clasp Efficient Appliances for People & the Planet

Frequently Asked Questions

Responses are pulled from CLASP's January 2023 gas report "Exposing the Hidden Health Impacts of Cooking with Gas"; and "The Public Health and Environmental Impacts of Cooking with Gas in the UK".

1. Approximately how many households in the EU and the UK cook with gas?

In both the EU and the UK, a significant number of households rely on gas for cooking. An estimated 144 million people in the EU and 36 million people in the UK cook with gas.

2. What are the associated risks of cooking with gas?

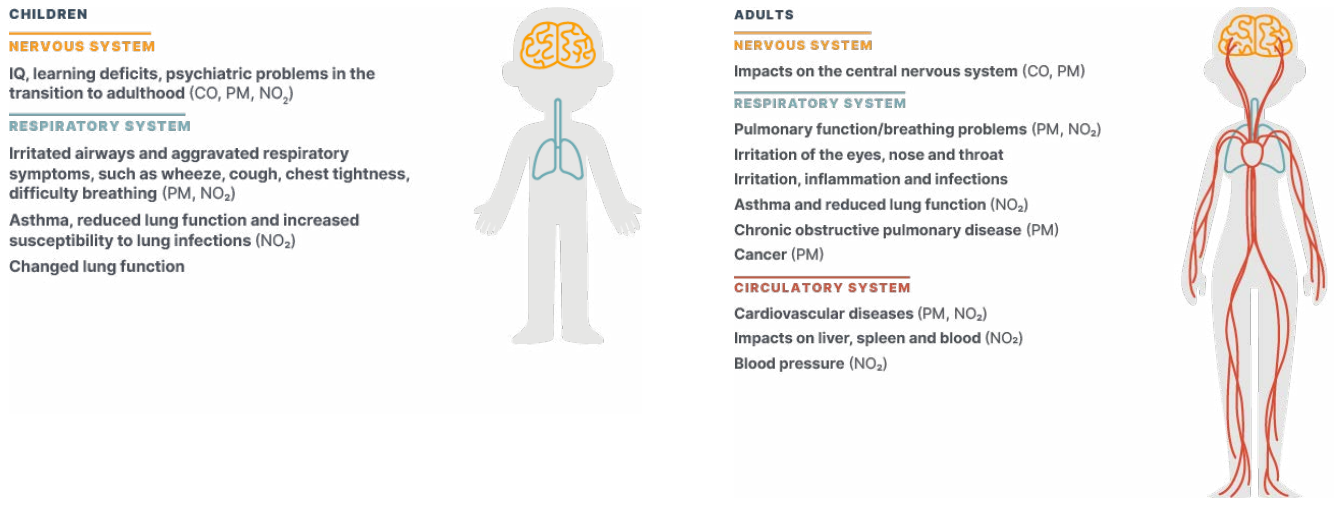
All gas cooking appliances release pollutants that are harmful to both individuals' health and the environment, creating indoor air pollution that violates EU and UK outdoor air pollution regulations. Pollutants released by gas cooking appliances include NO_2, a toxin that has been linked to development of asthma in children; gas cooking also emits carbon monoxide, carbon dioxide, and unburned methane, which are all harmful substances.

3. How does cooking with gas impact our health?

Exposure to high levels of air pollution is known to cause severe health consequences, such as strokes, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma. Specifically focusing on NO_2, the WHO has concluded: "The main health outcomes of interest are respiratory symptoms, bronchoconstriction, increased bronchial reactivity, air way inflammation and decrease in immune defence leading to increased susceptibility to respiratory infection."

4. Are the side effects different for adults compared to children?

Both adults and children can suffer from illnesses related to gas exposure, however, risks for certain illnesses are higher for children. For instance, the WHO found that children living in homes with gas cooking appliances have a 20% increased risk of lower respiratory illnesses. Subsequent research has linked domestic gas combustion to the development of attention deficit hyperactivity disorder (ADHD) in young children.



Increased exposure to indoor NO_2 has also been associated with increases in the number of days with limited speech, cough and nocturnal symptoms.[1] Children suffering from asthma also have higher levels of school absence, which can potentially affect their educational outcomes. Meanwhile, short-term exposure to NO_2 levels exceeding 150 µg/m3 can lead to negative outcomes for all children, such as a significant increase in sore throats, colds and absences from school. There is growing evidence linking combustion-related air pollution to adverse effects on brain development in young children.

[1]Hansel NN, Breysse PN, McCormack MC, Matsui EC, Curtin-Brosnan J, Williams DL, Moore JL, Cuhran JL, Diette GB. A longitudinal study of indoor nitrogen dioxide levels and respiratory symptoms in inner-city children with asthma. Environ Health Perspect. 2008 Oct;116(10):1428-32. doi: 10.1289/ehp.11349. Epub 2008 Jul 23. PMID: 18941590; PMCID: PMC2569107.

5. What are the environmental impacts of cooking with gas?

Cooking with gas has significant environmental impacts. Even when switched off, gas hobs leak methane—a potent greenhouse gas. Methane is the main component of fossil gas used for cooking; when burned or released, it can warm the Earth more than 80 times as much as the same amount of carbon dioxide over a 20-year period. In the U.S., gas cookers were estimated to emit 2.4 million tons of methane annually, equivalent to the annual greenhouse gas emissions of 500,000 cars. We have tested European gas hobs and found similar results -- in the UK, cooking accounts for roughly 2% of the country's total emissions. By keeping homes connected to the gas grid, we undermine our ability to meet net-zero targets.

According to CLASP estimates, the implementation of an energy label and energy efficiency requirements through Ecodesign would result in cumulative savings of 1MtCO_2 by 2030, 30MtCO_2 by 2040, and 85MtCO_2 by 2050. Learn more about CO_2 savings in this one-pager.

6. What are the alternatives to cooking with gas?

There are several clean and affordable alternatives available on the market. Electric cooking alternatives, such as induction hobs and plug-in alternatives, can replace gas hobs and ovens. Some of these alternatives are both environmentally friendly and more cost-effective than cooking with gas. Electric hotplates and infrared hobs, for instance, have been found to have lower ownership costs compared to gas, as demonstrated in the table below. The figures below were calculated based on the average gas and electricity prices in 2021, taking into account the energy price increases observed after the energy price cap rise in October 2021.

HOB TYPE	TOTAL COST OF OWNERSHIP PRICE COMPARISON TO GAS
Electric Hotplates	£180 cheaper
Infrared Hobs	£30 cheaper
Induction	£150 higher

7. Does ventilation solve the gas pollutant problem?

Not necessarily. While proper ventilation is better than no ventilation, it does not fully solve the issue. Research shows that existing domestic kitchen ventilation strategies are inadequate in over 80% of houses. Many households have range hoods that do not exhaust air to the outside but instead have ductless hoods that simply recirculate the air within the kitchen. The efficacy of the hood and filter also quickly decreases over time. A study conducted by TNO found that recirculation hoods with new activated carbon filters can reduce NO_2 peak concentration by 67%. However, the efficiency of the hood with the filter rapidly decreases in the first month of use to 19% efficiency in just 19 days. Even with a new filter, the hourly average NO_2 concentration remained above the indoor air 1-hour Air Quality Guideline recommended by the WHO.

8. What is the level of public awareness regarding this issue?

While the health risks associated with air pollution have been widely studied and publicized, the impact of cooking with gas on indoor air quality has not yet received the same level of public awareness. The gas industry has invested heavily in positioning gas cooking as a safe, superior alternative to electric. Decades of extensive marketing has shaped public opinion, leading people to view gas as a safe, clean, and "natural" product. As a result, there is a lack of awareness across Europe regarding the immediate health and environmental risks posed by gas cookers.

According to consumer surveys run by Opinium, less than half of UK adults (34%) have concerns over cooking with gas appliances in their homes. In France, 53% of surveyed adults believe that gas appliances don't cause any health issues; that number stands at 39% in Romania; and 43% in Spain. These numbers indicate the lack of awareness regarding associated health risks of cooking with gas.

9. What can individuals do to protect themselves?

Certain measures can help improve air circulation and reduce pollutant levels. If possible, the safest option is to replace your gas cooker with energy-efficient electric alternatives. However, if that isn't an option, minimize your exposure to gas cooking emissions by using plug-in appliances, such as electric kettles, fryers, or induction hobs. It's important to use your range hoods while cooking and leave them running for at least ten minutes after cooking. Regularly clean the grease filters to ensure their efficiency and prevent the buildup of grease and grime that can reduce exhaust capacity. Try to use the back burners that are closest to the range hood, for better ventilation. Ideally, your range hoods should vent outdoors to direct the fumes out of the kitchen. If you don't have a ventilation system, open the windows while cooking and leave them open for a few minutes after you finish cooking. Find more recommendations in this one-pager.

10. What can the government do to protect citizens?

The European Commission can protect Europeans by:

- Introducing a comparative test method that will enable a direct comparison of efficiency between gas versus electric cookers
- Set stringent efficiency requirements for both gas and electric cooking appliances, to generate more carbon emission reductions and to ensure consumers have lower energy bills
- Providing information on harmful gas cooking emissions to consumers, ideally on a A-G Energy Label that is present on both gas and electric hobs and ovens
- Include pollutant capture efficiency in the range hoods' Ecodesign requirements
- Fund the transition to cleaner electric cooking

Member States and the local governments can:

- Vote in favor of people and planet conscious regulations in the EU
- Ban gas cooking appliances in new construction
- Accelerate the transition to electric technologies, by providing incentives to households to upgrade to electric, specifically induction, cooking
- Run public health awareness campaigns
- Electrify infrastructure

The UK Government can protect households by considering the options above, as well as:

- Installing electric ovens and hobs in new construction in support of the UK's net-zero targets
- Accelerating the transition to cleaner electric cooking
- Acting on existing commitments to reduce electricity tariffs
- Establishing indoor air quality standards for NO_2 that reflect health-based exposure limits

11. Where can I learn more?

Visit the CLASP webpage, 'Electrifying Cooking in Europe,' where you will find a variety of resources in several languages.