GAS AND ITS OVERLOOKED HEALTH RISKS

Doctors for the Environment Australia

About Doctors for the Environment Australia

Doctors for the Environment Australia (DEA) is an independent, non-government organisation of medical doctors in all Australian states and territories.

DEA's work is based on the premise that humans need a future with clean air and water, healthy soils capable of producing nutritious food, a stable climate, and a complex, diverse and interconnected humanity whose needs are met in a sustainable way. We are therefore interested in environmental protection and restoration to promote human health and social stability.

Acknowledgement of Country

Doctors for the Environment Australia's members live and work around Australia. We would like to acknowledge Aboriginal and Torres Strait Islander peoples as the Traditional Owners of these lands, in the spirit of reconciliation.

We recognise that First Nations peoples have cared for Country and lived sustainably for millennia, and that sovereignty of this land was never ceded. We pay our respects to First Nations Elders past and present, and to emerging leaders.

Doctors for the Environment Australia

Contents

Executive Summary

Fossil gas is not just an energy or an environmental issue – it is also a human health issue.

Doctors for the Environment Australia (DEA) has collated the mounting scientific evidence demonstrating that dependence on fossil gas – primarily composed of methane – poses significant risks to human health. These health risks occur across the entire gas lifecycle, from the extraction and processing of gas, through to its combustion and use in our homes and businesses. They include risks to physical and mental health through indoor and outdoor pollution, and the contribution of fossil gas to climate change – one of the greatest threats to public health locally and globally.

DEA calls on all Australian governments to recognise the risks that fossil gas poses to public health and to take urgent action to reduce those risks. This involves accelerating the transition away from this harmful and polluting fuel, and ensuring all Australians – including low-income households, renters and other priority groups – can access healthier, affordable and more energy-efficient electric appliances for cooking and heating.

Toxic exposures at home and at work

Despite misinformation that fossil gas is 'natural' and therefore 'clean', burning it releases toxic air pollutants, including nitrogen dioxide, carbon monoxide, volatile organic compounds (including carcinogens such as benzene and formaldehyde), as well as particles small enough to be breathed in. Exposure to these pollutants indoors is associated with various health conditions, including the development and exacerbation of asthma, and the potential for carbon monoxide poisoning.

Beyond the home, hospitality workers are similarly exposed to pollutants from gas appliances, often for long hours in poorly ventilated environments. Workers in other industries reliant on fossil gas appliances or equipment, such as manufacturing, mining, laboratory work and the fossil fuel industry itself, also face gas-related health risks.

The health risks to communities of fossil gas extraction and production

Health hazards associated with unconventional gas extraction (fracking) include reduced air and water quality, excess water use, hazardous chemicals, silica exposure, increased vehicular traffic, noise pollution, loss of biodiversity, social disruption and accidents.

There is accumulating evidence, particularly in relation to birth outcomes, childhood leukaemia

and asthma, that exposure to hazardous chemicals from fossil gas extraction, is associated with poorer health outcomes. Where local communities are already socio-economically disadvantaged, these developments may exacerbate health inequities.

Fossil gas accelerates climate change and its health impacts

Methane is emitted throughout the entire gas supply chain, including leaks from abandoned infrastructure and at the point of use – even when appliances are turned off.

Methane is a powerful greenhouse gas that is over 80 times more potent than carbon dioxide in the first 20 years after emission. Methane accelerates climate change, and climate change drives more frequent and severe heatwaves, bushfires, droughts and storms, worsening air quality, disrupting food and water security, altering patterns of infectious disease and placing increasing strain on Australia's health system. Cutting methane emissions is a vital lever to slow the immediate rate of warming and buy ourselves time to avoid potentially catastrophic and irreversible climate tipping points.

Yet, despite these risks, Australia has not yet taken sufficient action to reduce avoidable health harms or secure a healthy environment.

Around 4.5 million Australian households – just under half of the nation's total – remain connected to the gas network. Building codes and efficiency standards have been slow to prioritise health, focusing instead on cost or emissions in ways that still allow fossil gas appliances to comply.

Australia continues to approve the opening of new offshore gas fields and unconventional gas developments in some jurisdictions. Fugitive emissions of methane from gas infrastructure, as well as other releases such as venting and flaring are poorly accounted for.

Australia remains one of the largest fossil gas exporters in the world – where its combustion causes further harm to health. The limited amount of gas required to support electricity reliability during the transition to renewable energy does not justify the expansion of new gas developments for domestic use. Continued investment in fossil gas infrastructure risks locking Australians into avoidable health harms, higher long-term costs, increased climate risk and litigation.

But a better future is already on the way

Some regions of Australia are already acting to secure a better future. The ACT and Victoria have stopped new residential and most commercial connections to reticulated fossil gas. All jurisdictions are currently offering rebates, subsidies or initiatives to encourage households and businesses to electrify and some jurisdictions have banned the sale and installation of the most dangerous types of gas-heaters. New workplace exposure limits for some airborne contaminants released from burning fossil gas are due to come into effect in December 2026. There is also increasingly robust evidence that switching from gas to electric cooking produces measurable improvements in asthma control and health service use.

The transition to flexible, renewable sources of power backed by storage – like batteries and pumped hydro – is well underway. Renewables are now providing more power than Australia's main grid needs at certain times of day and year and significantly improving grid resilience in heatwaves. Some regions in Australia have implemented bans or moratoriums on fracking due to its significant potential for harm to human health.

Community and health professional advocacy continues to highlight the need for more stringent measures to protect public health from fossil gas throughout its lifecycle.

Key recommendations for Australian governments

Australia has successfully reduced exposure to other major public health hazards when evidence demonstrated unacceptable risks. Fossil gas should be no different. Accelerating the transition away from gas offers a significant opportunity to improve health, reduce energy costs, cut climate pollution and create a safer, more resilient future for all Australians.

Protect households and communities

- Increase public and health professional awareness of the health risks associated with gas use and practical measures to reduce exposure.
- Provide targeted grants, incentives and concessional support to help households and businesses replace gas appliances and disconnect from the gas network.
- End new residential, commercial and public-sector gas connections.

Accelerate the clean energy transition

- Establish a clear timeline for phasing out gas extraction, distribution, use and export.
- Do not approve new gas extraction projects.
- Accelerate investment in renewable energy, storage and electrification, and support innovation in low-emissions alternatives for industries currently dependent on fossil gas.

Ensure accountability

- Strengthen fiscal and regulatory mechanisms so that gas companies bear the costs of the health and environmental harms associated with their activities, including their exports.
- Improve measurement, monitoring and public disclosure of methane and other gas emissions, including fugitive emissions.
- Require comprehensive health impact assessments for all new and expanded coal, oil and gas projects.

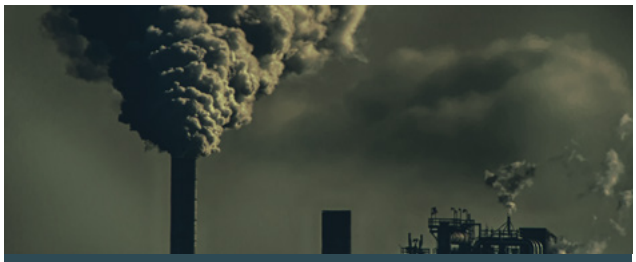
Fossil Gas and its overlooked health risks

Fossil gas in the home

- Almost half of Australian households are connected to gas.
- Gas stoves reduce indoor air quality, increasing the risk of asthma and carbon monoxide poisoning.
- To eliminate gas health hazards replace appliances with safe electric alternatives.

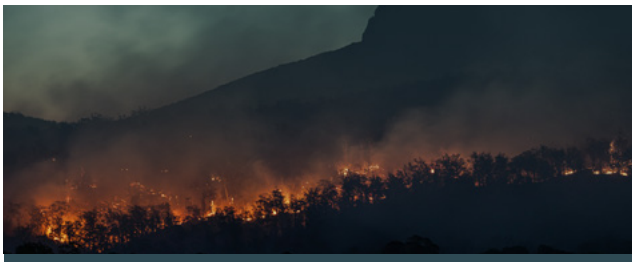
Fossil gas at work

- Workers are exposed to pollution from gas appliances.
- This increases the risk of asthma, chronic respiratory conditions, headaches and fatigue.
- To protect workers health we need better recognistion of the risks of using fossil gas.



Fossil gas extraction & production

- Concerns about fossil gas extraction include risks to water quality and groundwater contamination.
- Exposure to hazardous chemicals from extraction is associated with child leukaemias, respiratory and cardiovascular problems.



Fossil gas & climate change

- Fossil gas contributes to greenhouse gas emissions, exacerbating global heating and climate change.
- The National Climate Risk Assessment reports a severe risk to health from climate change.

Background

Moving on from fossil gas is not only essential to limiting further atmospheric warming, but also to protecting the health of our communities and our environment.

Fossil gas is primarily composed of methane. It is a naturally occurring gas containing carbon that is burned to power our homes, businesses, institutions and industries. Despite misinformation that fossil gas is 'natural' and therefore 'clean', extracting, processing and burning it pollutes our environment both locally and globally. This pollution causes significant impacts to human health, which are often overlooked.

Burning fossil gas produces a range of toxic air pollutants, particularly nitrogen dioxide, carbon monoxide, volatile organic compounds (including cancer causing chemicals such as benzene and formaldehyde), as well as particles of various sizes that are small enough to be breathed in and carried throughout the body. These pollutants are associated with health impacts both indoors, such as asthma and carbon monoxide poisoning,[1,2] as well as outdoors, including heart and lung disease, poor pregnancy outcomes and higher overall rates of illness and death.[3–6]

Fossil gas extraction and production is associated with direct physical and mental health risks to workers, as well as indirect health risks to communities through the contamination of air, land and waters, natural resource depletion, loss of cultural heritage, and biodiversity loss.[7–11]

Biogas has similar issues. Although it is made using microbes to process organic matter, it is also composed of methane along with varying amounts of carbon dioxide and other impurities. These also harm human health and contribute to air pollution and global heating.[12]

Importantly, methane is a powerful greenhouse gas, despite being relatively short-lived – it is over 80 times more potent at trapping heat than carbon dioxide in the first 20 years after emission..[13–16] Methane is also emitted throughout the entire gas supply chain, including through leaks at the point of use.[1,17,18]

Immediate action on methane emissions is a powerful way to address global heating in the near-term, protecting human and planetary health and avoiding potentially catastrophic and irreversible climate tipping points.

Fossil gas in the home

Gas appliances remain common in Australia, with around 4.5 million households – just under half of the nation's total[19] – still connected to the fossil gas network.[20] This reflects historical infrastructure investment and industry promotion of fossil gas as a 'clean' and 'affordable' fuel for heating, cooking and hot water.[21]

However, fossil gas stoves are known to be one of the largest contributors to poor indoor air quality in homes. Harmful pollutants – including known cancer causing chemicals – can quickly accumulate under common use conditions[1,22–29] and gas appliances can leak raw, unburned gas into homes, even when turned off.[1]

Hydrogen gas is not a viable alternative for Australian homes as existing fossil gas infrastructure is not compatible with transporting and using hydrogen gas to any beneficial degree. Increasing hydrogen beyond about 5% of the mixture with fossil gas is not considered safe due to the increased risk of infrastructure cracks, corrosion and leakage.[30]

Unlike parts of Europe[31] and the United States[32] where new connections of buildings to fossil gas are being phased out, most Australian states still permit gas connections to new homes. Encouragingly, however, the ACT and Victoria have stopped new residential and most commercial connections to reticulated fossil gas.[33,34]

Australian building codes and efficiency standards have been slow to prioritise health, focusing instead on cost or emissions in ways that still allow fossil gas appliances to comply. As a result, many households continue to use fossil gas, despite the lower energy costs of efficient electric appliances (especially when combined with solar panels and batteries),[35] as well as the health benefits of electrification noted by health professionals and the Australian Government. [36,37]

Gas and asthma

Asthma is a common and serious condition affecting one in nine Australians, and causing more than 400 deaths per year.[38] It is the leading cause of disease burden in young Australians aged between 5-14 years, affecting about 10% of our children.[39]

Cooking with fossil gas increases the likelihood of developing asthma, and may exacerbate symptoms in children already diagnosed, leading to more frequent flare-ups and hospital visits.

Governments should make every effort to help householders switch to safer electric alternatives for cooking.

The nitrogen oxides and particles produced when fossil fuels are burned are now well understood to exacerbate asthma in both adults and children, with the variety of effects of nitrogen oxides on the body being the best studied.[40,41]

Not surprisingly, concerns that cooking with fossil gas impacts respiratory health in our children have been raised for many years.[42]

In 1992 epidemiologists calculated that chronic exposure to the nitrogen dioxide levels comparable to using a gas stove increases respiratory illness in children by about 20%.[42] In 2013 a meta-analysis, which combines data from multiple studies, reported that children living in a home with gas cooking have a 42% increased risk of current asthma, that is, cases of asthma that have had symptoms or been on treatment in the last 12 months.[43]

Australian modelling in 2018 calculated that 12.3% of childhood asthma in Australia may be attributed to fossil gas cooking,[44] which was echoed by a US study in 2023 that calculated the figure at 12.7%.[45]

It is worth noting that studies looking at asthma in children exposed to household smoking have found a 14-33% increased risk for developing asthma,[46,47] something that it is well accepted that we protect our children against.

Adult populations are also affected by burning gas, with studies showing an increased risk of persistent asthma,[48] shortness of breath, wheeze and breathlessness.[49]

Encouragingly, there is now evidence suggesting that transitioning from gas to electric cooking improves health outcomes. An American intervention replaced gas stoves with electric ones in homes of 85 people with asthma. At follow up there were marked improvements in symptoms, and fewer people required hospital care for asthma.[50] In Ecuador, the 'Program for efficient cooking' enabled 750,000 homes to move from gas to induction stoves with measurable improvements for health – every percent of customers in the program was associated with a 0.74% decline in all-cause hospital rates and in respiratory related hospital rates.[51]

Risk of carbon monoxide poisoning

Carbon monoxide poisoning is an under-recognised and serious risk from fossil gas appliances. Carbon monoxide is a colourless, odourless gas produced by incomplete burning in faulty or poorly ventilated gas heaters, stoves and hot water systems.[52] Symptoms such as headache, nausea, dizziness and confusion are non-specific, meaning cases may be missed or misdiagnosed until severe poisoning occurs. Although uncommon, severe carbon monoxide poisoning risks long term injury to the brain and nervous system and even rapid death.[53]

Tragically, there have been preventable deaths linked to fossil gas heaters, prompting regular health warnings from several Australian jurisdictions. This particularly applies to unflued or open-flued gas heaters, which have their air intake inside the building and can leak carbon monoxide and other pollutants back into living spaces.[54,55] The risk is heightened inside tightly sealed, energy-efficient homes, especially when extractor fans elsewhere in the building are operated, as the negative air pressure created draws carbon monoxide into the room much more easily.

In recognition of this serious health problem, both unflued and open-flued gas space heaters are prohibited (with some specific exemptions) in some, but not all, Australian jurisdictions.[56]

Safer heating, cooking and hot water

The most reliable way to eliminate gas health hazards in the home is to replace gas appliances with safer electric alternatives.

Induction and ceramic electric cooktops are safer alternatives to cooking with fossil gas. Electric induction cooktops work by creating a magnetic field with the bottom of pots, and are a particularly fast, safe and energy efficient alternative to gas cooktops.[57] Portable induction hobs make the technology widely accessible. Having only electric appliances also saves the cost of gas appliance service charges.

Heat pumps are safe and highly energy efficient and are used to heat buildings and supply hot water. Many buildings already have heat pumps installed for cooling, so these 'reverse cycle air conditioners' can allow an easy switch away from fossil gas heating.[58,59]

Heat pump hot water systems enable much more efficient water heating, even with very low outside temperatures.[59,60] They are particularly cheap to operate when using free electricity from solar panels during the day to heat and store hot water for overnight use.[61]

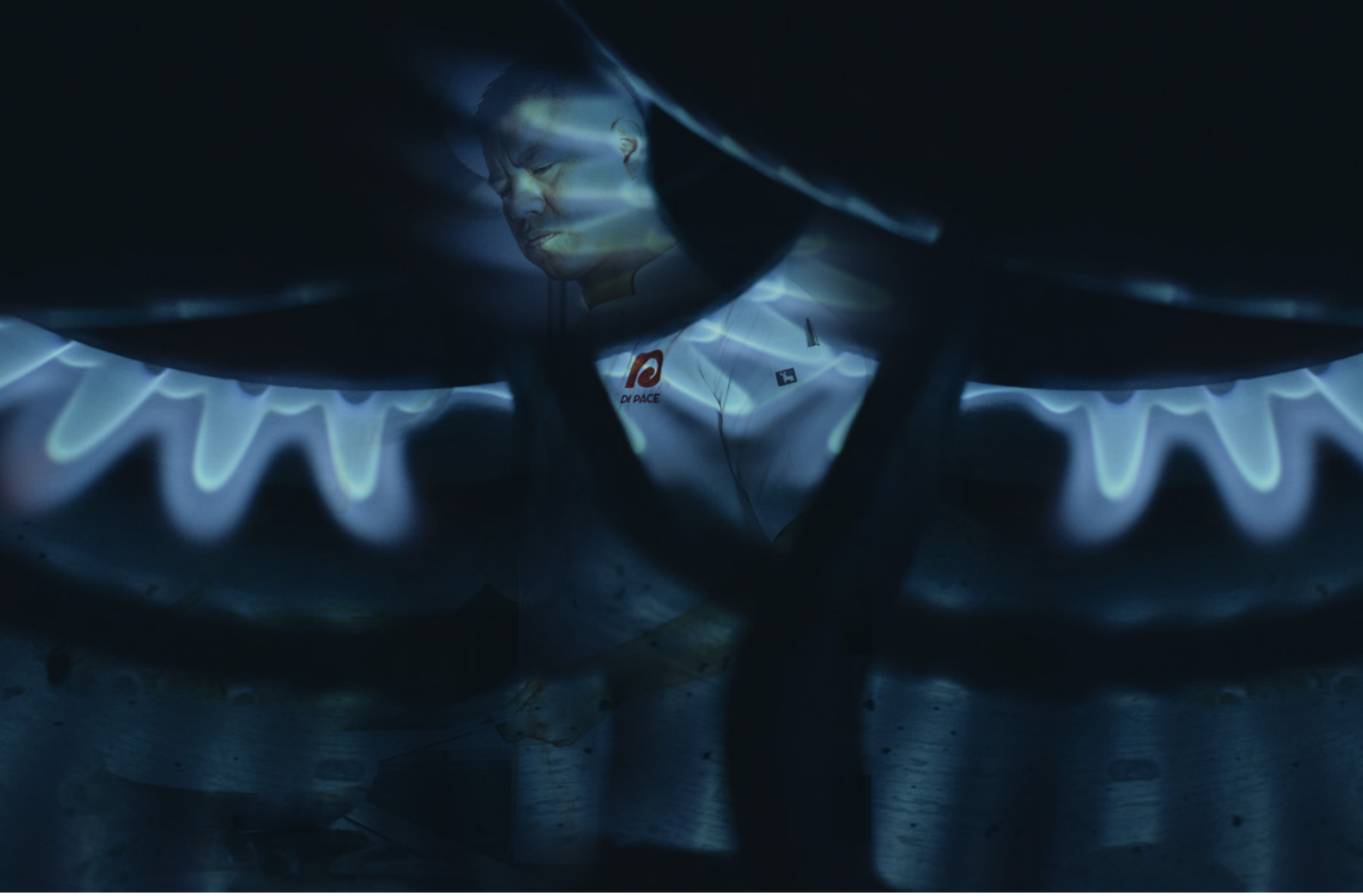
For those unable to remove fossil gas from their buildings, regular servicing, properly functioning exhausts, adequate ventilation and correct installation and use of carbon monoxide alarms reduce – but cannot eliminate – the risks.[62–64]

Australian governments need to provide equitable support for the energy transition. This should include measures that make it easier and more affordable for households (particularly low-income households, renters, and those in multi-unit dwellings) to replace gas appliances, upgrade electric switchboards and circuits, disconnect from the fossil gas network, and transition to energy efficient, all-electric homes.

It also means offering targeted subsidies, incentives, and retraining programs for workers and communities currently dependent on fossil gas. Encouragingly, all Australian jurisdictions are currently offering some rebates, subsidies or initiatives to encourage households and businesses to electrify.[65]

Induction cooktops and pacemakers or implantable defibrillators

When used as directed, induction cooktops are safe for people with pacemakers and implantable cardiac defibrillators (ICDs).[66–70] Any interference that could occur is not harmful and easily fixed by moving slightly further away, usually 30-60 cm.[68,69,71] Many modern implantable heart devices are now designed to withstand much stronger magnetic fields, such as those in MRI machines.[68,69,71] For most people, even those with pacemakers or ICDs, induction cooktops offer a safe, healthy alternative to fossil gas cooking.



Fossil gas at work

Workers in certain industries, particularly hospitality, are regularly exposed to harmful pollutants from fossil gas appliances.[24,29]

Kitchen staff often work for long hours in poorly ventilated commercial kitchens, where nitrogen dioxide, fine particulates and even carbon monoxide from gas stoves can reach levels well above recommended health limits.[72] This exposure increases the risk of asthma, chronic respiratory conditions, headaches, fatigue, and other symptoms, with cumulative effects over years of work. Workers usually do not have the choice to switch to safer electric cooking, making it an occupational health equity issue.

Beyond kitchens, other industries reliant on fossil gas appliances or equipment, such as manufacturing, mining, laboratory work and the fossil fuel industry itself, also face risks of explosions, burns, and toxic exposures.[73] Some of the toxic chemicals produced by burning fossil gas are included in updated workplace exposure limits for airborne contaminants due to come into effect in December 2026 in Australia.[74] However, methane itself is not included and limits for benzene, formaldehyde and nitrogen dioxide will remain at their current levels pending further work.[75]

Improving safety in the workplace

Protecting workers' health necessitates better recognition of the risks of using fossil gas, stronger workplace health and safety regulations along with compliance support and enforcement, improved ventilation standards, and a full transition to electric technologies where already feasible.

Australia must also support research and innovation, funding technologies for low-emissions energy use, electrification and alternatives to fossil gas for industrial processes.

Fossil gas extraction and production

Extraction of fossil gas from deep rock formations often involves the injection of high-pressure fluids and chemicals into the ground – the most widely known of these 'well stimulation' techniques is fracking.[76] Concerns have been raised about the potential and known health risks associated with this practice,[9,77–81] particularly for regions like the Northern Territory.[82] Hazards include reduced air and water quality, water quantity, hazardous chemicals, silica, increased vehicular traffic, social disruption and accidents.[81,83]

Exposure to hazardous chemicals from fossil gas extraction, such as benzene and toluene, is associated with childhood leukaemias, respiratory problems and other health complications.[9,21,84–87]

The extraction process poses risks to water quality, potentially contaminating groundwater supplies.[77,81]

There is a growing body of research showing adverse effects of unconventional oil and fossil gas development exposure on human health, with an accumulating weight of evidence particularly in relation to birth outcomes and asthma.[88] Some studies have suggested proximity to wells before birth increases pregnancy-related complications, adverse birth outcomes and some birth defects.[9,89–93] Furthermore, communities living near fracking sites may experience increased noise pollution and social stress, which can contribute to poor physical and mental health.[94] Significant socioeconomic inequities for communities living near oil and fossil gas extraction and processing sites compound the health impacts of such environmental stressors.[10,95] Healthcare workers in the Northern Territory have protested against developments like the Middle Arm fossil gas project, citing dangers from air pollution and increased risks of respiratory and cardiac diseases.[82,96]

Given these concerns, some regions in Australia have implemented bans or moratoriums on fracking due to its significant potential for harm to human health, while others continue.[97,98]

Offshore fossil gas extraction in Australia, particularly in regions like Western Australia, has raised significant concerns among health professionals about occupational health risks for workers on offshore platforms, including physical and psychosocial hazards, as well as broader environmental and climate impacts that have implications for public health.[99,100]

Additionally, the delayed or inadequate decommissioning of ageing offshore rigs poses ongoing environmental risks. This was seen with ExxonMobil's pipeline rupture in the Bass Strait, also raising concerns about potential long-term human health impacts from environmental contamination.[101] Regulatory bodies like the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) oversee safety standards, but ongoing community and health professional advocacy highlights the need for more stringent measures to protect public health in areas affected by offshore fossil gas activities.[102,103]

Once established, fossil gas infrastructure in general continues to leak, posing fire and explosion risks as well as harming our climate and health.[104] Much of this leakage is not accurately measured. In fact, losses, leaks and other releases – like venting and flaring – of methane and other greenhouse gases from the coal, oil and fossil gas sectors (including from abandoned infrastructure) are likely to be significantly higher than the current national estimates. This undermines the regulation of and accountability for climate pollution.[105,106]

Fossil gas extraction and production have significant impacts on biodiversity – habitat destruction, pollution, and climate change all contribute to the decline of native species and ecosystems. For instance, the Beetaloo Basin in the Northern Territory, a region rich in biodiversity, is threatened by fracking operations that could harm already threatened species.[107–109]

The loss of biodiversity undermines ecosystem services that are vital for human health, including clean air and water, food security and disease regulation.[77]

Minimising the impact of fossil gas extraction and production

Australia needs to implement strict emissions regulations, with tighter limits on methane and other greenhouse gas emissions from remaining fossil gas operations. These are urgently needed throughout the energy transition.

Improved measurement and disclosure of methane emissions are also vital to properly understand and address the impacts of fossil gas extraction and use. To enable effective regulation and accountability, Australia needs to mandate accurate, standardised, credible and independent measurement and public reporting of fugitive methane emissions across the fossil gas supply chain.[110,111] This should be financed by facility operators, including at coal mines and fossil gas processing facilities.

Australia must halt approvals for new fossil gas developments, including exploration, fracking and pipelines, to prevent locking-in future emissions.

Fossil gas accelerates climate change and its health harms

Australia's reliance on fossil gas extraction and use significantly contributes to greenhouse gas emissions, exacerbating global heating.

This heating intensifies the frequency and severity of extreme weather events such as heatwaves, bushfires, and storms. These climatic shifts pose direct health threats, including heat-related illnesses, respiratory problems due to smoke and injuries from natural disasters.[112] The National Climate Risk Assessment highlights these escalating risks for Australia, emphasising the urgent need for mitigation strategies to protect public health.[113]

Climate change, driven in part by pollution from fossil gas, alters ecosystems, expanding the range of disease vectors like mosquitoes.[114,115] This expansion increases risks from diseases such as dengue and Ross River virus in Australia.[116,117] The World Health Organization warns that climate change is a significant factor in the rising burden of vector-borne diseases globally.[118]

Extreme weather events, socioeconomic instability, uncertainty and fear along with other impacts of climate change contribute to poor mental health, including anxiety and depression.[119] In Australia, communities affected by extreme weather events like bushfires, droughts and floods report increased psychological distress and an increased need for health services to manage this distress.[115,120,121]

Australia's healthcare system is increasingly strained by climate-related health impacts, including heat-related illnesses, respiratory problems from bushfire smoke, injuries and mental health issues following extreme weather events.[122–125]

Rising hospitalisation rates and prolonged recovery periods after floods and storms are placing additional pressure on already overstretched hospitals.[126,127] Healthcare workers face burnout and fatigue,[128–130] reducing the system's capacity to respond effectively to climate emergencies.[127] Many healthcare facilities are not yet climate-resilient, lacking infrastructure to cope with extreme heat, flooding, or other environmental hazards.[121]

While national strategies and frameworks exist to address these challenges, insufficient investment and implementation limit the system's ability to adapt.[36] Without urgent action to strengthen infrastructure, workforce capacity, and climate-health planning, current healthcare services will struggle to keep pace with escalating climate-related health demands.[121,131,132]

Globally, the health impacts of fossil gas extraction and climate change are profound and far-reaching.[115]

The World Health Organization projects that between 2030 and 2050, climate change will cause approximately 250,000 additional deaths per year due to heat stress, malnutrition, malaria, and diarrhoeal diseases alone, illustrating the significant burden of climate-related health effects worldwide.[118] Low-income and island nations, despite contributing minimally to global greenhouse gas emissions, disproportionately bear the brunt of these health challenges, highlighting the stark inequity in climate-related health burdens.[115]

Priority populations within these regions, such as children, the elderly, and those with pre-existing health conditions, experience higher rates of climate-related morbidity and mortality, as they often have limited access to healthcare, clean water, and climate-resilient infrastructure. Indigenous communities and marginalised groups are particularly affected, facing compounded risks due to social, economic, and political marginalisation. This global disparity underscores the ethical imperative for high-emitting countries, including major fossil gas-producing nations like Australia, to reduce emissions and support climate adaptation and health resilience in the most affected communities.

Every gas project adds to the health burden

We can now quantify the human and environmental health costs of the emissions from individual fossil fuel projects.

Research published in October 2025 estimated the health harms of the Scarborough Gas Project, off Western Australia, over the anticipated lifetime of the project.[133] It found that the 0.00039 °C of global heating from this project will cause:

- 516,000 additional people globally exposed to excess heat
- 356,000 additional people globally put outside the 'human climate niche'
- 84 heat related deaths in Europe alone (where the data is available for robust estimates)
- an additional 16 million corals lost per bleaching event in the Great Barrier Reef.

This builds from earlier studies that estimate that there is one premature death for every 1,000 tonnes of carbon burnt, otherwise known as the 1,000 tonne rule.[134] Again using Scarborough as an example, the 238.7 million tonnes of carbon emissions would translate to 238,700 premature deaths across the globe.

These forms of mathematical modelling can be similarly applied to all fossil fuel projects and demonstrate that when Australia approves fossil fuel projects there are measurable global consequences for human health.

The precautionary principle should surely apply both in terms of reducing health harms and in reducing our nation's risk of climate litigation, considering the International Court of Justice 2025 ruling that countries have legal obligations to take action to protect the climate system from greenhouse gas emissions. Fossil fuel production, fossil fuel consumption, the granting of fossil fuel exploration licences or the provision of fossil fuel subsidies, may constitute an internationally wrongful act which is attributable to that State.[135,136]

The Australian Government's National Climate Risk Assessment demonstrates its understanding of the risks to human and environmental health from climate change, stating that Australia will be exposed to severe risk in both systems by 2050.[113] Its National Health and Climate Strategy has a key objective of Health in All Policies, recognising the significant contribution of fossil fuel combustion to climate change and the health co-benefits of emissions reduction.[36]

Given this, our federal and state governments have a responsibility to take into account the health impacts of the fossil fuel projects they are asked to approve, and could achieve this quite simply by requiring health impact assessments as part of all fossil fuel project decisions.

An orderly energy transition protects health

Australia needs to set a clear and ambitious timeline for phasing out fossil gas, co-ordinating action at all levels of government to establish legally binding targets to progressively reduce and eliminate fossil gas production and use.

Health impact assessments should be required of any and all new or extended coal, oil and fossil gas projects, so the consequences for human health and suffering as well as costs to communities and the health system are clear.

Local and First Nations communities should also be fully engaged in planning, decision-making, and benefit-sharing from the transition to an efficient and reliable, fossil gas-free energy system.

Fossil gas and the energy grid

Australia's energy grids used to rely on coal-fired generators – these are inflexible and are slow to ramp up or down, greatly increasing the enormous amount of carbon and other pollution they release.[137,138] These coal-fired generators are now reaching the end of their service lives and are increasingly unreliable, with frequent outages caused by breakdowns and increasing maintenance requirements.[139,140] Despite generating less power, they are releasing even more pollution,[141] and pollution from coal is well known to harm human health.[142,143]

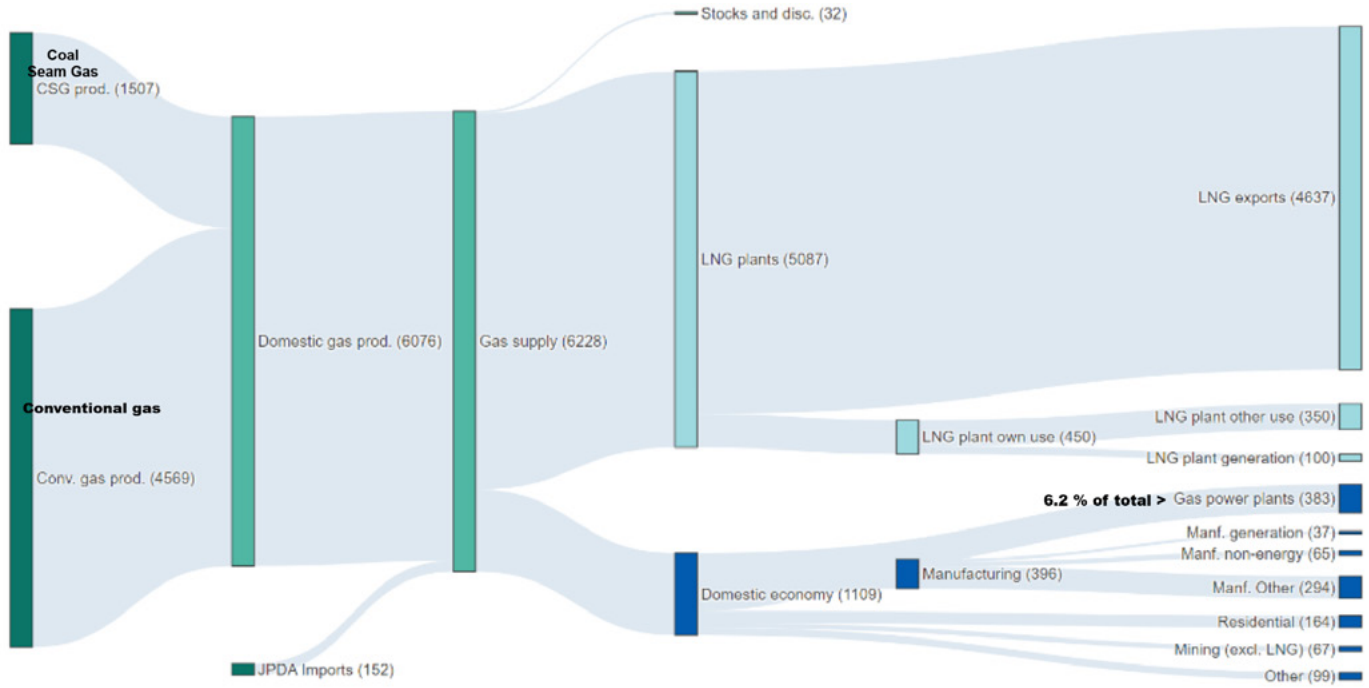
Encouragingly, the transition to flexible renewable energy, supported by storage technologies such as batteries and pumped hydro, is already well underway. At certain times of the day and year, renewable energy generates more electricity than Australia's main grid requires, as well as improving the grid's resilience during heatwaves.[144–146]

During this transition, only a small amount of fossil gas is needed to support Australia's electricity system.[147–151] In 2024–25, the National Electricity Market used 67 PJ of gas[147]— just 1.05% of Australia's total gas production.[152] Although gas-fired power stations are more flexible than coal-fired plants, they are costly to build and operate and produce substantial carbon emissions. Large batteries, which are faster, more flexible, scalable, and emissions-free, are increasingly replacing existing and planned gas peaking plants.[153,154] As a result, any remaining role for gas peaking plants is likely to be limited to infrequent and costly backup.[155]

Given the very low projected domestic demand for gas in the electricity sector, there is no justification for opening new fossil gas fields.

Cleaning up Australia's energy grid

Australia needs better energy system planning, to reduce the demand for gas, coal and oil while speeding up investment in renewable energy infrastructure and expertise.[156] This will expand solar, wind and storage capacity to replace fossil gas-generated electricity, ensure grid reliability and help export partners transition to clean energy.



Australian fossil gas flows, petajoules, 2022–23.
Note: Components may not sum due to rounding. Gas power plants include some generation by other economic sectors.
Source: DCCEEW (2024) Australian Energy Update, Figure 3 and Australian Energy Statistics, Tables A and F and internal sources, <https://www.energy.gov.au/publications/australian-energy-update-2024>. Used under Creative Commons Attribution 4.0 International Licence.

Fossil gas exports

Australia is reported to be the world's third largest fossil fuel exporter.[157]

The large majority of the fossil gas that Australia extracts is not used to power Australia's energy grids – it is exported, much of it without royalties or adequate taxes being paid.[158–161] Since 2015, the unrestricted export of Australia's fossil gas to higher paying international markets has resulted in domestic wholesale gas prices more than tripling and electricity prices doubling.[162] Fossil gas has now become an expensive form of energy for Australian households and businesses.

In 2022, about 80% of the fossil fuel greenhouse gas emissions for which Australia is responsible came from our exports.[157] Liquifying fossil gas for export is also energy intensive. Much more of Australia's fossil gas is used just for gas export terminal processes than is used by either the entire manufacturing industry or households in Australia.[163,164] Australia itself uses just 19% of the fossil gas it produces, once that used by the oil and gas industry itself is excluded.[157]

Globally, more than 4 million deaths were attributable to outdoor fine particle (PM2.5) air pollution in 2019, many of which could be avoided by eliminating the burning of fossil fuels.[165] As a major exporter, this means Australia is contributing to the shortening of the lives of tens of thousands of people each year globally from PM2.5 alone through the burning of our exported gas, even without considering the impacts of other toxic products from burning fossil fuels, their amplifying interactions with each other[40] or the health impacts of climate change.[166] Given this, and the expected decline in demand for fossil fuels, Australia urgently needs a plan to reduce reliance on revenue from these exports.

Conclusion

Ongoing exposure to the production and use of gas carries a range of health impacts that are generally not well recognised. As we learn more about these impacts, the case to act is increasingly compelling.

Fossil gas is a health hazard that we are exposed to in our homes, our communities and our environment.

Using fossil gas exposes us to toxic air pollutants, like nitrogen dioxide, particulate matter and volatile organic compounds, including the carcinogens benzene and formaldehyde. Burning fossil gas increases the likelihood and severity of asthma and risks carbon monoxide poisoning, with implications both at home and at work.

There are mounting concerns about associations of unconventional gas extraction with increased risks of respiratory and cardiovascular disease, birth defects, pregnancy problems, cancer and leukaemia in impacted communities.

As a potent greenhouse gas, the methane in fossil gas is causing global heating. This accelerates climate change increasing the incidence of heat-related illness, the impacts of extreme weather, food and water insecurity, infectious disease, displacement, and mental health impacts.

To protect human and environmental health we must set a clear and ambitious timeline to phase out fossil gas. We must accept our responsibility to address the health harms of fossil gas with government regulation to reduce both direct exposure and methane's greenhouse emissions, much as we have done with other known health hazards like asbestos, stone bench tops containing respirable crystalline silica and tobacco.

By applying a public health lens to this hazardous gas, we can move on from our fossil gas dependency and put the health of our community first.

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