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Haakon Solheim
Bjørn Helge Vatne
Norges Bank
Financial stability

Stikkord
Climtate policy
Climate change
Household finances

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Damage caused by weather and climate change: Identifying homes in areas exposed to weather-related risks in Norway*

Haakon Solheim, Bjørn Helge Vatne

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Abstract

Norwegian weather patterns are changing and payouts from insurance companies have increased markedly in recent years. Norway has a high level of insurance coverage and a collective scheme covering natural perils damage, but other types of damage have also become more frequent. In the coming years, a rise in weather-related damage may lead to increased costs for homeowners. While data on homes exposed to flooding, avalanches, landslidesand storm surges have long been available, we now also have data indicating exposure to stormwater intrusion risk. We find that approximately 13% of Norwegian homes are located in areas particularly exposed to natural perils damage and other weather-related damage, representing 11.5% of the total value of Norwegian homes.

*The views and conclusions expressed in this publication are the authors' own and do not necessarily reflect those of Norges Bank. They must therefore not be reported as Norges Bank's views. We thank Nina Midthjell and seminar participants at Norges Bank for their input and comments. Any errors or omissions are solely the responsibility of the authors.

1. Introduction

The climate is changing. The average temperature in Norway has increased, and there are signs of changes in wind and precipitation patterns. Infrastructure and buildings are generally adapted to historical weather conditions. For example, urban planning has often been based on historical norms for precipitation (see Dharmarathne et al. (2024)). When weather deviates from expectations, the probability of unforeseen damage increases.

This has already come to the fore in the form of increased insurance payouts. Munich Re (2025) estimates the value of global natural disaster losses in 2024 at USD 320bn, of which 45% were insured. They estimate that 93% of all natural disaster losses and 97% of insured natural disaster payouts were caused by weather-related events (unlike events such as earthquakes or volcanic eruptions).

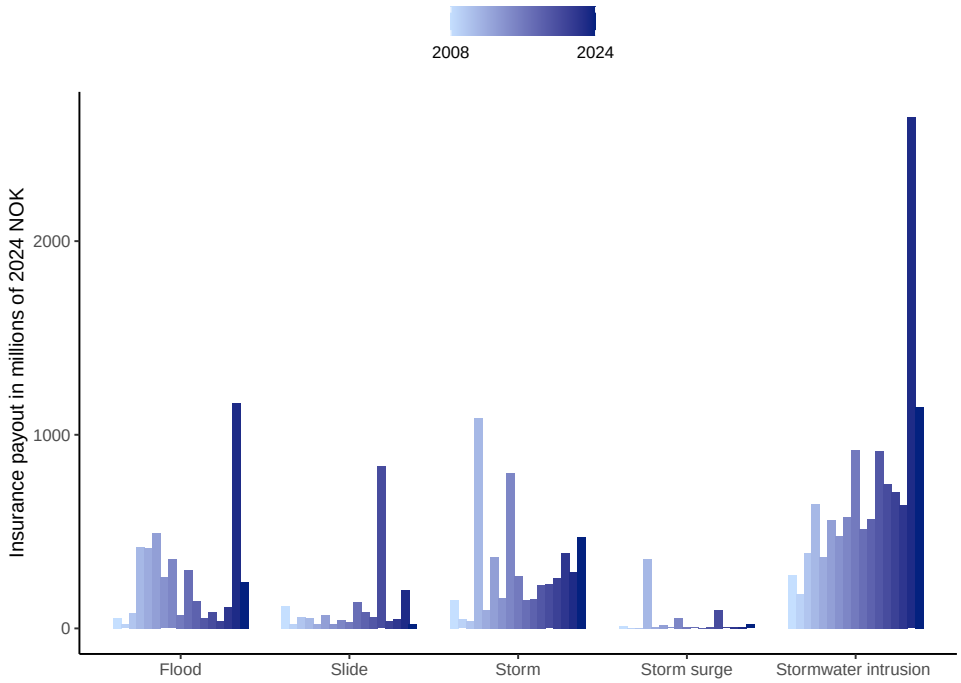
An increase in damage has led insurance companies to raise premiums substantially. Keys (2025) demonstrates that annual home insurance now costs over USD 4 000 in several parts of the US (while in Norway, the average is still below NOK 10 000). In Los Angeles, premiums for detached houses exceeding USD 10 000 have been reported. While insurance premiums for homes in areas of the US with a low risk of natural disasters have remained fairly stable relative to the consumer price index (CPI), premiums have increased approximately 40% faster than the CPI in high-risk zones. In some regions, premiums have risen so high relative to house prices that it does not make financial sense to hold an insurance policy.

Norway has a high level of insurance and a collective insurance scheme for natural perils. Nevertheless, international experience suggests that it is prudent to review the current status and assess future challenges. Klima- og miljødepartementet (2024) has appointed a committee to examine the economic consequences of climate change. The Finance Sector Union of Norway and Norsk Klimastiftelse (2025) have also initiated efforts to assess how the financial sector can manage climate risk and drive transition.

For many years, central banks considered transition risk to be the biggest risk to financial stability in the short term, while physical risk was assumed to be a longer-term concern (for example, see Norges Bank (2019); Sveriges Riksbank (2023)). In light of international developments in insurance payouts, physical risk and potential consequences for households are attracting increased attention. Norwegian households have a high homeownership rate, and loan-to-value (LTV) ratios are often high. Rising fixed property-related costs can negatively impact house prices and reduce households' ability to adjust consumption in response to negative shocks, which weakens debt servicing capacity.

To understand the risks associated with a rise in natural peril damage, it is important to identify which properties are assumed to be most exposed. Significant efforts have been made to identify the natural peril risk for Norwegian homes. In recent years, Norwegian homes' exposure to stormwater intrusion has also been estimated. Section 2 examines the historical development of weather-related damage and the increase in property-related costs. Section 3 assesses the exposure of the Norwegian housing stock to different types of risks given a weather-related event. Norwegian homes are particularly exposed to risk of flood and stormwater intrusion damage, with homes in some regions also exposed to risk of damage from avalanches and landslides. Section 4 summarises the implications for financial stability.

Figur 1: Insurance settlements to households by type of damage and year



Source: Finance Norway

2. More weather-related damage increases homeowners' fixed costs

2.1. Insurance payouts and premiums

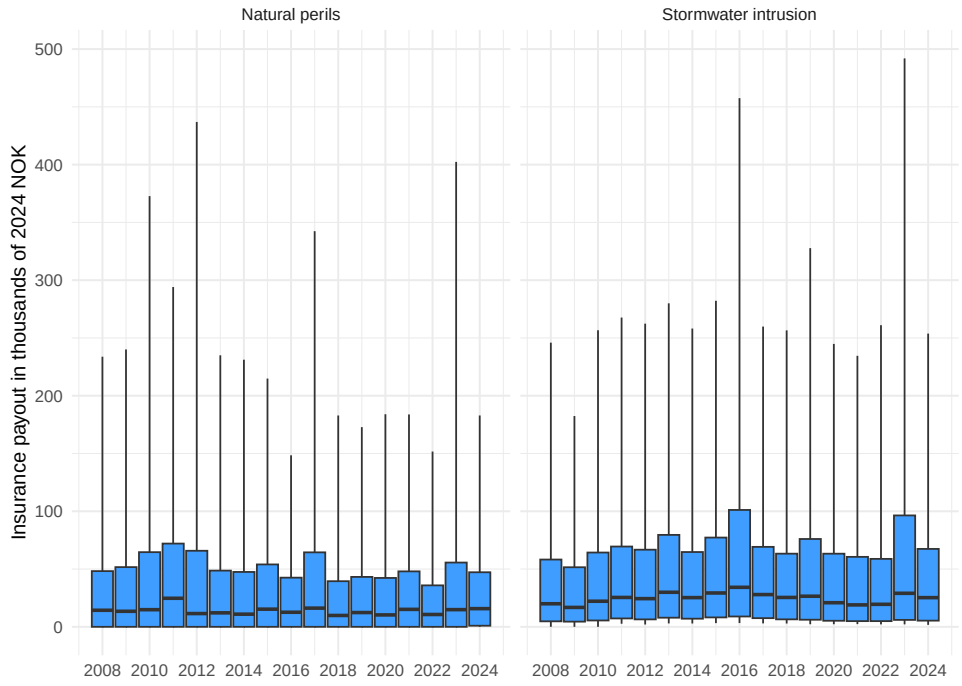
The best indicator of increased damage is a rise in actual insurance payouts. Insurance payouts in Norway are reported by Finance Norway and divided into payouts covered by the Norwegian Natural Perils Pool (See box in Section 2.3) (Finans Norge, 2025a)) and other insurance payouts (Finans Norge, 2025b).

Payouts for certain types of natural perils have increased markedly over the past 20 years (See Chart 1). The most substantial payouts are related to storm and flood damage. Payouts for storm surges remain low. Approximately half of weather-related insurance payouts are not classified as natural perils. Payouts for damages resulting from stormwater intrusion have also risen significantly in the period 2008-2024. Payouts were particularly high following the extreme weather event Hans, which also elevated payouts for flood and landslide damage.

Individual payouts for weather-related damages vary considerably in value. The median payout is around NOK 25 000 (see Chart 2). The value of payouts are approximately the same for both natural perils and stormwater intrusion.

While median payouts are relatively stable over time, the largest payouts vary considerably. In some years, the 90th percentile for the highest payouts has approached NOK 500 000, which in typical years is around NOK 250 000. This is a substantial amount for most households. Somewhat surprisingly, the magnitude of the largest payouts is relatively similar for natural perils and stormwater intrusion, likely because natural peril payouts are dominated by flood damage, which bears many similarities to stormwater intrusion

Figur 2: Distribution of payouts classified as «natural perils» and «stormwater intrusion» over time. Vertical lines indicate the 10th to 90th percentiles. The box indicates the 25th to 75th percentiles. The horizontal line represents the median value.



Source: Finance Norway

damage.

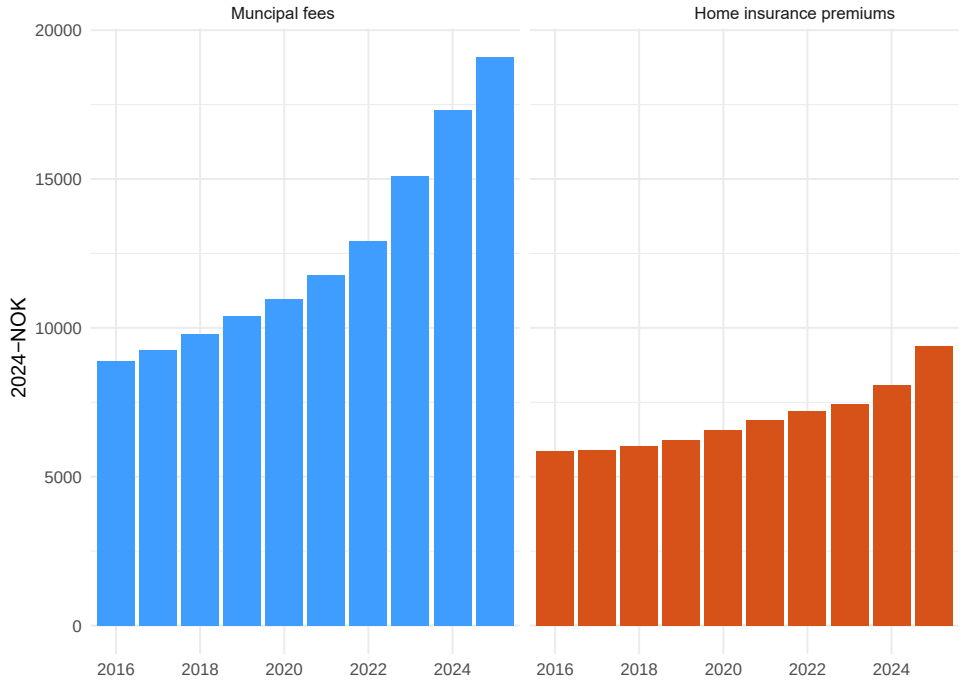
Increased insurance payouts lead to higher insurance premiums. Since 2016, home insurance premiums have increased by more than 60% in 2024 prices (see Chart 3). Premiums rose particularly sharply from 2024 to 2025, which can be assumed to partially reflect increased payouts following the extreme weather event Hans. In addition, the Norwegian Natural Perils Pool premium rose by 23% between 2024 and 2025, from 0.065‰ to 0.08‰ of the fire insurance premium.

2.2. An increase in weather-related damage may lead to higher municipal fees over time

There is reason to believe that an increase in weather-related damage to residential property also implies more damage and strain on public infrastructure. Historically, stormwater management systems have not necessarily been adapted to higher levels of precipitation. In a study commissioned by the Norwegian Association of Local and Regional Authorities, 74% of municipalities report being affected to a large or very large degree by an increased level of precipitation and cloudbursts (see Tandberg and Selseng (2024)). Municipalities report that climate transition considerations are an integral part of their risk and vulnerability analyses, but not into their budget processes. Both staffing and costs are cited as barriers to preventative measures.

Over time, it is likely that municipalities will need to increase taxes and fees in order to carry out necessary upgrades to reduce damage. Huseierne (2025) publishes an annual cost of living index, prepared by Samfunnsøkonomisk analyse (2025). In recent years, this index has shown, in addition to higher interest expenses, high inflation on both insurance

Figur 3: Home insurance premiums and municipal fees have risen. In constant 2024 prices



Sources: Finance Norway, Statistics Norway and Norges Bank

premiums and municipal fees. Figures from Statistics Norway show that average municipal fees in 2024 prices for a residential property have increased by more than 115% from 2016 to 2024 (Chart 3). The average cost for homeowners resulting from the increase in home insurance premiums and municipal fees has almost doubled in just ten years, from around NOK 15 000 to NOK 30 000.[1]

2.3. Higher expenses to cover weather-related damage may over time weaken debt-servicing capacity and increase default risk

Higher insurance premiums and municipal fees are not the only consequences of adverse weather events. Not all costs are covered by insurance. Eickmeier et al. (2024) finds a significant impact on unemployment and inflation in the wake of natural disasters. Higher costs and expectations of future weather-related damage can reduce house prices. Keys and Mulder (2020) find that homeowners exposed to storm surges in the US maintain their price expectations, but that transaction volumes have fallen as damage has increased. A literature review by (de Bandt et al., 2024) finds that properties in high-risk zones sell at a price 5-10% lower than similar properties outside such areas.

Such effects are also observed in Norway, despite sound insurance arrangements. Espegren et al. (2025) identifies negative impacts on house prices, consumption and income in Norwegian municipalities affected by particularly severe natural perils. Kivedal et al. (2025) finds a substantial impact on house prices in areas at high risk of weather-related damage, particularly in the period immediately following major climate-related events.

[1]Note that as of 1 July 2025, VAT on municipal fees was reduced from 25% to 15%, lowering the actual expenses paid, but not the rise in municipalities' funding needs.

Higher costs and lower house prices affect households' debt-servicing capacity. Ge et al. (2025) finds that default rates increase, particularly for households with high debt-to-income (DTI) and loan-to-value (LTV) ratios. Fontana et al. (2025) finds that banks often account for physical risk in mortgage rate spreads, but practices appear to vary across banks.

The authorities play an important role in the management of natural perils. Collier et al. (2024) demonstrates that extraordinary loans to households affected by natural perils can have substantial and lasting effects: the probability of mortgage default is reduced and consumption increases over a number of years. Decoene and di Mauro (2025) emphasises the need for cooperation between homeowners, financial institutions and local authorities.

The Norwegian Natural Perils Pool – ensures high insurance coverage but may give weaker incentives for preventative measures

In 1979, a general natural perils insurance scheme was established in Norway, organised since 1990 through the Norwegian Natural Perils Pool. It is a mandatory scheme that covers all non-life insurance companies that provide natural perils coverage. The natural perils premium is calculated based on the fire insurance amount and a set premium rate (see Lovdata (2024)). The premium is uniform for everyone covered by the insurance and is not risk sensitive.

The premium for the Norwegian Natural Perils Pool is a fixed rate depending on the fire insurance amount (in 2025, the rate is 0.08‰ (see Norsk Naturskadepool (2025)), an increase from 0.065‰ in 2024). When damage occurs, the insurance company submits the case to the Natural Perils Pool, which determines whether the damage qualifies as a natural peril (floods, storms, landslides, avalanches or storm surges).

Over time, the Natural Perils Pool premium should correspond to the costs associated with natural perils compensation. If the extent of damage increases, the premium must be raised accordingly. As the scheme is collective, any increase is distributed evenly. The advantages include broad coverage, a relatively minor cost increase for the individual and that damage that is difficult to insure against privately is nevertheless covered. Sandberg et al. (2020) points out that the collective element may add credibility to the system. The disadvantage is weaker incentives for preventative measures among those most exposed.

The Norwegian scheme shares features with those of a number of other countries. France and Denmark have similar mutual insurance schemes organised through private insurance companies. Iceland has a public scheme. Canada is considering introducing a public-private insurance scheme to cover flood damage from 2026 (see Canada (2025)). Henstra and Thistlethwaite (2024) argues that such a scheme should be risk-adjusted and include the aim of gradually phasing out any subsidy elements. European Central Bank (2024) shows that insurance coverage is low in parts of the EU. In parts of Southern Europe, less than 5% of expected natural peril losses are not insured. European Central Bank and EIOPA (2024) outlines two possible solutions at the European level: either a public-private partnership to expand insurance coverage or a larger EU catastrophe fund.

Not all countries with a high level of insurance coverage have collective schemes. Sweden and Finland have purely private schemes without mutual premiums. Finland moved

from a public-private scheme to a purely private scheme in 2014. In both Sweden and Finland, insurance is mandatory for everyone with a mortgage. Sandberg et al. (2020) finds that insurance coverage for natural perils is broadly the same in Sweden and Finland as in Norway and France.

Collective schemes help distribute risk. This can ensure broad participation in the scheme but also weaken incentives for preventative measures (Decoene and di Mauro, 2025). However, it is not a given that households follow up with their own preventative measures even if premiums rise. Many households underestimate the risk to their own home, and some may opt out of insurance if the price rises. In the UK, collective insurance exists for existing properties, but new builds in flood-prone areas must be privately insured. This does not seem to have hindered new construction in flood-prone areas. Collective schemes may also have regressive effects, for example, Bézy and Rözer (2025) shows that secondary homes in France are overrepresented in the collective flood insurance scheme.

3. Approximately 13% of homes, representing 11.5% of the total value of homes, are in areas particularly exposed to weather-related risk

In order to prevent damage and limit risk, it is advantageous to identify risks before they materialise. The Norwegian Water Resources and Energy Directorate (NVE) has long held primary responsibility for mapping risk zones for natural perils. However, the risk of stormwater intrusion has not been systematically mapped by public authorities.

In recent years, insurance companies have taken the initiative to conduct such risk mapping. Gjensidige has collaborated with the Norwegian Computing Center, while Fremtind has collaborated with 7Analytics to model the risk of stormwater intrusion due to heavy rainfall. Such mapping gives a better overview of the buildings most exposed to damage, the extent of the potential damage and appropriate mitigation measures.

In the following, we focus on detached and semi-detached houses. Using the coordinates of the building, we assess whether it is situated within an area at particular risk of climate-related events. The level of risk in multi-unit buildings is typically lower, as the risk is distributed across multiple households. See Tillegg A for a brief description of the method used to classify the buildings' risk.

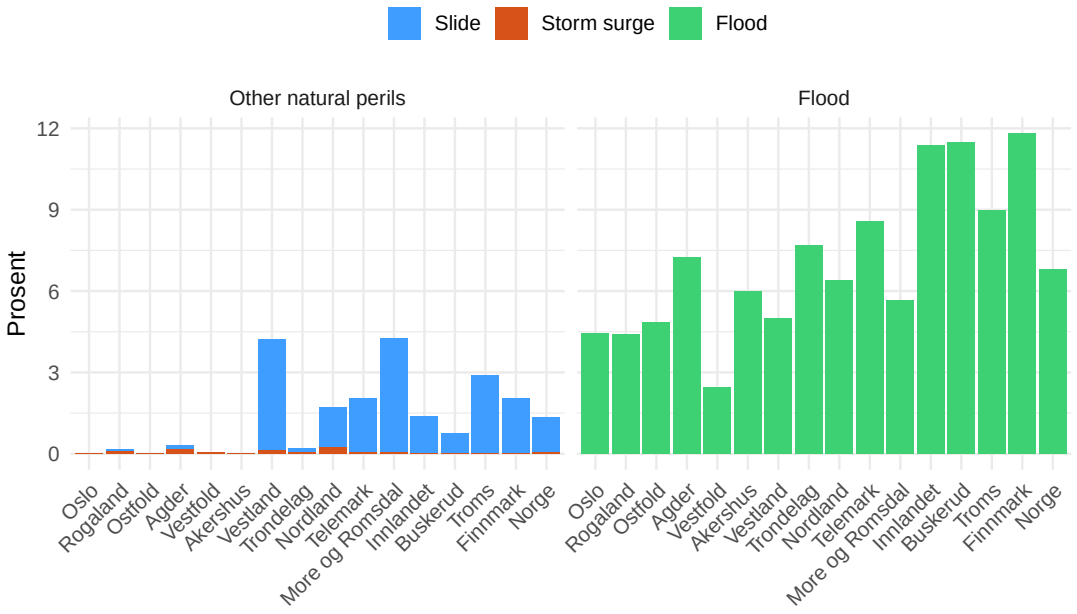
3.1. Approximately 13% of homes are in risk zones for natural perils and stormwater intrusion

Natural perils damage include damage resulting from floods, avalanches, landslides, storms and storm surges. The NVE and the Norwegian Mapping Authority map risk zones for floods, landslides, avalanches and storm surges. These risk zones are published by the Norwegian Mapping Authority through the Geonorge portal.

The designation of risk zones depends on the type of event being considered. In this analysis, we base our assessment on the so-called "200-year event". Slightly over 8% of Norwegian homes are located in one or more high-risk zones (See Chart 4). Of these, 82% are in areas prone to flooding, 15% are in avalanche-prone areas and slightly more than 4% are in landslide-prone areas. The risk of damage is unevenly distributed across the country, with the lowest number of homes in high-risk zones found in Rogaland and along

the Oslo Fjord, while the risk of flood damage is highest in Finnmark and along the major river valleys in Eastern Norway.

Figur 4: Shere of homes in high-risk zones for natural perils. By county



Sources: the Norwegian Mapping Authority, 7Analytics and Norges Bank

While risk zones for natural perils are well mapped, the risk of damage from stormwater intrusion has not been published by the Norwegian Mapping Authority. For homeowners, stormwater intrusion is a risk of particular importance as this is not covered under the Natural Perils Pool but through private insurance policies.

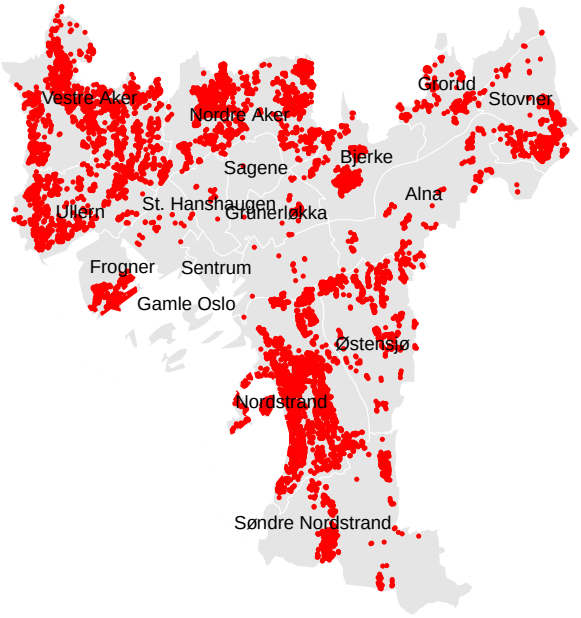
7Analytics (2025) has estimated an index for the frequency of stormwater intrusion damage for most Norwegian buildings. The risk model is a machine-learning model based on more than 600 physical parameters per property, trained on a large database of damage claims from the insurance company Fremtind Forsikring. The model captures stormwater intrusion exposure at a resolution of $1m^2$. The index ranges from 0 to 1 and indicates the probability of stormwater intrusion damage due to heavy rainfall. This work allows homes particularly exposed to stormwater intrusion damage to be identified. Chart 5 shows the distribution of homes with the 20% highest risk in Oslo municipality.

Insurance companies are naturally more concerned about homes with particularly high index values, which may be subjected to higher premiums or upgrade requirements. Our study finds that the probability of damage is concentrated between index values of 0.5 and 0.75, with a median around 0.5. For most residential property types, values are clustered around 0.5, but the tails are somewhat thicker for detached and semi-detached houses than for other residential property types (Chart 6).

We classify homes with a stormwater intrusion risk index value higher than 0.75 as high-risk. [2] We compare this with homes located in high-risk zones for natural perils, noting that

[2]The threshold of 0.75 as critically high was determined in consultation with 7Analytics.

Figur 5: Homes in Oslo municipality with 20% highest stormwater intrusion risk

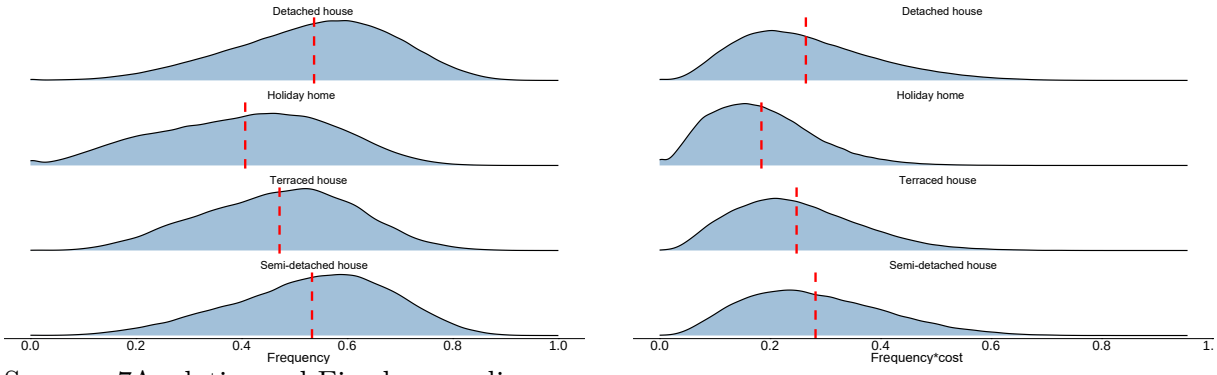


Sources: 7Analytics and Norges Bank

Figur 6: Indicators of stormwater intrusion damage. By residential property type

(a) Frequency

(b) Expected payout



Sources: 7Analytics and Eiendomsverdi

some homes are located in both risk zones.

Nationwide, 13% of homes are located in at least one high-risk zone (Chart 7). Just over 8% are in a natural peril high-risk zone, around 5.4% are in a high-risk zone for stormwater intrusion and 0.6% are in multiple high-risk zones. The share of homes with a high risk of stormwater intrusion exceeds 7% in Vestfold, Møre og Romsdal, Troms and Finnmark counties, while it is below 4% in Agder, Oslo and Vestland counties. The largest share of exposed homes relative to all Norwegian homes is found in Innlandet and Akershus counties.

3.2. The share of total housing value in high-risk zones is somewhat lower than the share of total homes

The property's risk profile is the most important consideration for homeowners. At the same time, the value of high-risk Norwegian homes is worth investigating because property is also used as collateral.

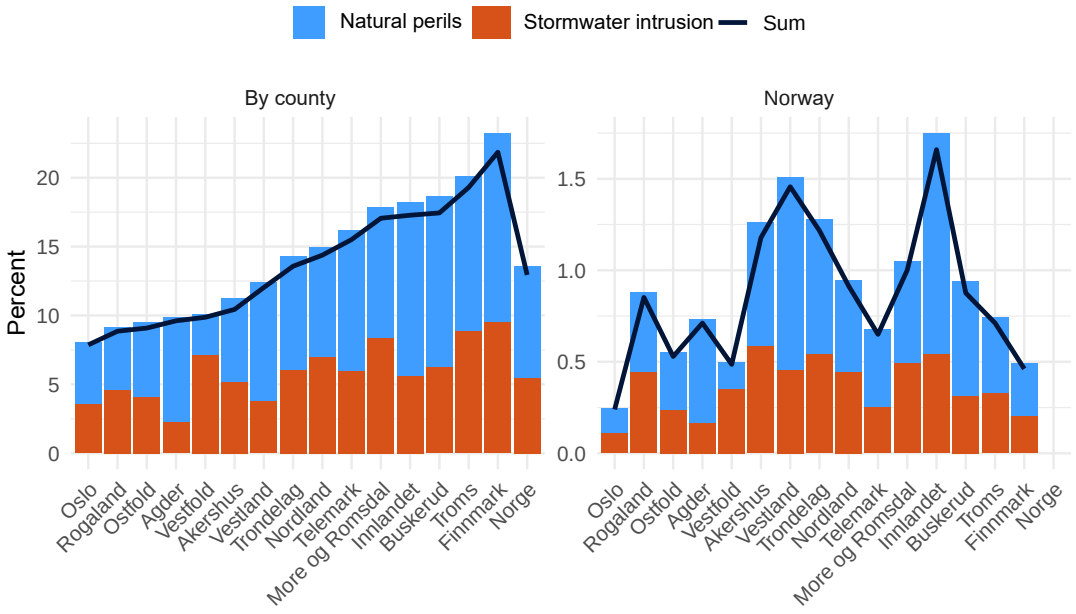
We therefore link exposure to weather-related risk with information from Eiendomsverdi AS's database as of end-2024 (Eiendomsverdi AS, 2025). Homes are identified using cadastral numbers (Gnr/Bnr/Fnr/Snr). The data are at the property level and contain details on property type, size, municipality and value estimates.

We find that around 11.5% of total housing values is in at least one high-risk zone. This is marginally lower than the corresponding share of the number of homes, which is around 13% (Chart 8). There are some differences in the share of total housing values in different high-risk zones. Over 8% (5.4%) of homes are in natural peril (stormwater intrusion) risk zones, but these homes represent only 6.4% (5.6%) of total housing values. There are also significant differences across counties. In risk zones in Vestland, Telemark and Agder counties, the value of homes is lower than the number of homes, indicating that house prices in high-risk areas are lower. The opposite is found in Finnmark, Vestfold and Oslo counties, where homes in high-risk areas are worth more than their share of the housing stock implies. This may reflect the fact that many high-risk areas are near the coast where house prices are high.

The fact that such a large share of housing values in Finnmark is high-risk carries less weight in the wider context of the total value of Norwegian homes in risk zones. High-risk homes in Finnmark represent only 0.3% of the total value of Norwegian homes (Chart 8). In comparison, high-risk housing values in Akershus represent over 1.8% of the total value of Norwegian homes. We find that Trøndelag, Innlandet, Vestland and Akershus counties have the largest absolute values of homes in high-risk areas.

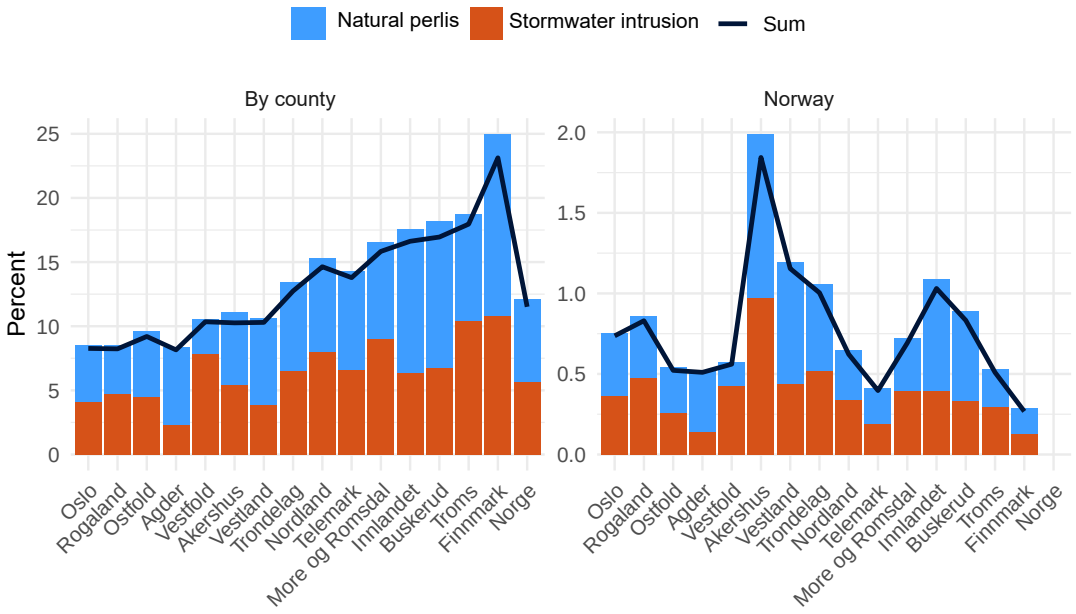
The value of at-risk homes is particularly relevant when they are used as collateral. We therefore link information regarding which banks have issued the mortgage the property is used as collateral for with information regarding the location of the property. This allows us to calculate the share of high-risk homes that are used as collateral. We use a sample of the 18 largest Norwegian banks. The exposure to high-risk homes varies considerably across banks, from around 9% of total lending for the bank with the lowest exposure to almost 16% of total lending secured by detached or semi-detached houses for the bank with the highest exposure (Chart 9). However, most banks have lower exposure to high-risk homes than the average exposure in Norway. The value of high-risk mortgage-free homes is somewhat higher than the overall average of mortgage-free homes in Norway.

Figur 7: Share of homes in high-risk zones for natural perils and stormwater intrusion. By county



Sources: The Norwegian Mapping Authority, 7Analytics and Norges Bank

Figur 8: Share of housing values in high-risk zones for natural perils and stormwater intrusion. By county



Sources: The Norwegian Mapping Authority, 7Analytics and Norges Bank

3.3. The development in weather-related events is uncertain

In this Memo, we have focussed on homes at risk of a weather-related event. As shown by insurance data, the number of weather-related events has increased significantly in recent years, but it remains uncertain whether and to what extent this trend will continue. A natural extension of this work would be to assess the probability of an increased frequency of such events. For more information regarding the potential impact of climate change, we recommend the following sources.

The best source for Norwegian climate projections is Norsk Klimaservicesenter (2025), which provides projections for a range of variables related to temperature, wind and precipitation up to the year 2100, under a number of scenarios for the development of global greenhouse gas emissions. The number of days with heavy or very heavy precipitation is expected to increase almost everywhere in Norway. The number of windy days is expected to rise in some regions but may decrease in others. Not all changes will necessarily result in more damage. Historically, many Norwegian rivers have been prone to flooding during the spring snowmelt period, but expectations of reduced snow cover over time may decrease this flood risk.

It is almost certain that sea levels will rise if global average temperatures continue to rise. The Norwegian Climate Service Center estimates that the sea level along the coast could rise by 40-70cm by 2100 in a high-emissions scenario (RCP 8.6[3]). This may seem pessimistic, but there is a large degree of uncertainty. Should tipping points be triggered, such as the melting of Greenland's ice sheet, the rise in sea levels over the coming centuries could reach several metres.

According to projections from the Norwegian Climate Service Center, the share of housing values exposed to storm surges could increase sixfold by 2100. For some banks, exposure could reach close to 1% of the bank's total mortgage lending (Chart 9). However, the share exposed to storm surges in 2100 remains moderate. Overall, 3.6‰ of the total housing stock would be affected, and fewer than one in 20 Norwegian homes would be in flood risk zones.[4] It is also worth noting that the current housing stock is unlikely to be representative of the homes used as collateral for banks in 75 years. At the same time, this provides a straightforward example of a predictable change, and banks can make use of available information to assess the evolution of risk during the coming years.

4. Weather-related damage continues to pose a minor risk to financial stability, but developments must be followed closely

Norwegian households are exposed to weather-related damage through their ownership of residential property. Homes can suffer damage classified either as natural perils or as stormwater intrusion damage. International experience shows that higher insurance payouts have resulted in substantial increases in insurance premiums and, in some cases, the withdrawal of insurance coverage from entire markets. Such developments can have

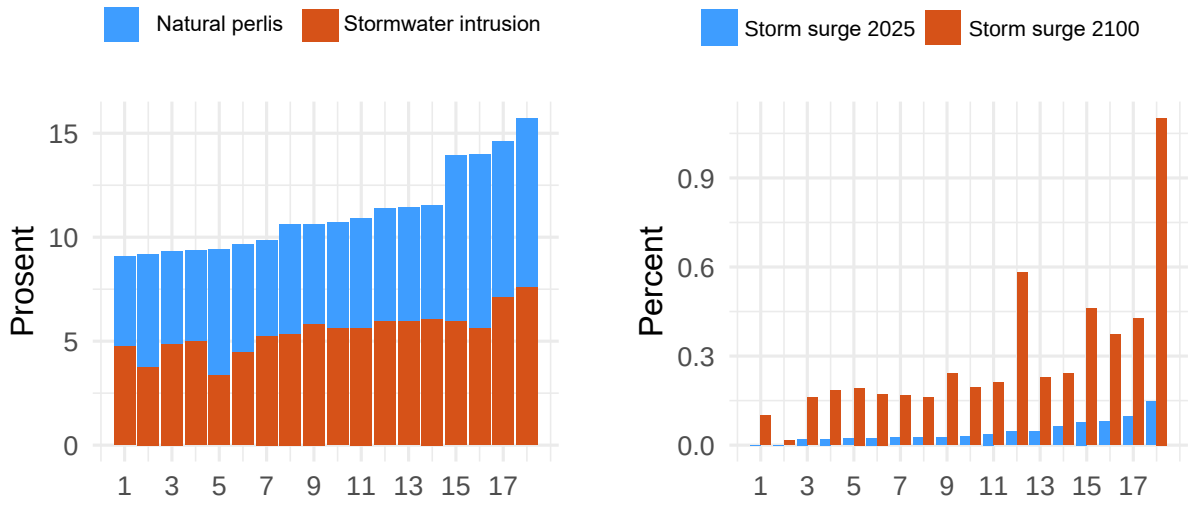
[3]This is a scenario based on continued emission levels and an approximately 4°C temperature increase by 2100, which is higher than current mainstream expectations.

[4]Note that Haug et al. (2021) finds that a much higher share of commercial property is at risk of storm surges, as commercial property is located more often near the coast and therefore more vulnerable to a rise in sea levels.

Figur 9: The share of the value homes in high-risk zones for natural perils. By bank. Nine larges Norwegian banks

(a) Naturskade

(b) Storm surges



Sources: The Norwegian Mapping Authority, 7Analytics and Norges Bank

significant consequences for homeowners as well as for banks holding these properties as collateral.

The majority of Norwegian homeowners hold home insurance. In Norway, all holders of fire insurance are automatically covered against natural perils through mandatory membership in the Norwegian Natural Perils Pool. Damage not defined as natural perils damage are covered through private insurance contracts.

The Norwegian Natural Perils Pool ensures broad coverage and mitigates the impact for homeowners in risk zones, as the costs are distributed nationwide. However, collective schemes can also weaken incentives for preventive action. This places greater demands on regulation and orders that promote risk mitigation.

For stormwater intrusion, insurers have stronger incentives to differentiate risk. Homes that have suffered substantial damage or are located in high-risk zones may be charged higher premiums or be required to implement improvements in order to maintain coverage. This increases the cost of homeownership. At the margin, higher premiums may reduce insurance coverage. Effective mapping of stormwater intrusion risk not only enables risk-based pricing but also helps to better target preventive action.

In addition, an increase in weather-related damage may place added pressure on public infrastructure. There has been a marked increase in taxes and fees related to housing in recent years.

With more precipitation, we should expect rising housing costs ahead. Higher fixed costs reduce households' flexibility in the event of income shocks and may impair their debt-servicing capacity. Lower property values in exposed areas may reduce collateral values. Households that incur high levels of debt when acquiring property without taking

weather-related risks into account may be particularly vulnerable.

Many cases of weather-related damage can be prevented through planning and known mitigation measures. The greatest risk to financial stability arises if homeowners and authorities refrain from such measures, whether due to short-term considerations or insufficient incentives. While collective insurance schemes ensure broad coverage, they must be complemented with policies that trigger preventive investment. Banks and insurance companies can play an important role in these efforts.

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Tillegg A. Method to identify buildings exposed to physical climate risk

The analysis uses buildings classified as detached or semi-detached houses in the Land Registry. Each building is identified with a building number and the building's location is given with coordinates. The buildings are assigned a property identified with a cadastral number consisting of municipality number, land number, holding number, lease number and section number.

Using the cadastral number, we can link information regarding estimated market value from Eiendomsverdi AS. Then we retrieve information from the register of mortgaged property in the Land Register for which banks hold these properties as collateral.

Classification of a building's natural peril risk

For natural perils, geographical information system (GIS) tools are used to identify coordinates for a building in a risk zone.

Classification of a building at risk of natural perils (flooding, storm surges and landslides) is based on risk zones from Geonorge, a collaboration between public institutions responsible for establishing and disseminating map data.

- **Flooding:** NVEs flood hazard maps indicate areas that may be exposed to flooding risk. Floor-prone areas are displayed as polygons on the map, but the maps to not contain information on the annual probability of flooding.
- **Storm surges:** The Norwegian Mapping Authority maps risk areas for storm surges. We use the area designated as "*Stormflo200År_KlimaÅrNå*", which defines regions affected by extreme high-water levels occurring on average once every 200 years, based on current sea levels.
- **Landslides:** Mapping of *landslide hazard zones* is carried out by NVE for the residential areas most at risk of landslides.

The classifications are performed in Python with the library Geopandas, Jordahl et al. (2020)

Buildings at risk of stormwater intrusion

7Analytics (2025) uses advanced technology in the areas of hydrology, geology and data analysis to develop high-resolution risk models for stormwater intrusion. These models estimate a frequency model at the building level linked to stormwater intrusion.

Buildings are classified as at risk if the frequency model exceeds 0.75.

The map and charts are made using R, R Core Team (2023) and the map package sf, Pebesma and Bivand (2023).