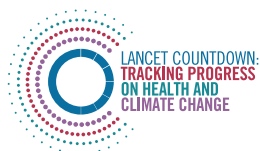


The Lancet Countdown on Health and Climate Change

Policy brief for Norway

2022



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Introduction

Climate change threatens to roll back recent advances in global health. The 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) reinforced that climate change is driving and will continue to drive increasingly frequent and severe extreme weather events, with catastrophic effects if greenhouse gas (GHG) emissions are not reduced to stay within safe levels.¹ Extreme weather, such as heavy rains and heatwaves, and weather-related events, such as floods and droughts, lead to increased risk of mortality and disease, economic and livelihood losses, food and water insecurity, and human displacement.² Extreme climatic events in 2021 and 2022 in the Northern Hemisphere, such as Canada's heat dome, floods in Belgium and Germany, and the drought in Europe, illustrate that climate change is a global phenomenon and that all countries are affected directly or indirectly.

The government (all ministries and levels), industry, and civil society all have critical roles to play in both climate change mitigation (reducing GHG emissions) and adaptation (the implementation of measures that can help to minimize the negative impacts of climate change). Norway's 2030 climate targets include a 50-55% reduction of GHGs,

compared to 1990 levels, as well as climate neutrality, achieved through offsetting national GHGs through the EU Emissions Trading System and international cooperation. By 2050, Norway is committed to a 90-95% reduction of GHGs, compared to 1990 levels. The government also contributes to the conservation and restoration of tropical rainforests in low-income countries by providing financial support for sustainable development and livelihoods, through Norway's International Climate and Forest Initiative.³ Moreover, when health was identified as a science priority area at the 2021 United Nations Climate Change Conference (COP26) in Glasgow, Norway, together with over 50 other countries, committed to building climate resilient and sustainable health systems.⁴

Despite these national targets and commitments, there is a considerable degree of climate change scepticism in Norway.^{5,6} There is a need to raise awareness of climate change drivers and consequences for health, as well as to assess the risks associated with impacts of potentially growing national relevance, particularly droughts, and to increase preparedness and resilience, especially regarding food systems and food security.

Recommendations

1

Future risk assessments should consider the potential impacts of drought events affecting Norway under plausible future climate change scenarios, with an emphasis on identifying potential direct and indirect health impacts, especially regarding livelihoods and food, water, and power supplies. Adaptive capacity should also be assessed and a plan should be developed to increase preparedness and resilience across all relevant sectors, including agriculture and health.

2

A national adaptation strategy to ensure food security must be developed and implemented, with an emphasis on increasing grain storage capacity, increasing self-sufficiency for energy-rich plant foods, and, based on a holistic assessment of intersecting direct and indirect risks to national and global food systems, strengthening preparedness and resilience throughout the food value chain. Compatibility between adaptation and mitigation plans must be ensured, thereby enabling the agricultural sector to fulfill its responsibilities regarding both. These plans must take into consideration their potential for promoting a national transition towards healthier and more sustainable diets.

3

The government should initiate a coordinated effort to assess, promote, and improve climate change communication among all agencies and institutions engaged in communicating the scientific consensus on climate change nationally. This initiative should facilitate collaboration among the government, public health experts, meteorologists, and the media to increase public understanding of the anthropogenic drivers of climate change, its links to national weather events, and its health impacts, with an emphasis on what various stakeholders can do to mitigate climate change and minimise its impacts.

Drought

Droughts are extreme events, characterized by persistently dry weather and high temperatures (meteorological drought), soil moisture deficits (agricultural drought), and low river and groundwater levels (hydrological drought). The incidence of drought is increasing globally, with 29% more of the global land area affected by extreme drought annually in 2012–2021 than in 1951–1960 (*Lancet* Countdown, **indicator 1.2.2**).² The environmental and social ramifications of droughts can be severe, as seen in 2022 in Europe, with impacts on crop yields and insufficient water availability for households and power production.⁷ In addition, the hotter and drier conditions have contributed to a 10% increase in the risk of wildfire globally, with each person experiencing an average of nine extra days of very- or extremely-high meteorological wildfire danger in 2018–2021 compared to 2001–2004 (*Lancet* Countdown, **indicator 1.2.1**).² Although drought projections in Norway and in Europe are characterized by considerable uncertainty, with variability between climate models,⁸ national meteorological assessments suggest that climate change threatens to double the risk of heatwaves and that summers will get warmer. This may lead to evaporation outweighing precipitation, making more frequent and severe summer droughts possible.^{9,10}

In recent years, with the summer of 2018 as an extreme example (see figure 1), drought in Norway has resulted in massive crop failure, the slaughtering of cattle due to insufficient feed, empty wells and water-

use restrictions, temporary closure of power plants, record-high reports of wildfires, and widespread damage to ecosystems, including reduced fish populations in drying streams.^{9,11} The implications for human health include the negative impacts of jeopardized livelihoods on mental health,¹² as well as the consequences for respiratory health of increased concentrations of ozone in the air under high temperatures.¹³ In 2022, drought has again contributed to low hydropower reservoir levels and reduced hydropower production in southeastern Norway; at the same time, the European energy crisis has raised concerns about energy poverty and its consequences for physical and mental health and wellbeing.^{14,15}

These recent drought impacts, together with the potentially increasing risk of similarly or more intense droughts than that of 2018, underscore the need for national assessments of the increased risk of drought from projected climate change, with particular attention to potential health impacts, both direct and indirect, and especially regarding livelihoods and food, water, and power supplies. A national adaptation plan is subsequently needed to increase preparedness and resilience across all relevant sectors, including agriculture and health. There is also a need for better understanding of the effects of climate change on droughts in Norway, drought impacts across sectors, and the cost-benefits of interventions. As the knowledge base grows, it must be assessed within national risk assessments and addressed within adaptation plans.

Drought duration (days) measured as the number of continuous days with subsurface storage below the 10th percentile, based on the normal period 1981–2010.

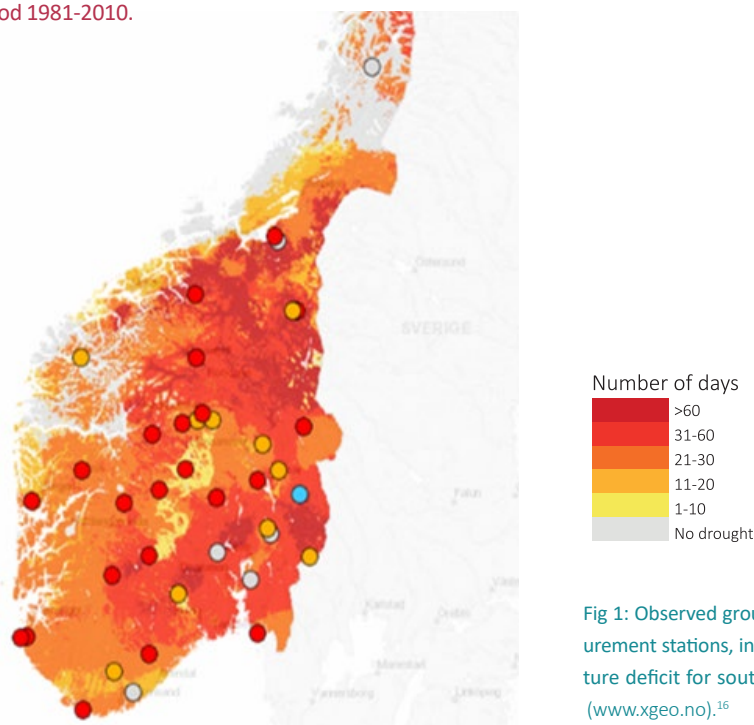


Fig 1: Observed groundwater levels (compared to normal levels, at measurement stations, indicated by circles) and modelled duration of soil moisture deficit for southern Norway on July 27, 2018. Source: Varsom Xgeo (www.xgeo.no).¹⁶

Food security

Globally, food insecurity is rising, bringing with it a range of health consequences, including malnutrition (i.e., undernutrition, vitamin and mineral insufficiency, overweight and obesity, and related non-communicable diseases). Climate change threatens food security directly, through impacts that include declining crop yields and quality, rising food prices, and increases in food loss and waste, as well as indirectly, through impacts on the wider socioeconomic and political context in which food systems operate, including the infrastructure, technologies, workforces, and institutions that play critical roles within food value chains.¹⁷ Indeed, higher temperatures in 2021 shortened crop growth seasons globally by 9.3 days for maize and by 6 days for winter and spring wheat, as compared to 1981-2010, putting crop productivity at risk. In Norway, the crop growth season for winter wheat decreased by 4.4% during this time period. In addition, the increase in heatwave events observed in 2020 compared to 1981-2010 resulted in 98 million more people reporting moderate to severe food insecurity (*Lancet* Countdown, **indicator 1.4**).²

Ensuring food security, which entails sustainable and universal access to safe and sufficient food, requires climate change preparedness and food system resilience.^{17,18} Particularly within the agricultural sector, climate change adaptations go hand-in-hand with climate change mitigation, given that the global food system contributes significantly to climate change, with responsibility for approximately 21-37% of total GHGs.¹⁸ Of specific concern for both climate and health are red meat and dairy, which, in 2019, were responsible for 55% of global agricultural emissions and 61.5% of Norwegian consumption-based emissions (*Lancet* Countdown, **indicator 3.5.1**).² The health burden associated with high-carbon diets was also considerable, with 2 million deaths globally and over 3000 deaths in Norway related to excessive red and processed meat and dairy consumption (*Lancet* Countdown, **indicator 3.5.2**).² Hence, from the perspective of climate change mitigation, there is a need to ensure food security in conjunction with a transition towards more sustainable and healthy consumption.

From the perspective of climate change adaptation, the capacity of a nation to produce the food that feeds its population, known as self-sufficiency, is a crucial determinant of food system resilience. Norway is nearly self-sufficient for meat (95%) and is primarily self-sufficient for fish (80%), but is considerably, and increasingly, less self-sufficient in grains, with a rate decrease from 36% in 2009 to 22% in 2019. In 2019, the self-sufficiency rate for vegetables was 46% and the rate for fruits was 7%.¹⁹ These rates largely reflect the natural self-sufficiency constraints in Norway, where only 3% of the land is arable and where

the climate limits the crops that can be grown and their yields. Rate fluctuations can also reflect the effect of extreme weather events on grain yields and quality. In 2017, for example, the share of domestically grown bread grain of the total national consumption was 66%; during the 2018 drought, it fell to 36%. The drought and low yields also resulted in a 5% reduction in overall food self-sufficiency in Norway, from 50% in 2017 to 45% in 2018.²⁰

Given the national dependence on imports, Norwegian food security is vulnerable to the impacts of climate change on the global food system, while local Norwegian food production is also vulnerable to local weather extremes, which will increase with global warming. In particular, the regions of Norway that are most important for the production of food grains and other plant foods are also those in which the risk of increasingly frequent and severe summer droughts is most pronounced. National analyses suggest that, by mid-century, Norway should be prepared for a high incidence of crop failure, both globally and nationally, as well as for the possibility that global and national shocks will occur simultaneously and intersect with indirect threats to food systems, such as energy crises.¹⁷ The systemic and cascading risks that such scenarios pose for national food security and the potentially severe consequences for health (particularly among those without the resources necessary to ensure adequate nutrition amid price increases and changing availability) and food politics (including compromised trust in the food system and associated societal unrest and hoarding) underscore the need for climate change adaptations.^{17,21}

Recommended adaptations include (1) increasing grain storage capacity, based on further assessment of possibilities for financing and building the infrastructure necessary to support a six-month national grain supply;²² (2) increasing self-sufficiency for energy-rich plant crops, with efforts underway through a binding partnership among all actors in the Norwegian value chain to raise the domestically grown shares of Norwegian food grains to 90% by 2030;²³ and (3) strengthening preparedness and adaptation across sectors, based on a holistic assessment of intersecting direct and indirect risks to national and global food systems.¹⁷ It is also critical that climate change adaptation and mitigation plans are compatible and co-advanced in ways that exploit the co-benefits for health, with respect to which there is a need to promote a national transition towards consumption that is both healthier and more sustainable.

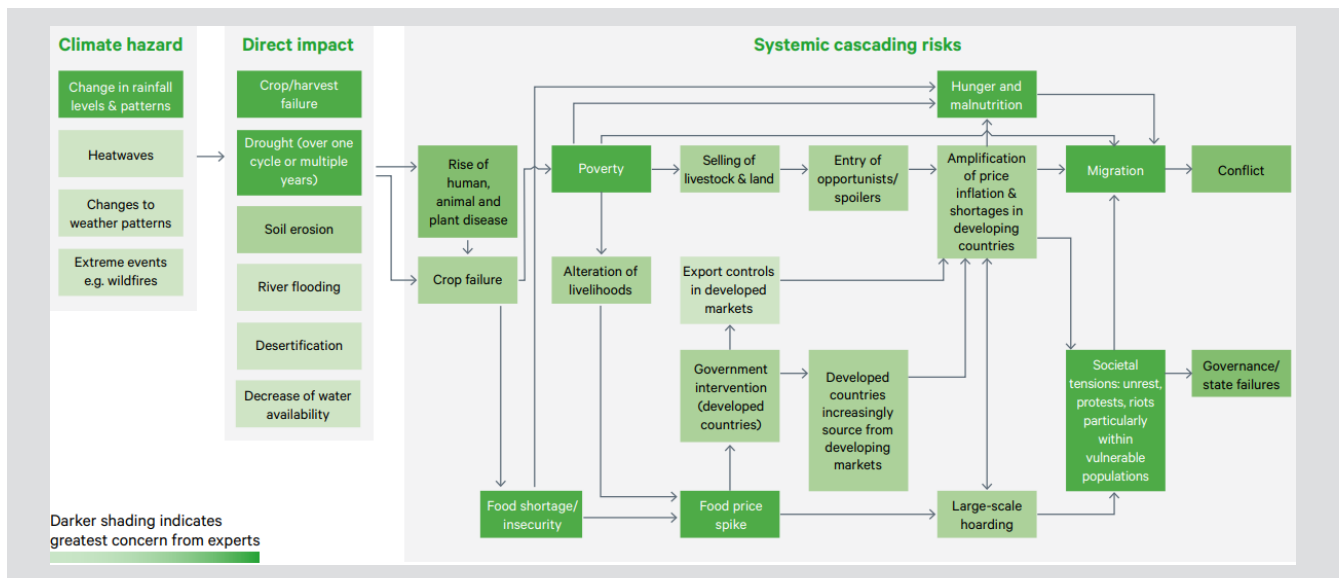


Fig 2: Experts' assessments of systemic cascading climate risks that are likely to lead to food insecurity Source: Chatham House Climate Change Risk Assessment 2021²¹

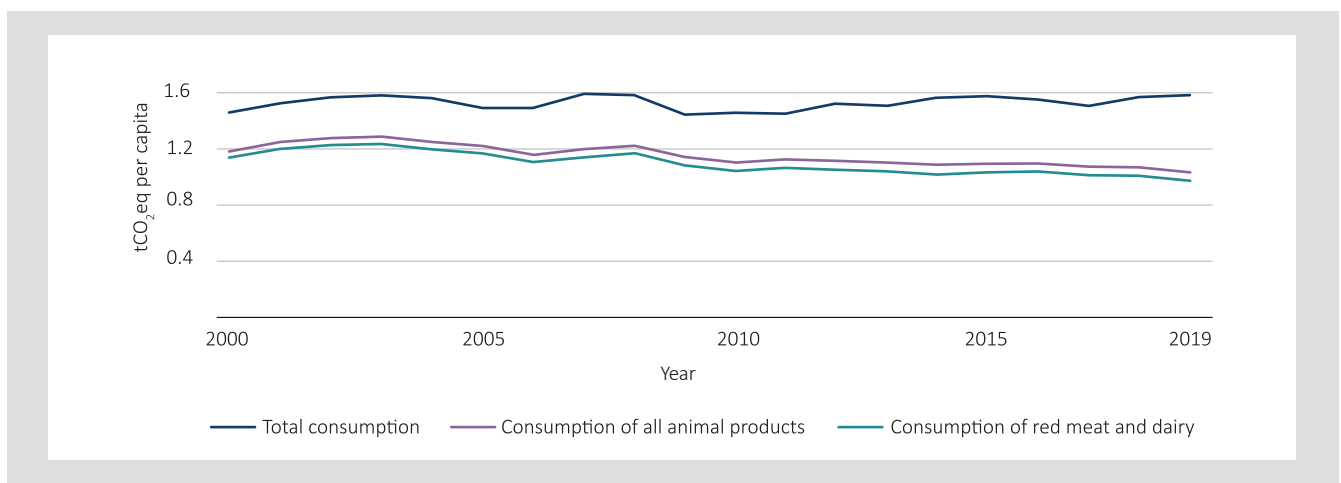


Fig 3: Consumption-based emissions for Norway. Source: *Lancet* Countdown 2022, indicator 3.5.1²

Media coverage of health and climate change

Public perceptions of climate change are of paramount importance for the development and public acceptance of climate change policy and mitigation and adaptation projects. Doubts regarding the existence of climate change, its anthropogenic drivers, and its consequences can hinder legislation and the adoption of sustainable solutions. Recent studies indicate considerable scepticism among Norwegians regarding both the causes and consequences of climate change, with Norwegians ranking lowest in European and international polls regarding concerns about the national impacts of climate change (only 27% are reported to acknowledge current national impacts) and regarding recognition of human activity as the predominant cause (24% are reported to believe otherwise), but highest regarding trust in oil companies, which are suspected, to far greater degrees among those surveyed in other nations, of concealing sustainable alternatives to petrol and diesel.^{5,6}

In the 2021 Norwegian policy brief, national trends in media coverage of climate change and health were analyzed, using the Retriever media monitoring base and a search strategy from the 2021 global *Lancet* Countdown report.² Both searches were repeated this year. The 2022 global *Lancet* Countdown findings reveal a significant increase in media coverage of climate change (4.7% more articles in 2021 than in 2020) and record-high international coverage of climate change, in general, and of its health implications, specifically (the latter constituted only a minor portion of the former) (*Lancet* Countdown, indicator 5.1).² Similar findings, however, are not observed in Norway.

The government and national media hence have a seemingly unfulfilled role to play in disseminating information about climate change and its causes, in communicating climate change as a public health threat, and in engaging with the worldviews, political ideologies, vested interests, and local experiences of droughts and other weather extremes

that, together with evidence, inform perceptions of climate change. Promising efforts are underway to develop the role of meteorologists as apolitical climate change communicators,²⁴ which has the potential to contribute to effective early warning systems by disseminating information about risks and increasing public understanding of the links between current weather events and climate change. There are also calls for increased emphasis on climate change within medical education, to prepare health professionals to better understand and communicate the impact of climate change on health.²⁵ This, together with addressing the needs for increased capacity building and climate change awareness among current health professionals and others influencing the health system, is critical for achieving the goals set out in the COP26 health program. The government, scientists, and the media all have important roles to play in harnessing these and other opportunities to increase climate change communication, with particular attention to what is being communicated and how. It is recommended that the government initiate a coordinated effort to assess, promote, and improve climate change communication among all agencies and institutions engaged in communicating the scientific consensus on climate change nationally. This initiative should facilitate collaboration among the government, public health experts, meteorologists, and the media to increase public understanding of the anthropogenic drivers of climate change, its links to national weather events, and its health impacts, with an emphasis on what various stakeholders can do to mitigate climate change and minimize its impacts.



Fig 4: “Many of the largest cities will experience yearly extreme weather from 2050”

TV meteorologist Kristian Gislefoss and news anchor at the NRK (Norwegian Broadcasting Corporation) Evening News, discussing the 2021 findings of the Intergovernmental Panel on Climate Change. A screenshot reproduced from and credited to Sivle and colleagues 2021.²⁴ Available at <https://tv.nrk.no/serie/dagsrevyen/201909/NNFA19092519/avspiller> (accessed 29 September 2022)

Conclusion

In conclusion, there are clear needs in Norway for increased drought preparedness, for increased climate change adaptation and mitigation that serves the interests of food security and health, and for climate change communication that advances understanding of its anthropogenic drivers, links to national weather events, and health impacts. Juxtaposing the devastating impact of drought on national grain harvests in recent years with current food security concerns and, at the same time, appreciating the negative impact that climate

change scepticism may have on progress towards sustainable solutions, elucidates that there are clear intersections between the needs that have been outlined in each of these focus areas and, moreover, that there are valuable health co-benefits to be achieved through implementing the recommendations. Accountability across sectors and multisectoral cooperation, as emphasized in these recommendations, is critical for realizing the degree of climate change mitigation and adaptation that safeguarding global health hinges on.

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Organisations and acknowledgements

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THE LANCET COUNTDOWN

The *Lancet* Countdown: Tracking Progress on Health and Climate Change exists to monitor the links between public health and climate change, and the transition from health threat to opportunity. We are a global collaboration of over 300 leading experts from academic institutions and UN agencies across the globe, bringing together climate scientists, engineers, energy specialists, economists, political scientists, public health professionals and doctors.

Each year our findings are published annually in medical journal The Lancet ahead of the UN climate change negotiations. Our data makes clear how climate change is affecting our health, the consequences of delayed action and the health benefits of a robust response.

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