex questions regarding heritage holistically.

## **Focus on speed and cost saving at the expense of spatial quality**

So, a growing number of (government) agencies and professionals are working to stimulate and develop policy on heritage, preserve spatial quality in the reinforcement operation, and share knowledge. This helps with spatial development and with making decisions about the preservation of heritage, but it can also entail risks for cooperation and coordination. With the growing number of agencies and policies, residents struggle to have a good overview of regulations and relevant authorities.

<sup>14</sup> Available at <https://kwaliteitsgidsgroningen.nl/>

Various stakeholders express concerns about the loss of the spatial quality and identity of the region with the reinforcement operation (Maas-Flim, 2023; OKT, 2023; Tweede Kamer der Staten-Generaal, 2023b; Veenstra, 2023). This applies in particular to unprotected heritage that also determines the appearance of villages. The concern is that the current focus of the reinforcement operation is mainly on speed and cost savings, at the expense of spatial quality and the unique character of the earthquake region (Maas-Flim, 2023, Veenstra, 2023). Replacing iconic homes with uniform new construction may affect the feeling of 'home' and connection with the region. According to experts, an integrated approach is necessary to maintain the identity of Groningen (OKT, 2023). They also see an important role for architects (OKT, 2023; Maas-Flim, 2023; Veenstra, 2023). Greater involvement of architects can provide residents with support during the reinforcement process and better guarantees spatial quality.

# 5

## Economy, the Housing Market, and Investment Needs

**Authors: Willemijn Schreuder, Nienke Busscher & Sanne Hupkes**

**The Northern Netherlands is falling behind the rest of the Netherlands in terms of economic development. What consequences do the problems caused by gas extraction have for the local economy, including the housing market, entrepreneurs, and investments? What are the plans for the future of the region?**

The economic development of the five earthquake-affected municipalities, as well as of the Northern Netherlands as a whole, has been lagging behind the rest of the country for a long time. Different publications have reported on these developments in the Northern Netherlands (Alsem & Wever, 2020; Doets et al., 2021; NPG, 2021a, 2021b). For example, because of damage to houses, houses would be for sale for a significantly longer time and depreciated. Several reasons have been put forth to explain the lagging

behind of the economy, including the demographic structure of the region and the low employment rate. Historically too, the national government has chosen to invest less in this region and more in urban agglomerations in the western part of the Netherlands. The Parliamentary Inquiry Committee concluded that Groningen did not benefit economically from gas extraction (Tweede Kamer der Staten-Generaal, 2023b). At present, the periphery of Groningen is not seen as an attractive region by entrepreneurs and *Groningers* to do business or to find a job (Alsem et al., 2021).

The government attempts to compensate for these negative economic consequences for Groningen with extra investments and subsidies, mostly from the NPG. This program focuses on various aspects, including providing financial support for large-scale energy projects that are expected to have beneficial economic impacts for the region. At the same time, we see much opposition against (plans for) wind- and solar farms, due to their size, the difficult cooperation between initiators and local residents, and the consequences for the living environment.

## **Major investments in new energy projects, concerns of residents for repetition of mistakes**

Besides initiatives from the NPG, other parties are also focusing on the growth of the regional economy. For example, the national and local government together wrote the 'Agenda for the Future of Groningen' (*Toekomstagenda Groningen*) in 2021 and several educational and governmental institutions made collaborative agreements in the 'Agreement of Groningen' (*Akkoord van Groningen*) to help the city and region move forward in the fields of knowledge and innovation. Also, some of the fifty measures (see Appendix B) in the Cabinet response to the parliamentary inquiry report *Nij begun* address economic compensation and perspective (Rijksoverheid, 2023). In this respect it is useful to note that in the recent



past, similar funds for compensation and economic perspective have not always made a noticeable difference for residents (Tweede Kamer der Staten-Generaal, 2023b). Furthermore, it is noteworthy that government officials frequently prioritise new investments and economic growth, even when these priorities may not align with the preferences and needs of local residents. Particularly noteworthy are authorities' wishes to make major investments in new energy projects. This raises concerns of residents who are still struggling to cope with the social impact of the current energy policies, and who are not yet presented with a coherent and sustainable vision for how these new energy initiatives would avoid making the same mistakes.

With respect to that current impact, we see that concrete economic consequences for companies, both small and medium sized businesses and agrarians, are still being compensated in an unsystematic way. This is a long-standing problem of 10 years or more, which stems from the complexity of the cases, as well as from the government focusing on large-volume mitigation. Another complicating factor is that the government split this complicated case across three separate institutions, one focused on economic compensation through investments for future regional economic growth (NPG), and the other two for real estate damage (IMG) and reinforcement (NCG). Agrarians and business owners often fall between the cracks (Zijlstra, 2022), receiving insufficient consideration both in research and policy. Their situation is complex due to the interwovenness of living and working both in their lives and property, the necessity for tailored solutions owing to the diversity of situations, and a lack of research, resulting in a multitude of uncertainties. In 2023, the IMG did introduce a new regulation to compensate agrarians for damage to their land, manure cellars, and sheds.<sup>15</sup>

Similar to economic development in a broader sense, the housing market in the gas extraction region lags behind the rest of the country. Although positive national housing market trends, such as increasing house prices and shorter duration of property listings, are present, properties in the risk area with high damage intensity are considerably longer on the market, compared to the reference areas (Aarts *et al.*, 2023a). Figure 4 shows how these risk and damage areas are defined, and Figure 5 shows the developments in house sales from 2012 to 2022, based on these areas.

<sup>15</sup> IMG. (2023). Start regeling voor mestkelders. Available at <https://www.schadedoormijnbouw.nl/nieuws/start-regeling-voor-mestkelders>

## Chapter 2

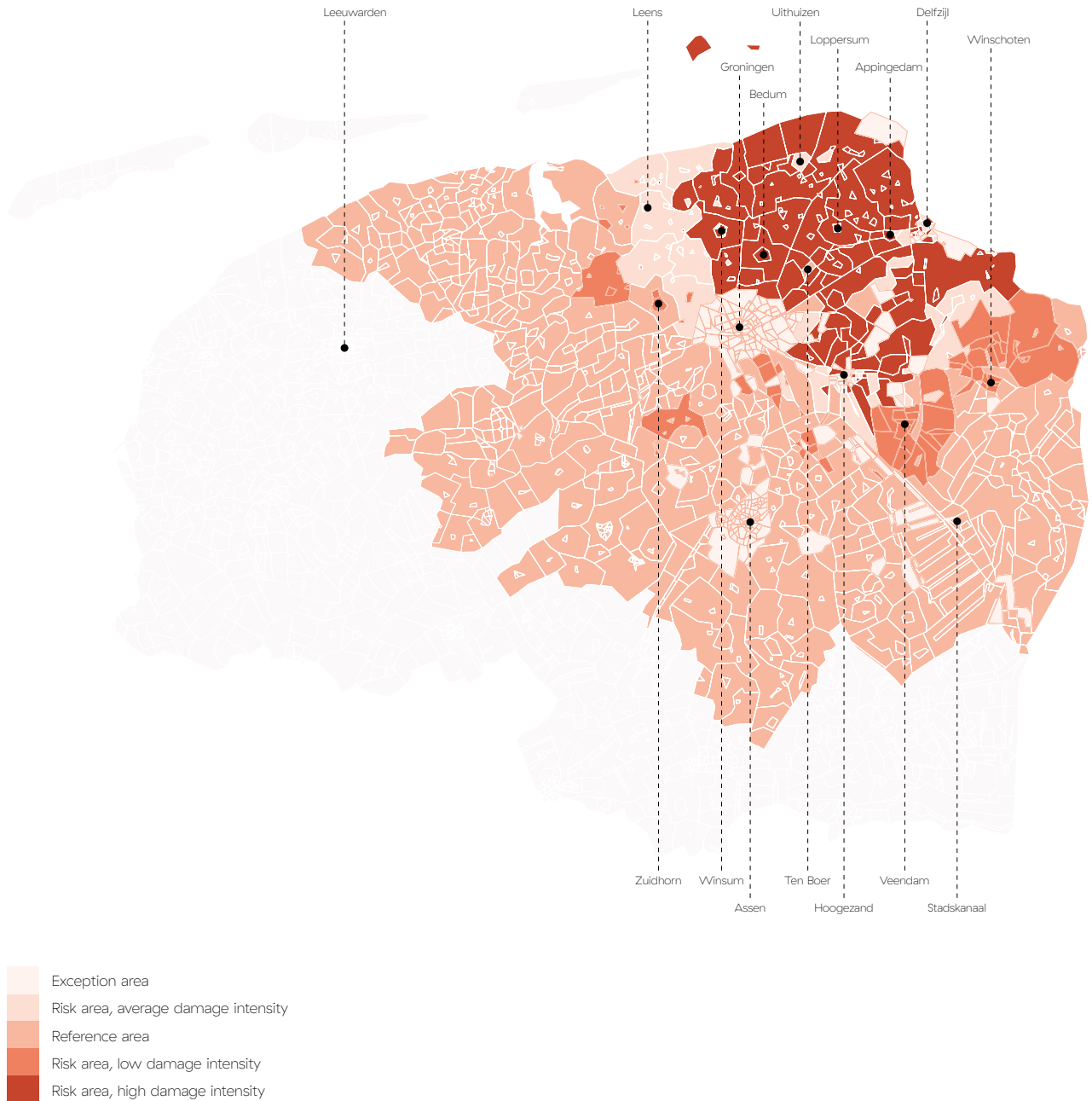


Figure 4. Classification of risk and reference areas based on damage intensity

Source: Aarts et al. (2023a)

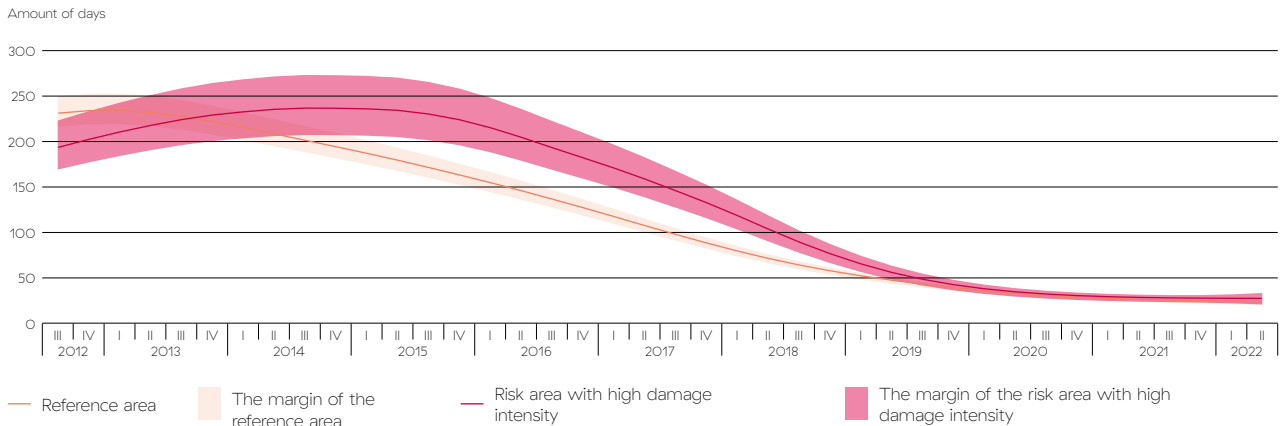


Figure 5. Developments in the share of homes for sale in risk area with high damage intensity and in the reference area, not indexed (2012–2022)

Source: Aarts et al. (2023a)

From the 1st of July 2020, the IMG rolled out a depreciation scheme (*waardedalingenregeling*) in phases. Homeowners in the gas extraction area have since been able to claim compensation for falling house prices due to gas extraction issues. We note that determining the depreciation of houses remains controversial: residents and some scientists remain critical of how depreciation is determined (Onafhankelijke Raadsman, 2021). According to De Kam and Hol (2021), there are better ways to measure depreciation than the current model. The courts affirmed that authorities are right in using the current model.<sup>16</sup>

<sup>16</sup> Rechtbank Noord-Nederland (2021). 01-11-2021, ECLI:NL:RBNNE:2021:4668.

Available at [https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBNNE:2021:4668&pk\\_campaign=rss&pk\\_medium=rss&pk\\_keyword=uitspraken](https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBNNE:2021:4668&pk_campaign=rss&pk_medium=rss&pk_keyword=uitspraken)

## 6

# Liveability and the Living Environment

**Authors: Willemijn Schreuder & Nienke Busscher**

**The quality of life and of the living environment is under pressure due to the consequences of gas extraction. How does gas extraction influence the liveability of the region? What do residents value and find important in their living environment?**

Liveability is about the extent to which the immediate and physical living environment match individuals' desires, ideals and needs (Gieling *et al.*, 2017). To measure liveability, the concept of *broad prosperity* (*brede welvaart*) is increasingly used for a holistic approach to the development of Dutch regions. This concept takes a broader perspective on what a 'good life' entails. *Broad prosperity* conceptualises the quality of life 'here and now' and the degree to which quality of life is at the expense of future generations and people elsewhere in the world (CBS, 2022). Instead of focusing solely on economic indicators, such as employment and income, it also includes, among others, subjective well being, safety, and health (Horlings & Smits, 2019; Thissen & Content, 2022). The implementation of this concept offers the opportunity to take better account of what the region has to offer and to give greater weight to the interests, needs, and values of residents in the democratic process and in decision-making. Such an approach to *broad prosperity* may also offer tools to meet the regional need for recognition, to eliminate perceived inequality, and the feeling of not mattering to administrators and to the Netherlands as a whole. *Broad prosperity* in the earthquake municipalities is monitored by the NPG (NPG, 2021a, 2021b, 2022), while *broad prosperity* in the province as a whole is monitored by the Social Planning Office Groningen (*Sociaal Planbureau Groningen*, SPG) (SPG, 2023).

***Groningers* feel connected and socially secure in the region**

These monitors show that residents in Groningen are generally satisfied with their living circumstances, the liveability, the living environment, and their own house (NPG, 2021b; SPG, 2023). Additionally, the SPG monitor shows a feeling of connectedness and social security among *Groningers* present in the region. At the same time, *broad prosperity* in Groningen is under pressure because of diverse reasons such as stress among young adults, ageing population, and poverty, but also because of earthquakes (SPG, 2023). *Groningers* in the earthquake region report lower satisfaction with the liveability of their village or neighbourhood (SPG, 2023). Increased earthquake damage is related to a decrease of both the perceived liveability and the appreciation of the liveability and the landscape in general. Moreover, the reinforcement operation entails additional concerns for residents, such as the constant construction work, but also neighbourhood relationships that are put under pressure by government policy.

In order to effectively handle the problems caused by gas extraction, attention to social cohesion in neighbourhoods and districts is necessary. Research shows that social cohesion and cooperation can make communities and individuals more resilient, it can be a buffer against declining health and offers possibilities for social support, a social network, exchanging information and creating connectedness within communities (Stroebe et al., 2019b). In many places in Groningen social cohesion is threatened due to the inexplicable differences in both damage repair and the reinforcement operation. This generates mutual distrust and perceived inequality, while limiting the connection between residents (Stroebe et al., 2021b). The *Commissie Verschillen Groningen* (literally: committee differences Groningen) was installed at the request of the state secretary of mining to identify inexplicable differences and make recommendations as to potential solutions to remedy these differences.<sup>17</sup>

Research by *Gronings Perspectief* has shown that the municipality can be essential for improving social cohesion in neighbourhoods (Stroebe et al., 2019b). A facilitating attitude by the municipality to encourage resident participation can help restore the relationship between the municipality and residents and build trust in government. Where residents are actively involved in formal agreements and are considered equals at the negotiating table, the researchers saw major improvements in terms of social cohesion and cooperation were possible. However, residents' initiative *Experiment Krewerd* has shown that a collective approach is difficult to fit into the reinforcement operation (Pot et al., 2022). *Experiment Krewerd* is an initiative

<sup>17</sup> Their report is available at <https://open.overheid.nl/documenten/52eac1c7d-871c-4a62-8fe7-779b96be0f2c/file>

of residents in a village of 45 houses in the municipality of Eemsdelta.<sup>18</sup> In 2017, the residents of Krewerd embarked on a collective approach to the reinforcement operation in the form of a *dorpscoöperatie* (literally: village cooperation) in which reinforcement, sustainability, the energy transition, and a new vision for the village were addressed together. The aim was to give residents more control over the reinforcement operation and to use 'engineering judgement' instead of computer models. However, despite this collective approach, Pot *et al.* (2022) see that relationships are under pressure and that the intensive participation of residents in the reinforcement operation brought additional stress and conflict, in addition to the existing feelings of dissatisfaction and earthquake-related stress. Moreover, this collective approach ran into problems within the existing web of institutions and regulations, showing that a more flexible perspective from government agencies is needed to make it successful (Pot *et al.*, 2022).

The concept of *broad prosperity* is increasingly used in policymaking (Weterings *et al.*, 2022). There are different initiatives in Groningen that aim to improve the *broad prosperity*, among which the NPG. The success of these projects depends on a close cooperation between different governments and the commitment of civil society organisations (Molema, 2021). This cooperation and commitment should lead to a clear vision about the development of regions in a broad sense, another important factor for success (Koster & Van Dijk, 2022). This means there should be a clear picture of the local context and the aspects of *broad prosperity* that are important for residents.

Policy decisions in the past have created much opposition between urban and rural areas in the Netherlands by enhancing assumptions about this opposition (Tweede Kamer der Staten-Generaal, 2023b; Van Vulpen, 2022). Contrary to those assumptions, there is a strong interdependence and connection between urban and rural areas (Hupkes *et al.*, 2021). The division of investments from the Multi-Year Programme for Infrastructure, Spatial Planning and Transport (*Meerjarenprogramma Infrastructuur, Ruimte en Transport*, MIRT), exemplifies this: only 4% of the 7.5 billion ended up in

<sup>18</sup> See <https://www.experimentkrewerd.nl/>

the whole Northern Netherlands (Groningen, Drenthe and Friesland).<sup>19</sup> Such policy choices feed regional dissatisfaction, make residents in these areas feel disadvantaged, for example in resource allocation, and make them feel their norms and values are not respected (Huijsmans *et al.*, 2021). A targeted approach to improve *broad prosperity* in regions with accumulated societal issues is more beneficial (Van den Berg & Kok, 2021).

In practice, *broad prosperity* is not always applied accurately. Often, short-term thinking plays a dominant role in project financing, which means a long-term plan taking into account all aspects of *broad prosperity* has not (yet) been designed and implemented. The NPG is monitoring the effects of investments, but not enough time has passed to see the effects (NPG, 2021b, 2022). Additionally, the NPG has changed directions with the appointment of Johan Remkes as chair. Instead of investing in local, relatively small scale projects, Remkes wants to bundle investments in five groundbreaking programmes (*baanbrekende programma's*) that enhance the economy of Groningen.<sup>20</sup>

Not just because of the reinforcement operation, but also because of the energy transition, major spatial changes are expected in Groningen that will have consequences for the liveability in villages and neighbourhoods. It has been recommended that reinforcement and sustainability measures for houses should be combined (Wientjes, 2022). Resident participation is an important theme here, both at the level of their house but also on a local and regional level for planning the approach to reinforcement and the spatial incorporation of energy projects. Despite the many different (individual) subsidies that are available for home improvement and making the home more sustainable for residents, the process of reinforcement and these subsidies do not match up (see also the interview with Appie Ridder in 'Visualising Impact' in this publication). In addition, taking into account the history of Groningen as a resource extraction area and the unequal distribution of revenue, we signal that a new way of thinking is needed for new energy projects. Creating support and understanding among residents means informing residents early on, including them in the process, giving them a say, incorporating mitigating measures, making independent knowledge available, being transparent, and setting up thorough monitoring (Hupkes *et al.*, 2021; Rodhouse *et al.*, 2022; Roovers & Duijn, 2021).

<sup>19</sup> De Hoop, D. (28 November 2022). Tweede Kamer: "Verdeling geld infrastructuur moet eerlijker". Omroep Fryslân. Available online via <https://www.omroepfryslan.nl/nl/nieuws/1178607/tweede-kamer-verdeling-geld-infrastructuur-moet-eerlijker> [Last opened on 8 February 2023]

<sup>20</sup> These programmes concern: health technology, hydrogen economy, agriculture and food, leisure economy, and circular economy.

# Reflection on the Groningen Gas Extraction Case

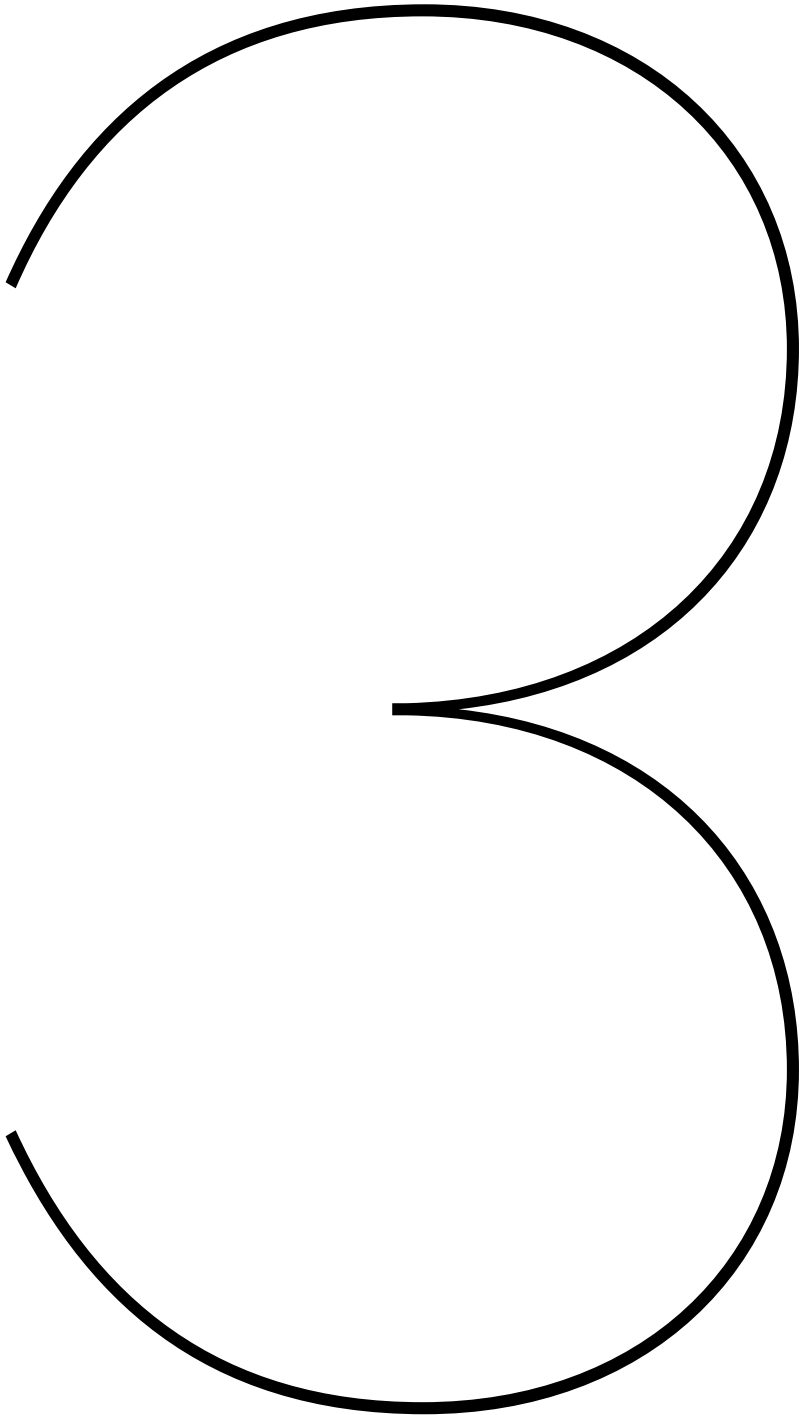
In February 2023, the Parliamentary Committee of Inquiry into natural gas extraction in Groningen published the report *Groningers before Gas*. The central conclusion is that the Netherlands owes Groningen a debt of honour, because the province was treated as a *wingewest* (this can be understood as a region in which extractive industries take place while the profits go to a different area in the country, or as a colony exploited for the benefit of home countries). The inquiry concluded that “gas extraction meant ignoring the interests of the people of Groningen in systemic fashion”, by both the national government and the oil companies (Tweede Kamer der Staten-Generaal, 2023b, p. 26). The powerlessness of local politicians also became painfully clear.

Recently, the Cabinet published their response *Nij begun*, which contained a 50-point plan for the future. They concluded it with a hopeful perspective: “A new beginning for a region that plays a *leading role* in the field of energy, health, and (agricultural) innovation, with chances for everyone.” [emphasis added] (Rijksoverheid, 2023, p. 48).

Great promises have not been lacking in Groningen since the 2012 earthquake in Huizinge that shook everyone awake. Hopes were raised before. *Nij begun* contains, without a doubt, an impressive list of generous, good intentions and promises for the future, especially concerning damage repair and reinforcement.

Authors: Tom Postmes  
& Nienke Busscher





The worrying thing is that warm words about ‘Groningen’ have often proved meaningless. The inquiry shows that the government time and again claimed that the wellbeing of *Groningers* was at the forefront of its policy decisions, but the reality was that the *gasgebouw* (literally: the ‘gas building’ — a public–private partnership)<sup>21</sup> pursued one single goal: maximising profits. Even when the Cabinet closed the gasfield, making it look like a big gesture for the residents, the inquiry showed that this happened because minister Wiebes told the Cabinet that continued extraction had become too costly. So, the interests of the people and the region were always secondary to the treasury.

The lesson is that it is wise not to rely on words, intentions, and plans, but on facts and practical effects. The intentions are positive, but are they executable and realistic? Will they benefit residents? This knowledge overview is concerned with this reality. The core questions therefore are: what is the ‘state of the region’ at this moment? To what extent are there going to be improvements?

## Toward a Prosperous Region

**The current knowledge overview shows that the region is falling behind on many indicators. If the region wants to play a ‘leading role’, it first needs to considerably catch up. What is the state of knowledge?**

Economically, it is uncontroversial that Groningen, according to Dutch standards, is a disadvantaged region, while on paper it has been one of the richest regions of Europe because of the profits from gas extraction. Nobody doubts that the economic impact is real, but finding out exactly what damage the seismicity has done is difficult. From the perspective of Statistics Netherlands (*Centraal Bureau voor Statistiek*, CBS), the influences of population decline and ageing (also seen in other regions such as Zeeuws–Vlaanderen and the Limburg mining region) are hard to disentangle from the influence of gas extraction. Additionally, things like damage to the perception of the region are hard to quantify. And all the more complicated is discounting the economic benefits accruing from billions of euros invested in damage repair and housing reinforcement. In sum, the question “what is

<sup>21</sup> The gas building is a public-private partnership with multiple legal entities including NAM, EBN, and EZK that jointly made strategic decisions regarding gas extraction until 2018.

fair compensation?” is so hard to answer that one has to doubt whether it would be scientifically possible (let alone reliable) to quantify it.

Moreover, the desire to precisely quantify damage caused by gas extraction stems from an increasingly criticised and outdated way of thinking. The aim is partly to be able to recover all damage from the NAM and partly to ensure that residents do not unfairly benefit. In this way, a huge amount of money is spent on engineering and accounting for everything, in the hope of saving money. This approach is one of the prime reasons why the implementation of policies has become unacceptably costly and slow: it just does not work.<sup>22</sup>

## Interests of the people and the region were always secondary to the treasury

It is for this reason that the Committee makes its moral appeal: the country has a debt of honour to this *wingewest*. And indeed, one thing is certain beyond a doubt. On paper, the province was the richest of the Netherlands for decades and yet the poverty rate is, on average, 30% higher than in the rest of the country. If you look at long lasting poverty of households (the most poignant form), then it's 45% higher than the national average. This means that in the Groningen countryside you find poverty issues that are otherwise found only in problematic big-city neighbourhoods. That this is a historical fact makes it even more poignant, because for more than a century, Groningen and the North have provided energy for the rest of the country, first from turf and then from gas, but very little of the enormous profits were invested in the region itself. It is for this reason that the North's economic structure lags behind.

<sup>22</sup> The *Algemene Rekenkamer* (2022, p.51) writes: "In 2021 the IMG spent € 0,74 of every euro that was paid out on implementation costs." At the NCG, the implementation costs are significantly lower, at 23%, but the NCG does not consider the excessive costs of calculations in a regular intake and assessment ("depending on the approach € 52.000 up to € 130.000") as overhead but as reinforcement costs. From the perspective of the resident this is a bit ironic, because these calculations are mostly meant to justify the bill to the NAM. For residents, the long period of calculations is very frustrating.

On paper, that is about to change. Many questions remain about the 20 billion euros that Groningen can look forward to. As always the question is how much 'new' money is really involved. Furthermore, we wonder whether there is support for the plans in the investment agendas, whether they have been sufficiently and solidly thought through, and if there is enough supervision on the process and its outcomes.

To create support for these plans, the proposal is to organise innovative meetings (among others a 'conference for the North' and a 'social manifestation') that remind us of the people's congresses in Groningen in the 70s. A difference is, however, that these people's congresses happened before plans were presented. For the current plans, there has not been a broader discussion about what the debt of honour consists of and how it should be redeemed. Reportedly, civil society organisations also were not, or were barely, consulted when the local and national government, each independently, made their plans for Groningen this year. And these two parties, in the run-up to and after the publication of *Nij begun*, publicly disagreed. The consequence is that there seems to be a big bag of money on the table, earmarked in ways that governments disagree about, and with the promise that broad consultation will still take place.

This course of events is in some ways reminiscent of how the NPG was put together. Within the NPG there is considerable attention for monitoring the effectiveness of investments. However, of the investment decisions that were made at the start of the programme, it was (a) unclear what the alternatives were and (b) the effectiveness was not substantiated well (scientifically or otherwise). Although there is a lot of knowledge about the use of investments to sustainably improve the economic structure, it is unclear how it was used when choices were made. For example, investments in education (especially middle and higher level applied education) have value in many ways, but investments in (rail)roads usually add less value. How does that knowledge relate to the choices that were made in the plans of the Cabinet for Groningen? There is little attention to education. There is a lot of attention, however, to energy, in which the lack of thought about the risks for people and the landscape stands out. Say, for example, that Groningen does become the energy province of the Netherlands, does this mean that *broad prosperity* increases, or do the profits, as it happened with the turf, gas, and wind energy, go to the investors and the State? The law does not put any obligations on energy operators to ensure that the region from which the energy is extracted also benefits. And the world of hydrogen and new energy does not yet have a good reputation in the area of consultation and participation.

Our last point of concern about the plans for the future is the governance and oversight of investments and outcomes. This is especially difficult because institutions such as the NPG have been structured as partnerships between different layers of government: all representatives on all levels can have an opinion about the plans, which blurs the responsibilities. Who is responsible for oversight? And who is responsible for representing local communities? Better representation of resident interests is, in view of the inquiry's conclusions, desperately needed, because until now, "from the point of view of the affected residents, the compensation measures brought very little resolution and [...] it is doubtful whether they have sufficiently contributed to the achievement of the goals set." (Tweede Kamer der Staten-Generaal, 2023b, p. 69).

All things considered, it is clear that we should avoid making the old mistakes: in order to truly make a new beginning, *Nij begun* will have to learn from the past. It would be a refreshing break from the trend if the North first took a look at itself: what do we want with *our* region and *our* prosperity, and how do we restore confidence and trust in the future? This will require tapping into new self-confidence. It will also require inspirational leadership from within the region itself and a new social movement.



**What do *we* want with *our* region and *our* prosperity, and how do we restore confidence and trust in the future?**

## Good Governance

**Having mentioned democratic control and representation of residents' interests brings us to the tricky point of governance and the quality of public administration. The problems due to gas extraction have badly eroded trust.**

The inquiry concludes this has been an “unprecedented system failure” (Tweede Kamer der Staten-Generaal, 2023b, p. 26). Nonetheless, the Committee recommends that the government does not change this system, even though research shows the system itself has become problematic for residents who are most affected. Accordingly, the government states: “the Cabinet takes to heart the advice of the Committee not to fundamentally change the governance of damage control and reinforcement now.” (Rijksoverheid, 2023, p. 39). The consideration is that changing the system again, for example by integrating damage repair and reinforcement, could worsen the situation. We know from research that the current system functions with such difficulty and such unintended side-effects that fundamental changes seem unavoidable. This is necessary for the feasibility of *Nij begun* and to give residents, as intended, a central role in the implementation.

The inquiry makes suggestions for improvement of governance, but *Nij begun* is hardly concrete on this point. The *gasgebouw* was (if we should believe ministers Verhagen and Kamp) a State within the State. Ministers insufficiently and incorrectly informed the House of Representatives because their civil servants in the *gasgebouw* allegedly withheld things. The response of the Cabinet is to dismantle the *gasgebouw* and to better safeguard the public interests in state-owned companies such as Energy Control Netherlands (*Energie Beheer Nederland*, EBN). However, *Nij begun* does not clarify that a broader change is needed. After all, things went wrong not only at state-owned companies, but especially at the Ministry of Economic Affairs and Climate (*Ministerie van Economische Zaken en Klimaat*, EZK) and the Ministry of Finance (*Ministerie van Financiën*). It would be good for these ministries in particular to learn lessons.

The inquiry describes that EZK could not reconcile the conflicting interests: in its decision-making, safety of residents became subordinate to energy provision and profit maximisation for the treasury and businesses. The Cabinet responds to this concern with few concrete plans. At the ministry, civil servants will soon take a new 'oath of office' in which serving the public interest is made explicit, and "counter-thinking will be encouraged" within the civil service (Rijksoverheid, 2023, p. 41). Additionally, more dialogue with citizens is encouraged.

Naturally, it is good to have dialogue with citizens, but it is also necessary to change methods and legislation. In new energy projects, risks for local residents are still assessed, monitored, and regulated in the old way. EZK holds on to their old understandings of safety: responsible businesses adhere to existing legal norms for things such as stench, noise, and risk of death. This is also what the *Environmental Impact Assessment (Milieueffectrapportage, mer)* — central to licensing — still revolves around. The social impact for local residents is not a factor in this process and residents do not have a say in the process either. Furthermore, it is not possible in current legislation to demand from companies ways in which they should interact with local residents or compensate them for nuisance and risk. In sum, it is as if the problems that arise from gas extraction in Groningen have in no way encouraged any substantive policy change, even though EZK's technocratic approach to risk is really different from internationally accepted working practices and even from the practice of our own Ministry of Infrastructure and Water Management (*Ministerie van Infrastructuur en Waterstaat, I&W*).

Equally striking is that a different aspect of the failing system is kept intact: the system of consultation structures, accountability, regulation, national coordinators, national programmes and approaches. In this way, the problem was divided into separate and seemingly manageable pieces, in order to better solve them. The government has allotted these tasks to new agencies, each responsible for their own part. All governments, meanwhile, were fully committed to their own mandate and wanted to have a say in everything. The consequence is that a multitude of governmental bodies look over the shoulders of those implementing measures and have to give them approval. Often, by necessity, these agencies were (and still are) mostly concerned with each other. As a result, it is difficult for residents to take centre stage.

*Nij begun* wants a completely different approach and, in terms of ambition, goes down an entirely new road that, in our view, is the right one: an area-oriented reinforcement that provides residents with more input, on the basis of an area-plan, in which houses with recurring damage are repaired and made more sustainable at the same time. Such a holistic approach (that, by the way, is very similar to the ideal that National Coordinator Hans Alders described in 2015) seems like a big task for the current patchwork of agencies and institutions. An example: many of the described tasks are formally the responsibility of municipalities and it seems logical if they were in control. However, control actually lies with the IMG which is an independent administrative body and by definition cannot be directed, with the NCG that ultimately decides itself on the use of resources, and with the NPG which is completely independent from this. On top of all this, EZK and the national government pay for everything and therefore (understandably) also want control. We question this governance structure and therefore consider the feasibility of these essentially good plans to be limited.

## Everyone wants the best for the resident, but the joint approach still runs aground

Improving the cooperation between different parts of the government should be a separate point of attention to truly make a new beginning work. There are many examples in the inquiry report suggesting that for the past 10 years the different layers of government have disagreed with each other on just about everything. Whether it concerns safety (where EZK, The Mining Council (*De Mijnraad*), and Dutch State Supervisor of Mines (*Staatstoezicht op de Mijnen*, SodM) clashed) or the consequences of ground movement (higher and lower governments, municipalities among themselves) or issues behind residents' front doors (in which municipality, EZK, NCG, and/or IMG are involved): everyone wants the best for the resident, the personal relationships are often good, but still the joint approach runs aground on resources, power and, sometimes, insight. There is a world to be won here.



# Spatial Quality and Liveability

## **The issues of spatial quality are becoming more and more prominent in the new plans, it seems.**

Here too, it is good to learn from the recent past: the issues were always there (as were issues like sustainability), but they were neglected and even discarded, partly because neither NAM nor the State wanted to pay for them. The lesson is that, until recently, things like spatial quality and heritage were seen as ‘nice to have’s and not as core values and capital that one needs to have. The need to invest in them was therefore lacking. For residents, the priorities are clearly different.

The importance of this theme is shown, among others, by *Toukomst* — the part of the NPG in which the needs of residents themselves are central. We see an interesting contrast. Whereas the plans for the future made by governments are mainly about material issues such as energy, healthy ageing, infrastructure, or innovative agriculture, residents’ initiatives revolve around other values: the quality of the living environment, societal issues such as cohesion or culture, and also good governance (themes that local residents also value in research into *broad prosperity*).

The inquiry points out the immorality of this unwillingness to do what is necessary. But, according to us, it also points to the broader flaw that seeps through this case like ‘creeping oil’: in decision-making, things only became reality when they could be expressed in euros or human lives. The things that cannot be expressed in these quantities were easily framed as ‘nice things for the people’. We suspect this is why there is no place for well-being and human dignity in decisions about safety. Such a way of thinking may explain that spatial quality is only a ‘precondition’ in the plans of the Cabinet: “It is important to ensure that residents recognize themselves in the changes, that what is of value is preserved and that spatial quality is strengthened” (Rijksoverheid, 2023, p. 37). This clearly does not have the priority and urgency the investments in innovative agriculture and large energy projects do. However, as Chief State Architect (*Rijksbouwmeester*) Floris Alkemade observed in *Panorama Nederland*: a shift in thinking is needed here.<sup>23</sup> The true capital in our already densely populated

<sup>23</sup> Available at <https://www.collegevanrijksadviseurs.nl/adviezen-publicaties/publicatie/2018/12/06/panorama-nl>

country is no longer just the packed motorway or bustling port,<sup>24</sup> but also, or even precisely, the preservation of an environment worth living in. And exactly that is the capital of the gas extraction area, with the *Waddenzee*, the varied and beautiful surrounding countryside (*Ommelaand*) and a wealth of heritage that is also unique internationally. It is not surprising that residents appreciate this wealth: they experience it every day. It deserves more priority, from both The Hague and the province itself.

## Are we, together, creating conditions that make life worth living?

We see something similar surrounding heritage and culture. Heritage is seen as something that should be protected against ground movement. Culture is named in *Nij begun* as a means to restore personal and social well-being. In the view of many residents, however, they are essential things that make life worth living. Here too we point to the lessons of Groningen: the industry boasts that no one would have died as a direct result of collapse. ‘Groningen is safe’ was their conclusion. But that ignores what this is really about: are we, together, creating conditions that make life worth living, or are we creating conditions that make residents increasingly want to flee the area? Under that heading investing in things like culture, heritage, and education in Groningen is not a nice extra, but an absolute prerequisite for the future of residents and their children.

**In short: we are looking forward to a future in which these matters are given an even more prominent place on the investment agenda, in which they are embraced as an end goal in and of themselves.**

<sup>24</sup> The Rotterdam port and the national highway were, among other large infrastructural projects, built using revenues from the Groningen gas field (Tweede Kamer der Staten-Generaal, 2023a, p. 389).

# Health and Well-being

**Compared to previous investment initiatives there is, in *Nij begun*, a special and hopeful change: residents and their well-being are placed at the centre for the first time.**

Until now, the main focus has been on their houses and the assumption seemed to be that if those were declared safe, residents would be fine again. Now there is a new program: a 'social agenda', with objectives on (mental) health, cohesion, opportunities for children, and poverty. As this knowledge overview shows, these things are urgently needed: in terms of health and well-being, the damage caused by gas extraction, earthquakes, and their laborious handling is still current, urgent, and extensive.

The positive news is that *Groningers* are proud of and happy with where they live, but besides that the earthquakes and problems arising from gas extraction have affected well-being in a broad sense. These aspects are acknowledged in *Nij begun* and investments are made in remedies, buffers, and patches. It is of course also important (or even more important) to take away the causes: *Nij begun* also attempts to do this. Although the program is without a doubt necessary and good, it is also important to be realistic: we know from the past that known problems are not easily resolved. We expect the inconvenience and insecurity caused by damage and reinforcement to last well beyond 2028. The horizon of thirty years in *Nij begun* is realistic.

When shaping a new program around the 'social agenda', it is good to learn from the experiences with NPG and all other previous programmes. Additionally, what has been said before about good cooperation is also essential here. Health and well-being are demonstrably intertwined with the approach to reinforcement and the handling of damage, but also with the investment agenda, spatial plans, and all previously mentioned subjects. The economic ('prosperity'), spatial ('liveability'), personal ('well-being'), and technical ('the construction operation') cannot be treated as separate dossiers: behind residents' front doors they are inextricably linked. The key is to give the resident a central role and place in everything.

In closing: a reflection on the role of knowledge in the future. It has been a special period for our Knowledge Platform. Both in the report of the inquiry, *Groningers before Gas*, and in *Nij begun*, our years of research have received considerable recognition. Recommendations, some of which we have been making for a long time, are now being adopted. You could say: the penny has dropped and the Knowledge Platform has fulfilled its task.

In terms of acceptance of our core messages, much has indeed been achieved. The evidence had been there for some time; it is now being accepted and acted upon. But as we argued at the beginning of the reflection, *Nij begun* is more of a dreamed direction than a new beginning, let alone the 'solution'. The subject remains extremely complex and multifaceted and there is still a lot of knowledge that is not being used. It is evident that at least three major tasks remain.

## ***Nij begun* is more of a dreamed direction than a new beginning**

The reinforcement is not even at the start of completion. First, therefore, it remains necessary to conduct research into the development of the case. We also note that new questions are emerging, partly as a result of *Nij begun* itself. These questions indicate that actors in this field want to take more account of the societal side of the story. This calls for a pooling of knowledge and better interaction between practice, knowledge, and insight. That is our field of work.

The second task *Nij begun* has not yet got around to is translating the lessons of Groningen into new policies and ways of working, for instance in the field of safety or in the fair distribution of burdens and benefits. This is where it is not only necessary to implement existing knowledge: new knowledge and new ways of working need to be developed that better integrate the technical and social. This will require a boost for the latter:

the fields of mining and industrial safety are so dominated by EZK and the technical disciplines that there is far too little expertise and continuity on the human and societal side in the Netherlands. Minister Kamp could rightly introduce his preferred safety expert in parliament as ‘the only safety professor in the Netherlands’: all the others had retired.

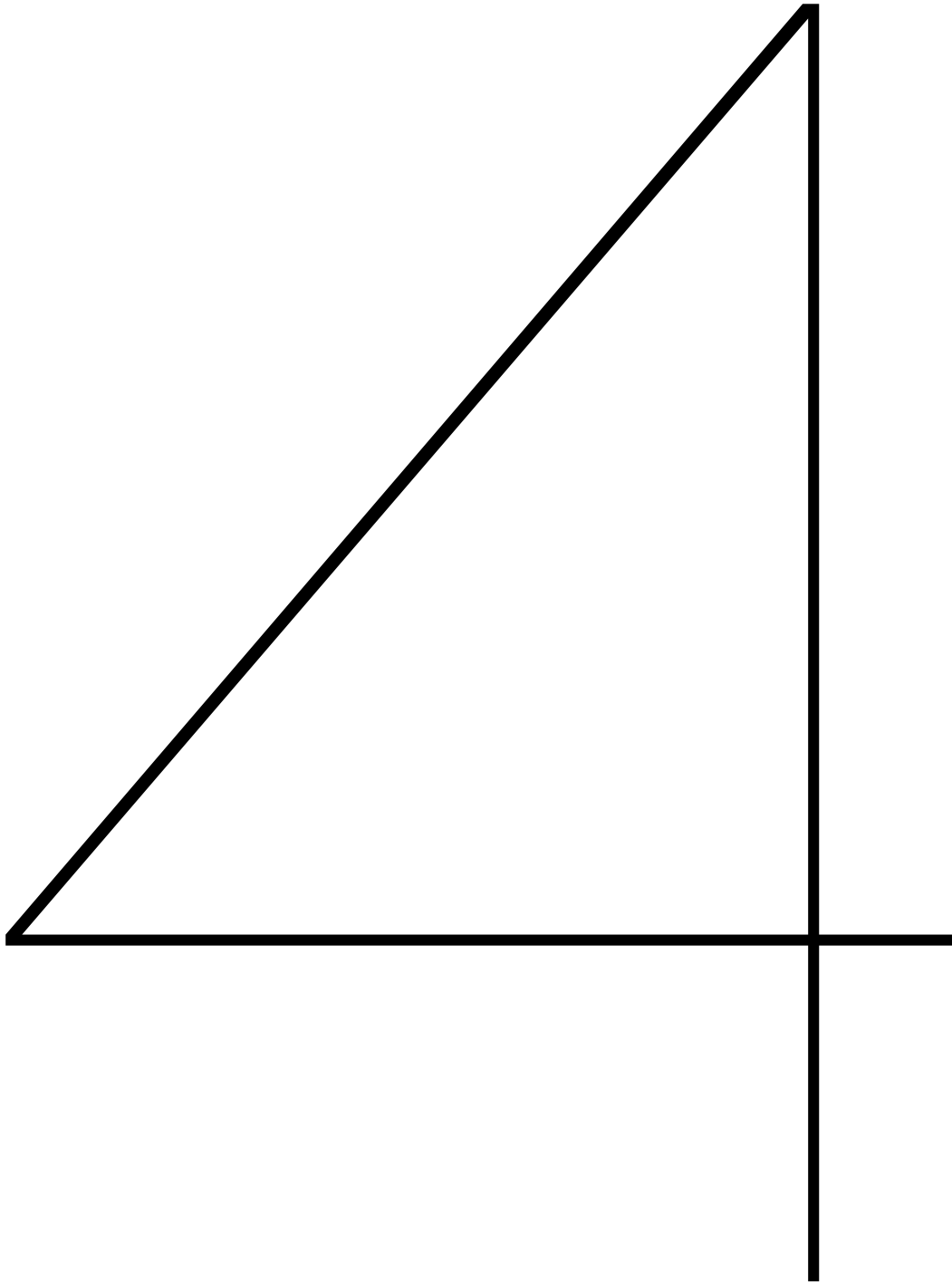
This brings us to the third and final point. *Nij begun* initiates a “coherent knowledge program for sustainable and safe use of the subsoil in the energy transition and the effects above ground on people, buildings, and infrastructure” (Rijksoverheid, 2023, p. 45). This ball is explicitly in the miners’ court and we do not think that is surprising. However, at this time it remains unclear which role the insights in this publication and the ‘lessons of Groningen’ will play in this and how our Knowledge Platform will cooperate with this new program. In the parliamentary inquiry, our research received recognition and praise. Hence, our activities will not become superfluous now that the knowledge program is being broadened on the geo-side: you build on what is going well. Moreover, it will be necessary to continue research into the specifics of the Groningen gas extraction case (as the Committee also advises). But we expect that it will be a search from all sides on how to better integrate different disciplines, while also better including the input of residents.

**In short: *Nij begun* — a new beginning — sounds in almost all respects like a fantastic idea. To turn the page, to do everything differently from now on, to do it better. But that does not mean we can or should forget the past: it exists and must be acknowledged. Nevertheless, it is also clear that all parties will regularly be asked to undo unfortunate decisions of the past and swallow away unpleasant memories in order to move forward.**

**A new beginning sounds like a fantastic idea, but that does not mean we can or should forget the past**

# Visualising Impact

Authors: Paulien de Haas,  
Willemijn Schreuder &  
Nienke Busscher









## Introduction

If you drive through the province of Groningen, the impact of the gas extraction becomes visible. The reinforcement operation is in full swing. Many houses are in scaffolding or struts. Construction workers work day and night on the restoration. Hundreds of houses have been demolished and rebuilt. In some places, open plains rise where once used to be houses. All of this affects the liveability and the appearance of many villages and neighbourhoods. How does this affect residents? In this part of the knowledge overview, several residents tell (part of) their story and we visualise what the province looks like through photographs.

Photographer Marieke Kijk in de Vegte ventured into the gas extraction area. In her photos, she highlights

the beauty of, and activity in, the province. They show the importance of heritage for the identity of villages. For good reason, there are signals from different directions that this heritage should be preserved. Marieke photographed several residents and villages — among others — Hoogezand, Loppersum, Overschild, Schildwolde, Thesinge, and Stedum.

We spoke with some of the portrayed residents about their living environment and the impact of gas extraction on their life. Among other things, Jeroen and daughter Nikita talked about having a home business and growing up in Schildwolde. Jelly and Rob spoke about the now-completed demolition-and-rebuild trajectory of their house in Overschild. Appie and Heidi from

Thesinge are in a completely different stage of the process. They are still waiting for the reinforcement advice for their house. Jeroen talked about his life in Loppersum and about a second house that he and his partner are currently renting out to fellow villagers that had to temporarily leave their house. The photographs sketch, together with the personal stories of residents, a picture of the situation in Groningen.

The interviews also show the strength and resilience that residents need to cope with the situation. They are forced to put time and energy into a process they never asked for.

We also pay attention to the many people who work on the extraction case every day. They too experience

the heaviness of the case and try to put a (positive) spin on it. For instance, we interviewed Gert Jan of construction company Paas BV. This company was responsible for the reinforcement of the school in Thesinge. Furthermore, we pay attention to the opportunities of the reinforcement operation. We explain the *scholenprogramma* (the reinforcement program for schools in Groningen) that ensures dozens of school buildings in the region are future-proofed and adapted to today's needs.





## Hoogezand

Hoogezand is located in the municipality of Midden-Groningen and has a population of 21.965 (measured in 2022). Together with Sappemeer, 220 addresses are included in the reinforcement operation. Of these, 60 addresses were completed by early 2023. In 2021, Queen Máxima opened a new cultural and administrative centre in Hoogezand. The building plans were adjusted midway through the process so that this building too would be earthquake-resistant. The House of Culture and Administration (*Huis van Cultuur en Bestuur*) houses the library, music school, theatre, and town hall.

### **Scholenprogramma**

The *scholenprogramma*, a programme of the NCG, was developed to make all schools in the province earthquake-resistant and future-proof. It plays an important role in Hoogezand. Besides reinforcement and damage repair, the programme also focuses on the consequences of demographic decline, pupil decline, educational offer in the region, and current (sustainability) requirements for school buildings. The programme includes 101 school buildings, of which 21 will be reinforced and made more sustainable. For the remaining schools, 42 new premises will be built. Some schools have been demolished. In the municipality of Midden-Groningen, 26 schools are part of this programme, of which 11 have been reinforced and 15 were eligible for rebuilding. In Hoogezand, new child centres were created consisting of a combination of primary schools and childcare. Sustainable and earthquake-resistant houses are now placed where primary schools used to be. They are mainly homes for senior citizens and first-time buyers.







### Loppersum

Loppersum has a population of 2.283 (measured in 2022) and was an independent municipality until 2020. In 2021, the municipality merged with the municipalities of Delfzijl and Appingedam into the municipality of Eemsdelta. Many houses date back to the 19th century. This makes it a unique village with a lot of cultural history. Hotel Spoorzicht is a well-known location in Loppersum where many conversations and meetings about the problems arising from gas extraction took place.

There are 1.288 addresses in the village included in the reinforcement operation. For the vast majority, the inspection of homes was carried out and assessments were made. After (re) assessment, 56 addresses were found to be up to standard. For only 57 of the remaining addresses in Loppersum, the process of implementing reinforcement has started, while about 524 addresses are still waiting for it to start. Temporary housing has been built at three locations in the village. One more location will be added in 2023, which means there will be a total of about 126 temporary housing units.



















# “That was a strong shake” and then move on with the rest of the day.

Jeroen loves Loppersum. ‘It is a beautiful, easily accessible village with many amenities.’ However, he does notice that the problems arising from gas extraction deeply affect the village. The individual approach to damage and the reinforcement produces many unequal situations. This creates tension and friction: “why them and not me?”. Jeroen is well aware that it has a profound effect on a person when you have to leave your home involuntarily. Yet, his connection to the village did not change after all the ‘hassle’. He did see this a lot with other people. Especially around 2012, when there were about 20 houses for sale in the village. Sales were difficult at the time. Meanwhile, Loppersum is back in demand.

Jeroen is active at the foundation *Dorpsbelangen* — which represents the village residents — in Loppersum. Here, he met a family who had to leave their home due to the reinforcement. He offered their nearby second home to the family to live in temporarily. They bought this house in 2007/2008 with the idea of renovating and renting it out. Given its location and the connection to their own property, this was a logical move. Unfortunately, earthquakes

threw a spanner in the works. Damage occurred in both houses and many cracks had to be repaired before they could proceed with the renovation of the second house.

Initially, by no means was all of the damage recognized as earthquake damage. Jeroen and his partner had to provide a lot of evidence and input during the process towards recognition. For example, a crack in a stone column was considered frost damage by the NAM, but after contacting a manufacturer, they were able to provide evidence that it was indeed earthquake damage.

The second house was completely measured and assessed. The chimneys were assessed as potentially hazardous. They are an integral part of both the front and rear façade, which made the repair complex. After two and a half years and eight thick reports, the repair agreement was signed. It then took another year and a half to actually carry out the reinforcement. The cost of the preparation was estimated to be twice as high as the cost of implementation. The long wait, the constant changes, and the ignorance of certain ‘experts’ made it an exhausting process. ‘You get desperate.’

The house in which Jeroen and his partner themselves live will not be reinforced for the time being. They have renovated and repaired the house for forty years, and they cannot even think about having to renovate it again. Experiences in their area show that there is

little chance of getting the house back in its original state. Special ornaments of a house, such as a unique wallpaper, definitely will not come back. ‘The charm disappears from houses that are reinforced.’

Despite the fact that their house is not reinforced, Jeroen feels fine in the house. “It probably won’t collapse.” But after a heavy earthquake in the night, they do lie awake. Despite this, you learn to live with feeling unsafe. According to him, this is necessary as earthquakes continue to occur. Putting it into perspective helps them go through it. They don’t talk much about it. “So be it” or “That was a strong shake” and then move on with the rest of the day.

There is much room for improvement in the approach to damage and reinforcement, according to Jeroen. He thinks residents should have more freedom and a say in the damage repair and the reinforcement of their house. Besides that, processes take an enormously long time and the communication feels impersonal. Professionals change frequently and they often do not have enough authority. Jeroen would like to see a fixed contact person per project who can actually do something. Many people are resilient and self-reliant, but there are also residents who are less able to cope with the constant change of plans and appointments within their trajectory. The agencies should not stand against, but stand beside the residents.

<sup>25</sup> This is a heritage status. Municipalities can attach the label ‘character-giving’ to buildings when they consider them essential for the appearance and identity of an area.

## Jeroen

Jeroen Franzen is originally from Zuid-Holland and moved to the city of Groningen to study English. He and his partner have now lived in Loppersum for 40 years, in a ‘character-giving’ house<sup>25</sup> built in 1860.

## Stedum

Stedum is a village located in the municipality of Eemsdelta with a population of 929 (measured in 2022). The reinforcement operation is in full swing here. This concerns both private-owned properties and properties owned by housing corporations. Thirty-one temporary housing units have been placed on the Hilmaarweg for the reinforcement operation. Several houses in Stedum are empty, waiting to be demolished and rebuilt. In 2022, an initiative by village residents took place to brighten up an abandoned house with murals. In April of 2023, the complex 'Nij Nittersum' was demolished in Stedum. This property was owned by the housing foundation Wierden en Borgen. The demolition was controversial as many residents wanted to keep the building.























## Schildwolde

The village of Schildwolde is located in the municipality of Midden-Groningen and has a population of 1.675 (measured in 2022). Not all addresses in the village are included in the reinforcement operation. However, some individual addresses in the outer areas of the village and some cluster-addresses (classified by the municipality) are included. In total, this concerns 331 addresses. The vast majority of the addresses are in the phases of 'assessment' or 'plan-making'. In the phase of 'plan-making', many owners have chosen to reassess the property on the basis of the newest norms.

Schildwolde has a joint support centre of the NCG and the IMG. Residents of the earthquake region can ask questions about both the handling of damage and the reinforcement of their house. If residents want to tell their story, they can also turn to the support centre for a listening ear.







# “It comes as it comes and it goes as it goes.”

## Family Haan

Jeroen Haan was born and raised in Schildwolde and has been living — for about 29 years — at the edge of the village, now together with his wife Eugenie and daughter Nikita. Their son currently lives in Overschild, where his rental house is to be demolished.

In 2004 they started the company Jereus, where Jeroen sells clogs, work shoes, and boots, among other things, in a sales wagon. The wagon is often in the yard, as well as at markets. The company has a wide brand recognition in the area and a large customer base, with loyal customers even in Germany and France. Jeroen would rather sell one pair of shoes that are worn with satisfaction than three pairs that end up in the closet; ‘after all, worn-out shoes have to be replaced.’

Customers sometimes pour their hearts out to him. They talk about the damage to their homes, the unclear communication, and the uncertainty involved. The stories especially increase immediately

after a quake, when people are doing rounds around their house. Jeroen himself has a down-to-earth and positive attitude and tries to convey this to his customers. ‘It will be fine, it just takes a long time’ is often his message.

The family’s home has also suffered earthquake damage. Damage they reported in 2017 was not recognised as earthquake damage. Later, in 2021, reinforcement plans were made for the front and back façade of the house.

Jeroen and Nikita see many points of improvement for the gas extraction case. They describe the current communication to residents as impersonal and messy. They would like to be treated personally and not as just a number. One fixed contact person per village, that knows of the specific situations, would be an improvement. According to them, there is much miscommunication between institutions and professionals. During their reinforcement trajectory, agreements were not met, construction drawings sent by Jeroen were not included in the reinforcement plan, and the family saw multiple resident facilitators<sup>26</sup> come and go.

Professionals seemed to be working independently, without coordination or consultation with each other. As a consequence, the specific situation of the family was not taken into account. With their business, they are dependent on the sales location at their house. Besides that, their horses and chickens roam around the yard. There was therefore a slight panic when, shortly before construction started, the family was suddenly told that they had to leave the house. This was especially bothersome because the information was incorrect. In fact, the façades could easily be reinforced via the roof tiles.

Jeroen thinks the damage to their house, such as cracks and crooked tiles, is a real shame. Yet he doesn’t report it because he doesn’t want to have another discussion about whether or not it is earthquake damage. Besides, it is often easier for him to fix it himself. If people have to visit, Jeroen has to take time off and he loses a day’s profit. Unfortunately, he has little faith in authorities and prefers not to have any expectations. ‘There is also little point in worrying. Life just goes on.’

Despite the earthquake problems, Jeroen still feels connected to Schildwolde. He describes the neighbourhood as beautiful and friendly, and the people as very helpful. The family often gets help from neighbours, for instance when containers full of goods arrive. Nikita agrees. When her horse ended up in the ditch, the neighbour immediately came to the rescue. She finds it an ideal place to grow up in. There is plenty of space, tranquillity, and she knows the people in the area. The problems connect people. It sometimes frustrates Nikita that many outside the area do not know what is going on and how it affects people. So she doesn’t really talk about it with fellow students from the city. The family views the future positively. They are not afraid of future earthquakes or an unsafe home. ‘It comes as it comes and it goes as it goes,’ says Jeroen, laughing.

<sup>26</sup> Resident facilitators (*bewonersbegeleiders*) are appointed by NCG to support residents through reinforcement procedures.





### Overschild

Overschild is a village located in the municipality of Midden-Groningen with a population of 510 (measured in 2022). The village is often cited when it comes to the reinforcement operation. The vast majority of houses have been demolished and rebuilt. As a result, the appearance of the village has considerably changed. Overschild's village church also needs reinforcement. This national monument built in the 1880s is of great importance to the village's appearance. A large-scale restoration is planned in 2023. The reinforcement and restoration will then be jointly tackled. This will also address new wishes. For instance, there are plans to open a tearoom in the new entrance and the building will be made more sustainable by installing a heat pump and solar panels.

























# “The situation makes you cynical.”

## Jelly and Rob

Jelly Dijkstra is originally from the north of the Netherlands and Rob Gramberg from Amsterdam. They both moved about 20 times in their life. They met at the Social Academy in Driebergen, but are now enjoying their retirement in a brand new house in Overschild.

In 2008, Jelly and Rob left Brabant, to settle in Groningen. Because of asthma, Rob was advised to move to an area with clean air. They spent two summers in Groningen to see where they wanted to live in the province. After spending entire days browsing Funda, a housing site in the Netherlands, a detached house in Overschild caught their eye. They fell for the horse stable, the type of house, and the space around it.

After the earthquake near Huizinge in 2012, there was damage to the property. The handling by the NAM went smoothly. However, the quakes that followed caused more and more cracks and hassle. Jelly and Rob describe it as a “kind of game” where you report damage, an expert says it's not earthquake damage, you then request a counter-evaluation and still receive money. In 2017, a pilot started in Overschild and inspections were carried out throughout the village. Jelly and Rob's house was assessed by 10 people and a report was drawn up. This, to them rather unclear, report was only a summary. They wanted to see the entire report and got it through a Wob-procedure<sup>27</sup>. The report contained an appendix about the foundation of the house. The foundation was found to be unsafe and needed to be replaced. To their great surprise, this was not even mentioned in the summary of the report. Furthermore, the number of blacked out words in the report was striking. These contained sensitive information and, according to them, fit perfectly with the “mentality of distrust” towards residents.

Jelly and Rob's house turned out not to be earthquake-resistant. It was much cheaper to demolish and rebuild than to reinforce the house. So this is what the NCG opted for. Fortunately,

they didn't have a lot of trouble demolishing their house. They also knew very well what they wanted: a wooden house. Rob started drawing and they started looking for contractors. The new house was placed at a different spot, to the left of the old house. Because of this, they did not have to live in temporary housing. They had heard many bad stories about temporary housing, involving problems with moisture and leakage. From April 2021, the new house was built in its entirety in Sweden. On the 31st of August 2021, the house was transported to Overschild with trailers and placed with a big crane. Only after this, the demolition of the old house started.

Unfortunately, contact with professionals and agencies did not go smoothly for Jelly and Rob. The resident facilitator of the NCG had little authority and eventually quit. They found the conversations with the municipality about municipal subsidies, among other things, to be exhausting. They had to fight for many things. ‘Everything is process- and procedure-oriented.’ Jelly and Rob say they don't mince words, something that often worked to their advantage. Yet, even for them, it was an exhaustive process. Apart from the legal help they had arranged themselves, they did not experience any real support.

Jelly and Rob experience difficulties with the injustice in the gas extraction case. The core of Overschild, for example, has been reinforced, but the outer area of the village has not been addressed, yet. “It's about money, not safety”, says Rob disappointedly. ‘A large part of the money goes to inspections and reports. The situation makes you cynical.’ Both would like to see that the government stops distrusting residents. According to them, it is necessary to think from the people's point of view and not only in rules and regulations.

Jelly and Rob were already familiar with building a house. Still, they would not recommend it. ‘It is a lot of fuss and bother.’ Despite the gruelling process they had to go through, they never considered moving. They love the location, the fresh air, the view, and the spacious area where they can enjoy walking the dog. It took six months for them to feel at home in their new house. They had to establish a connection with it and that worked out perfectly.

<sup>27</sup> A procedure to request information from the government, now called Wob-procedure.

### Thesinge

Thesinge is a village located in the municipality of Groningen with a population of 560 (measurement 2022). The first drilling rig (Ten Boer-1) was placed here in 1956, to search for oil at the time. This location is now still used by the NAM to monitor pressure in the Groningen field. A house was already demolished in Thesinge in 2017. In the rest of the village, the reinforcement operation is now also getting started. Twenty-one assessments are scheduled for 2023 to investigate whether the houses need to be reinforced.

The reformed church on Kerkstraat also falls within the reinforcement operation and is planned for 2023. The primary school in Thesinge has already been reinforced. Furthermore, the village has some complex, long-lasting repair and reinforcement cases. In 2022, the municipality of Groningen launched an area survey to collect ideas and wishes from villagers for village renewal.











“There may be money, but many hands have to do the work.”

## Gert Jan

Gert Jan Rozema is sustainability program manager and has been in the construction business for over 35 years. He works on maintenance, making properties more sustainable, and combining different opportunities during the implementation of reinforcement measures. Occasionally, he works on new construction.

## Paas BV

Construction company Paas BV is a family business that has been around for over 75 years.

Under the lead of Gert Jan, the company was responsible for the reinforcement of primary school De Til in Thesinge. After a different construction company withdrew from the reinforcement trajectory of the school, the NCG put out the tender again. As the reinforcement had already incurred a lot of delay, the most important conditions were starting as quickly as possible and delivering before the construction holiday period of the summer of 2022. Moreover, it was considered undesirable that the primary school's pupils had been taking the daily bus to another school in Ten Boer for a long time. Despite some setbacks, such as the presence of asbestos-containing materials in the building, staff shortages, and supply problems for construction materials, Paas BV still managed to meet

the schedule. The school was festively reopened on 28 September 2022.

Paas BV and the NCG were keen to involve the pupils of De Til in the reinforcement process. Construction was halted for an afternoon and the whole village was invited. Wearing safety helmets, the children were given a tour of the school. Paas BV did the same thing when reinforcing a senior citizen's complex. According to Gert Jan, organising these types of activities is important so residents and users can be involved in the processes of the reinforcement operation.

Sometimes Gert Jan encounters residents that are having a difficult time. He hears their stories and gives them tips. Construction companies are often viewed as the bogeyman when delays occur. “Welcome to construction,” he says ironically. According to him, when humans do the work, mistakes can happen. Contacts at other construction companies share

similar experiences on delays from the NCG and dealing with municipalities.

Gert Jan sees that the gas extraction has a big impact on people. Yet he likes to look at the situation positively. ‘A lot has gone wrong in this case, but in many places, beautiful neighbourhoods with renovated houses are now emerging.’ He is slightly less optimistic about the target of completing the reinforcement operation by 2028. He worries about the problem of capacity in construction. There is little enthusiasm for the profession from the youth these days. Both the profession, and the education towards it, should be made more attractive to meet the capacity demand now and in the future. “There may be money, but many hands have to do the work.” According to Gert Jan, a more realistic plan should be drawn up, by the whole industry, for reinforcing and building all houses.



# “You have to compete, even for a box of screws.”

## Family Ridder

Appie Ridder was born and raised in Thesinge. His wife, Heidi Ridder, is from Garmerwolde. In 1996, they settled together in Thesinge. They still enjoy living in this beautiful village where their son and daughter are also growing up.

They like living in Thesinge, a tranquil area where they occasionally chat with neighbours and have a beer together. People in the village do talk about the problems arising from gas extraction, but they prefer to avoid the subject.

Together they started a carpentry company in 2012 called Ridder. Appie works on small and big carpentry jobs in the province, many related to the earthquakes. Many of his current clients share their worries about their house and damage with him. For instance, after a severe earthquake, they might ask him to come and take a quick look at the damage. The earthquake misery also comes up during his normal work.

Contracts for repair or reinforcement work often go to large companies. Appie notices ‘favouritism’ between certain agencies and the big contractor companies. Residents have the option to choose their own contractor. However, communication about this is unclear. It is mentioned in small print, but five big companies are recommended. This leaves many potential or existing clients of Appie unaware that they do have a free choice. “The big guys get away with the money.”

The rules and procedures more often prove detrimental to the company. For instance, they regularly spend a lot of time preparing bids for reinforcement projects, which then fall apart because of

delays. They are no longer reimbursed for the hours they put into the project. The same applies to courses Appie is required to attend for working with damage repair and reinforcement. They think it is a good initiative, but ‘time unfortunately costs money and this time is not reimbursed.’

Appie and Heidi also have damage to their house and have done two damage claims. Once, they spent the compensation to repair the damage. They have not used the second compensation yet because they are waiting for their reinforcement advice. Their house was assessed in July 2021 based on the latest findings. Maintenance on the house and repairing the damage are now on hold. They find the overdue maintenance very annoying, but “paying for it themselves is a waste of money”. They still want to know what the advice says first.















The family experiences a lot of uncertainty with the application for the immaterial damage scheme and the subsidy of 17.000 euros for home improvement and sustainability. With the IMG's questionnaire for the immaterial damage scheme, they find the role of reinforcement in determining the compensation amount ambiguous. Regarding the subsidy, they are postponing work. They would like to make this investment, but again they are waiting for the reinforcement advice so

that they can combine it with the reinforcement measures. This is because the subsidy has to be used within three to four years of its award.

Appie and Heidi also experience a lot of insecurity during the process. They don't know when they will be informed and what they can expect. Being on top of it themselves takes a lot of time. Heidi sometimes spends hours in the queue for a phone call. They have little trust in the institutions. They

also find it annoying that people from other parts of the Netherlands don't understand how distressing the situation in Groningen is. A statement like "but you get a lot of money, right?" stings. Yet they do not give up and continue to fight for justice in the process of damage repair and reinforcement.

For now, Appie and Heidi continue to live in Thesinge. Later, their son would like to take over the house from them. However, they do

very much hope that the village's characteristic appearance will be preserved in the reinforcement operation. They also hope that procedures in the future will become faster, easier, and with fewer lines of communication. They feel that procedures have currently been made too difficult for residents, and that there are too many exceptions. "You have to compete, even for a box of screws."











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# Appendix A

## *Groningers before Gas*

### List of Parliamentary Inquiry Conclusions and Recommendations

#### Conclusions:

- Conclusion 1.** The gravity of the problems in Groningen has been consistently underestimated
- Conclusion 2.** Money dominates decisions regarding gas extraction
- Conclusion 3.** Security of supply as a smokescreen
- Conclusion 4.** Unsafety in Groningen lasts unacceptably long
- Conclusion 5.** Oil companies benefit from the confusion of roles at the Ministry of Economic Affairs
- Conclusion 6.** Inflexible and closed Gasgebouw shows little appreciation of the interests of the outside world
- Conclusion 7.** Inadequate claims handling causes damage to the people of Groningen
- Conclusion 8.** Wavering approach to reinforcement has crippling effect on affected people of Groningen
- Conclusion 9.** Regional administrators not able to properly take care of the interests of the people of Groningen
- Conclusion 10.** Knowledge development about the Groningen field deliberately kept limited

#### Recommendations:

- Recommendation 1:** Make claims handling easier, less harsh, and more humane
- Recommendation 2:** Give residents clarity about reinforcement quickly
- Recommendation 3:** Offer the region prospects for the future
- Recommendation 4:** See to it that there is enough money for all future costs
- Recommendation 5:** Strengthen the role of the regulator
- Recommendation 6:** Increase the importance of the public interest within departments
- Recommendation 7:** Strengthen the role of the House of Representatives
- Recommendation 8:** Structure future public-private partnerships better
- Recommendation 9:** Strengthen knowledge development on the subsurface
- Recommendation 10:** Commit to the spatial organisation of the subsurface
- Recommendation 11:** In conclusion: Invitation to the people of Groningen

# Appendix B

## *Nij begun*

### Cabinet Response to the Parliamentary Inquiry Report

#### Fifty Measures:

1. The Cabinet annually reports on the State of Groningen

#### Working on recovery: Damage handling, reinforcement and sustainability

2. Clarity about the area where damage is compensated
3. Stop investigating the causality of damage and the use of tools to measure ground movement (*trillingstool*) for this
4. The IMG proactively resolves bottlenecks
5. More frequent choice for handling claims with fixed compensations
6. Repeated damage is prevented with sustainable damage repair
7. Higher nuisance compensation for multiple-damage reports
8. Adjust compensation for immaterial damage
9. Smoother handling of deadlines for damage claim settlement
10. Area-oriented crisis approach to accelerate reinforcement
11. The NCG makes the implementation of reinforcement more people-oriented
12. More tailor-made solutions to combat differences
13. More attention to spatial quality during reinforcement
14. Extra money for quality of life and neighbourhood development
15. Extra money for restoration of the public space after completion of the reinforcement
16. Reimbursement for residents' own time in reinforcement
17. Indexation of increased costs
18. Extra budget for personnel costs for local authorities
19. Costs for legal, technical, and construction assistance will be reimbursed
20. No litigation

21. More control and better information
22. Better support from IMG, NCG, and SNN with a single point of contact
23. Earthquake coaches in every municipality
24. Extra help to farmers with damage
25. Extra support for entrepreneurs with damage and compensation for depreciation of business premises
26. Continuation of Heritage Program (*Erfgoedprogramma*)
27. A strong safety net for those who need it
28. Homes that still need to be reinforced should be made (ready for) being natural gas-free
29. (Financial) incentives to make homes in Groningen and North Drenthe sustainable
30. Expansion of the scope of the subsidy for home improvement

## Working on social and mental well-being

31. Municipalities receive their own bottleneck budget
32. Support for *Groninger Dorpen*, *Stut en Steun*, and civil society organisations
33. Young people get a voice
34. Additional budget for the implementation of a Social Agenda for the earthquake area
  - There will be a Social Agenda and an additional budget for 30 years for municipalities to invest in, among other things, education, health, quality of life, opportunities for children, and participation on the job market.

## Working on economic perspective

35. There will be an Economic Agenda for sustainable growth with a budget for 30 years
  - Extra money for business and business climate
  - Groningen will become the hydrogen region of the Netherlands
  - Veendam–Stadskanaal railway line back in use for passenger transport
  - Widening of national highway N33
  - Groningen takes first place when new national policy is introduced

## Working on the government: A better government that serves society

36. Direct contact between Chamber and regulator (SodM)
37. Actively making advice from government inspectorates public
38. Introducing collegial management at SodM
39. Guarantees for independent performance of tasks. Inspections by government inspectorates are included in the State Inspections Act (*Wet op rijksinspecties*)
40. Adjust the oath of office and encourage counter-thinking within ministries
41. Better distribution of government employment
42. Ministers and policy officials engage in large-scale discussions with citizens
43. The *Gasgebouw* will be dismantled in the coming years
44. The outcome of discussions with Shell and ExxonMobil has no effect on residents
45. Supervision of clean-up activities
46. Test whether the public interest is safeguarded in the strategy of state and policy participation
47. More transparency about safeguarding public interests by EBN
48. There will be a National Program for sustainable use of the subsurface
49. More knowledge, better data, and monitoring of mining effects
50. Safety and risk strategy for underground activities



# Colophon

This knowledge overview is a publication of the Knowledge Platform (*Kennisplatform Leefbaar en Kansrijk Groningen*). The Knowledge Platform is a cooperation between the University of Groningen (coordinating institution), the Hanze University of Applied Sciences, and CMO-STAMM/Sociaal Planbureau Groningen. The Knowledge Platform is financed by the Ministry of Economic Affairs and Climate Policy.

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## Authors

Willemijn Schreuder, Nienke Busscher, Tom Postmes, Aziza Zijlstra & Ena Vojvodić

## About the translation

This publication is translated from Dutch. The introduction, the list of key stakeholders and concepts, and the background have been written for the purpose of this publication. The summary is a modified version of the original publication's literature review. Both the reflection on the Groningen gas extraction case and the visualisation of impact through pictures and interviews are translations. The appendices have been written for the purpose of this publication.

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## Final editing

Paulien de Haas & Sarah Oude Brunink

## Photography

Marieke Kijk in de Vegte

## Design and graphics

Shootmedia

## Contact

[www.kennisplatformleefbaar.nl](http://www.kennisplatformleefbaar.nl)

[contact@kennisplatformleefbaar.nl](mailto:contact@kennisplatformleefbaar.nl)

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The societal consequences of gas extraction from the Groningen field keep unfolding. This is partly due to the gas extraction and earthquakes, but also due to friction among stakeholders, the multitude of policy changes, and the search for a good approach to safety, damage, and related issues. Attempts to contain the problems sometimes create new crises. What does this do to residents and their living environment? Knowledge about this is not always accessible and it is scattered across different research groups, institutions, and organizations. The Knowledge Platform (*Kennisplatform Leefbaar en Kansrijk Groningen*) provides thorough overviews of the consequences, allowing readers to understand the case and its development better.

This publication is an extensive English summary of the fourth knowledge overview *Inzicht in impact*, published in 2023. We summarize the most important studies and reports up until mid 2023, while critically reflecting on the recent developments and plans for the future of the region. Additionally, we provide a list of key stakeholders and a concise background of the case's history. We also present photographs and interviews with residents capturing the impact.



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