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Shifting Ground: When Environmental Fallout Shakes Politics

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Environmental fallout is becoming a tangible reality for a growing number of Europeans amidst unabated climate change. While much of this harm is hard to attribute to a single cause or set of policies, there are cases where a few actors bear clear responsibility for the damage. This dynamic is visible in the Netherlands, Germany, and Italy, where voters have expressed their frustration through the ballot box.

The ground in the Dutch province of Groningen shakes more often than one might expect. More than 1,600 kilometres from the nearest active volcano, and far from any major natural fault lines, the earthquakes that trouble this region are entirely man-made.

For decades, the Netherlands extracted vast quantities of natural gas from beneath Groningen's soil, powering homes, fuelling industry, and filling state coffers, all while quietly destabilising the earth below. What began as an economic triumph has since left a complicated legacy: thousands of small earthquakes have damaged homes, unsettled communities, and eroded public trust. Today, residents live not only with cracks in their walls, but with fractures in their confidence in the institutions that once championed the project. From compensation claims and legal battles to the ballot box, this distrust is increasingly visible today.

Gas in Groningen

Up until 1959, the North Sea area was assumed to be mostly devoid of oil and natural gas. Thischanged when exploratory drilling by the Dutch Petroleum Company (NAM), jointly owned by Shell and Esso, discovered a gas field in the municipality of Slochteren, in the province of Groningen. While little was known about its size at first, further drilling revealed a site large enough to be of commercial interest. After the Dutch government granted a concession in 1963, extraction began under a consortium of the state-owned mining company, NAM, Esso, and Shell.

The ensuing gas rush was further amplified by expectations that gas would lose its relevance over the following decades with the anticipated rise of nuclear energy. Consequently, there was a strong push to scale up production and sell Groningen's gas quickly, and early concerns – particularly about possible ground subsidence – were brushed aside. Extraction ultimately peaked in 1976, at 88 billion cubic metres, roughly equivalent to Germany's entire current annual gas consumption. Only after the oil crisis of the 1970s and growing social resistance to nuclear energy had shown that gas was here to stay did the government begin treating the Groningen field as more of a long-term reserve, slightly reducing extraction and diversifying towards smaller fields, particularly in the North Sea.

A Turning point

Throughout the 1960s and early 1970s, the Groningen field seemed nothing short of a miracle. Gas profits flowed generously into shareholders' pockets as well as into the treasury. The Dutch government received up to 85 per cent of gas revenues, which at times accounted for as much as a fifth of total

government spending. For a small country still rebuilding after World War II, this was transformative. Roads, schools, hospitals, and social programmes were funded in no small part by the resource extracted from beneath Groningen.

Yet the benefits to the province itself proved limited. The gas sector created around 9,200 jobs – meaningful but modest for a region with a labour force of approximately 286,000. As a Dutch parliamentary inquiry concluded in 2023, only about 1 per cent of the total revenues from the gas field flowed back to Groningen. Most of the economic value flowed upwards to The Hague, to be redistributed at the national level, far from the villages that hosted the extraction sites.

National policy choices only deepened this imbalance. Unlike Norway, which established a sovereign wealth fund on its oil revenues, the Netherlands folded gas income directly into the state budget. This allowed for the rapid expansion of the Dutch welfare state, but at the cost of longer-term planning. The gas windfall also brought what *The Economist* would coin the "Dutch Disease" in 1977: as revenues strengthened the guilder, Dutch manufacturing lost its international competitiveness, and unemployment more than quadrupled between 1970 and 1977, rising from 1.1 to 5.1 per cent. In short, the gas boom filled the treasury while hollowing out industry.

Things get shaky

For the first two decades of gas extraction, the ground beneath Groningen remained deceptively calm. Despite early concerns about subsidence, no seismic activity was officially recorded, reinforcing the belief that the risks were manageable. This confidence began to erode on Christmas Day in 1986, when a magnitude-2.8 earthquake struck near Assen. In 1991, the Dutch meteorological institute recorded the first officially recognised induced earthquake directly linked to the Groningen field, with a magnitude of 2.4. From there, seismic activity accelerated: four earthquakes in 1991, six in 1992, and 16 in 1993.

Induced earthquakes occur when human activity, most commonly hydrocarbon extraction, alters pressure levels in underground rock formations. As gas is removed, pressure drops, the surrounding rock compacts, and stress builds along geological faults until it finds sudden release. In Groningen, this process unfolded gradually but relentlessly.

By the early 2010s, the situation had escalated sharply. In 2013 alone, 133 earthquakes were confirmed across the Netherlands, 121 of them in Groningen, averaging roughly one every three days. The turning point came on 16 August 2012, with the Huizinge earthquake, measuring 3.6 on the Richter scale, the strongest ever recorded above the Groningen field.

Though most of these tremors were classified as light by seismological standards, their impact on buildings and residents was anything but negligible. Homes cracked, foundations shifted, and entire neighbourhoods began to deteriorate.

Still, the political response lagged despite the mounting evidence. In January 2013, the Minister of Economic Affairs, Henk Kamp, decided against an immediate reduction in gas extraction, against the urgent recommendation by the State Supervision of Mines, instead commissioning 14 separate investigations into the maximum credible earthquake magnitude, seismic hazard, effects on housing and infrastructure, security of supply, and the fiscal cost of a production cut. This decision came at a time when the Netherlands was in a period of fiscal austerity, and gas revenues were not easy to forgo.

The prevailing assumption was that the risks could be managed financially. A compensation scheme for earthquake damage was expanded, based on the belief that revenues could offset material losses and

political fallout. Extraction would continue; damages would be paid.

It was not until 2014 that production was capped – at 42.5 billion cubic metres – for the first time explicitly due to the earthquakes. Further reductions followed, though always cautiously. Plans to phase out extraction entirely were announced, revised, and at one point delayed by the Russian invasion of Ukraine in 2022, which briefly revived Groningen's strategic importance. Gas extraction from the field ultimately ceased in October 2023. By then, roughly 2.3 trillion cubic metres of gas had been extracted from one of the largest gas fields ever exploited.

But even with extraction halted, the harm persists. Over 3,300 buildings were demolished in Groningen due to earthquake damage between 2012 and 2023. Furthermore, following the Huizinge quake, hundreds of thousands of damage reports have been filed. The Dutch state has paid over 1.2 billion euros in compensation, yet many residents describe the process as slow, opaque, and adversarial. Studies by researchers at the University of Groningen also link sustained exposure to the risk of earthquakes to deteriorating mental and physical health outcomes, and even to increased mortality. Entire communities lived for years in a state of permanent vigilance, unsure whether their homes were safe or whether promised repairs would ever materialise.

Shaking up the vote

What makes Groningen particularly distinctive is not just the scale of the damage, but its origin. The harm that people there have faced for decades is immediate, local, and unmistakably man-made. And that has had significant political consequences.

Jordan McAllister and Afiq bin Oslan tackle this topic in a recent paper titled "Shaking up the Vote: The Electoral Impact of Induced Earthquakes". Placing the Groningen earthquakes at the centre of a broader inquiry, the authors examine how first-hand experience of the direct consequences of environmental harm has translated into changed voting behaviour.

Groningen is an unusually well-suited setting for this kind of study. Unlike pollution or an oil spill, where the distribution of harm is ultimately shaped by human decisions, induced earthquakes strike in nearby areas depending on geological factors that no one controls. They are caused by human activity (unambiguously so in Groningen, where earthquakes were virtually non-existent before drilling began), but where exactly they strike is essentially random. As a result, the researchers can reasonably associate differences in voting behaviour across polling stations with earthquake exposure rather than some pre-existing political difference between areas.

Using data on 891 earthquakes linked to the Groningen field alongside highly granular polling-station-level data across Groningen and its two neighbouring provinces, Friesland and Drenthe, McAllister and bin Oslan ask whether voter exposure to induced earthquakes increases electoral support for GroenLinks, the Dutch Green party. The answer, in short, is yes. Across three elections and multiple model specifications, areas with greater earthquake exposure consistently show higher GroenLinks vote shares in subsequent elections.

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The paper also finds that earthquakes are associated with a significant fall in support for the PvdA, the Dutch Labour party, consistent with the idea that earthquake exposure is prompting vote-switching towards the Greens from other parties on the left, rather than simply raising overall turnout.

Crucially, the relationship between earthquake exposure and green voting is not linear. It peaks at moderate levels of exposure and weakens at the very highest levels of impact. The authors suggest that those most severely affected may come to prioritise immediate material concerns such as compensation, repairs, and economic security over electoral environmental preferences. At the same time, those experiencing meaningful but less overwhelming exposure are most likely to translate that experience into a green vote. Environmental shocks then do not automatically and uniformly push electorates in a greener direction. How exposed they are, and what else that exposure demands of them, matter as well.

Beyond Groningen

The Groningen case is, in several respects, unusual. Induced seismicity directly linked to gas extraction in a densely populated region, with clear institutional responsibility and a single identifiable operator, is not a combination that recurs frequently elsewhere. But the broader mechanism it illustrates – locally experienced and clearly attributable environmental harm feeding back into political behaviour – is hardly confined to the Netherlands.

In the Val d'Agri valley in the southern Italian region of Basilicata, the energy giant ENI's oil extraction operations present a comparable picture. The region hosts the largest onshore oil field in Western Europe, yet its population has seen negligible economic benefit from decades of extraction while bearing environmental costs, including contaminated water sources and elevated rates of cancer and respiratory illness.

The political response has been real: ENI executives have faced joint legal action from the regional government, municipalities, and environmental agencies. Moreover, grassroots organisations such as COVA Contro have built sustained platforms for accountability. Anti-extraction sentiment has surfaced electorally too: in the 2019 regional election, a left-wing candidate running explicitly on an anti-oil platform received 4.3 per cent of the vote, though this has remained a niche position rather than a decisive force.

Two factors may help explain the gap between Italy and the Netherlands. Firstly, economic anxiety in the Val d'Agri valley, one of Italy's poorest regions, tends to compete with environmental grievance as a political driver. Secondly, unlike the Netherlands, Italy has no well-established Green party capable of channelling anti-extraction sentiment into parliamentary weight. While the Groningen parallel seems to hold in terms of the underlying injury and political mobilisation, the similarities are less clear when it comes to votes.

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The German lignite regions offer another striking parallel. In the Rhineland and Lausitz, local communities have borne the costs of extraction in ways that are, if anything, more visible than in

Groningen: more than 50 villages or parts of villages have been demolished in North Rhine-Westphalia alone to make way for expanding open-cast mines, with entire communities uprooted and resettled. The public has opposed these projects fiercely: the planned demolition of the village of Lützerath to expand RWE's Garzweiler II mine drew thousands of protesters over years of sustained resistance; in 2023 the eventual five-day police clearance of an activist occupation of the village became a national flashpoint. But was there also a wider political response?

The vote share data from North Rhine-Westphalia is at least suggestive: the Greens rose from 6.4 per cent to 18.2 per cent in state elections between 2017 and 2022, in contrast to their more modest gains at the federal level, from 8.9 per cent in 2017 to 14.8 per cent in the 2021 Bundestag election. That rise, though, predates the party's own turn: In October 2022, when they were in government federally and in the state, the Greens agreed to the deal with RWE that cleared Lützerath for demolition. This turn was viewed by many as a change in sides. Whether this will cost them electorally is difficult to determine.

The confounders here are too numerous to read much into either shift directly, but the broader point stands: these cases offer at least plausible instances of locally experienced environmental harm feeding back into political behaviour, in different institutional and partisan contexts. What they also reveal, by contrast, is why Groningen is such a rare analytical opportunity. Elsewhere, the harm is real enough, but the causal pathway remains tangled, and the harm harder to isolate.

The limits of attribution

The cases considered so far share a key feature: the source of harm is local, visible, and traceable to a specific operator or set of decisions. Where the previous section showed variation – Groningen producing a measurable electoral response, Basilicata and the lignite regions less so – the explanation lay not in attribution, but in what came after it: whether a credible electoral channel existed to convert grievance into votes. The mobilisation, in all three cases, seems real enough. But not all environmental harms afford even that starting point.

When flooding devastates a region or drought destroys harvests, the causal chain is longer and more contested. Climate change may have made the event more severe, but the link between many natural disasters and specific policy choices is harder to draw, and therefore harder to convert into electoral accountability. The devastating floods that struck Valencia in October 2024, killing over 230 people in one of the deadliest natural disasters in Spain's recent history, illustrate this well. Scientists broadly agreed that climate change had intensified the rainfall, but the political response was far from unified. Multiple levels of government faced – and traded – blame simultaneously: regional president Carlos Mazón faced mass protests over the dismantling of an emergency unit his administration had shut down just the year before, while the national government faced accusations of insufficient coordination. Rather than producing more support for environmental protection, the debate became highly polarised, with disinformation campaigns seeking to redirect blame onto environmentalists themselves for having allegedly restricted flood-control infrastructure.

Groningen and the cases it can usefully be set alongside illustrate that the political salience of environmental harm is shaped not only by its severity, but by its legibility, by how clearly it can be traced to identifiable decisions, and how directly it is felt. As the consequences of both energy policy and climate change continue to accumulate across Europe, that kind of clarity is likely to become rarer.

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