

What can be done to combat air pollution in Europe?

From wood burning to driving, there are things people can do – but industries such as shipping and agriculture bear most of the responsibility

The Guardian - Gary Fuller - 21 Sep 2023

While air pollution is largely invisible to us in our daily lives, the health impacts of breathing tiny PM2.5 particles is increasingly well known. So what can we do about it?

5 A study from the Barcelona research institute ISGlobal connects health impacts to their sources in more than 800 cities across Europe, and identifies priorities for action. Some sources are obvious, but many have been overlooked for years.

10 For Europe as a whole, the main source of air pollution is home heating. This is followed by agriculture, industry, transport and shipping, but priorities vary from place to place. For north-west Europe, agriculture is dominant. Transport pollution
15 is the biggest source in the cities of central and north-west Europe, along with northern Italy. Farther east, home heating, energy generation and agriculture are priorities for action.

Here, we explore each of the five sources, which need
20 structural solutions, as well as what you as an individual can do.

1. _____

Burning solid fuel is the most polluting way to heat homes. The health cost of air pollution from home
25 heating across Europe is estimated at €29bn a year in 2018.

The availability of fossil gas from the 1970s meant that many homes in western Europe turned away from solid fuel heating, leading to large
30 improvements in air quality. For the last two decades, this trend is being reversed with the rising popularity of wood stoves as an aesthetic and second source of heating.

In eastern Europe, home heating with coal remains
35 popular. In Italy, the impacts come mainly from wood burning. Studies across Ireland highlight severe particle pollution from wood, coal and peat burning in both small rural towns as well as big cities.

Dr Jurgita Ovadnevaite, from the University of
40 Galway, said: "Solid fuel burning results in extreme air pollution events, spanning most populated areas in Ireland, with levels frequently exceeding the World Health Organization recommendations for health. The obvious solution would be to ban solid fuel burning
45 completely. To make this feasible, houses should be properly insulated for electricity to become a viable alternative."

2. _____

The main source of PM2.5 from agriculture is
50 ammonia emitted from fertiliser and animal waste. This pollutes our rivers as well as our air.

Dr Anna Font of the research institute IMT Nord Europe said: "Agriculture represents about 94% of all ammonia emissions in Europe. Ammonia emitted
55 as a gas will rapidly transform into ammonium particles by combining with sulphate and nitrate. These represent roughly 20% to 40% of total PM2.5 in the air."

"From satellite data we can see hotspots of ammonia
60 in north-western Europe (including the Netherlands, Belgium, and north-west Germany), Brittany, the Po Valley in northern Italy and the Ebro valley in north-east Spain."

If farmers reduced ammonia emissions they would
65 need to buy less fertiliser to put nitrogen into their soils.

Prof Mark Sutton, from the UK Centre for Ecology and Hydrology, explained: "Most ammonia emissions come from livestock excreta and fertilisers.

70 "With high fertiliser prices in 2022, total UK nitrogen losses were worth around £3bn. This is around the same as the total UK agricultural subsidy. Covering manure stores and incorporating manure and fertiliser in the soil can reduce these emissions by
75 90%. Reducing ammonia emissions avoids this massive waste of resources and is good for air quality at the same time."

3. _____

In the 1970s, forest die-back from acid rain was a
80 powerful visual image of the impacts of air pollution. Today, large industries across the developed world are subject to inspection and control but they still add to our air pollution.

Examples of sudden health improvements following
85 the closure of polluting industrial sites demonstrate the burden that industry can still create, and therefore the opportunities for better technological solutions.

In 2016, the closure of a coal processing plant near
90 Pittsburgh, US, was followed by an immediate 42% decrease in emergency room visits for heart problems in the local community, and further improvements in the years that followed.

Prof George Thurston, of New York University
95 Grossman School of Medicine, who studied the impacts of the coal processing plant, said: "We need to focus our clean air efforts on eliminating the most health damaging particles – those emitted by fossil

fuel combustion and industrial processes.
100 Documented health effects include increased cardiovascular deaths, hospital admissions and emergency room visits, as well as an increased risk of asthma attacks among children.”

4. _____

105 Vehicles bought in Europe today contain engine management systems, filters and catalysts to clean their exhausts but all vehicles, even electric ones, still produce particle pollution from the wear of brakes, tyres and road surfaces. These are not subject to
110 regulation and there are no mass-market engineering solutions.

Dr Will Hicks, of Imperial College London, said:
“Drivers can help by driving smoothly. This could be encouraged through traffic calming measures (30kph
115 speed limits should help), media campaigns and driver awareness courses.”

Long-term solutions lie in the design of our towns and cities.

Prof Mark Nieuwenhuijsen, of the Barcelona research
120 institute ISGlobal, said: “Too often we focus on technological solutions. Land use and behavioural changes such as the Barcelona Superblocks, Paris’s 15-minute city or London’s low-traffic neighbourhoods also reduce air pollution and bring
125 additional benefits such as increased walking and cycling, which is good for health.”

5. _____

The seas around Europe are home to some of the world’s busiest shipping lanes. New rules have led to
130 better quality marine fuel and the use of scrubbing systems, but shipping remains a major source of particle pollution. In the UK, breathing PM2.5 from shipping is estimated to result in a health cost of

about £1.5bn at 2017 prices. The air pollution from
135 shipping reaches hundreds of kilometres inland but it is especially intense in coastal areas and ports.

Dr Matthew Loxham, of the University of Southampton, said: “Where shoreside power is not used, ships tend to keep auxiliary engines running to
140 satisfy their power. The largest cruise ships require more than 10MW of power at berth* (5,000-10,000 times greater than average household requirements), and therefore it is unsurprising that there is some impact on local air quality.”

145 Loxham added: “In the future we may see a move towards to alternative fuels, such as liquefied natural gas, hydrogen, methanol and ammonia, or ships being powered by battery (electric) or nuclear energy. Each of these comes with environmental, health, life-cycle,
150 and safety considerations of their own.”

6. _____

There are clearly actions that we can take in our everyday lives to reduce particle pollution. Not heating our homes with solid fuels, if we have that
155 option, is an obvious one. Not driving is another but sometimes our city design leaves us with few other choices.

We can reduce our exposure. Studies in London have shown that walking down a back road instead of a
160 main street can reduce your exposure to PM2.5 from traffic exhaust by more than 30%.

However, it is widely recognised in the climate debate that focusing on individual actions can divert responsibility from the sectors that are really
165 responsible for the problem. Similarly, tweaks to everyday life will not improve particle pollution from farming, shipping and industry, for example. These require action by governments and industries.

Source : Source : <https://www.theguardian.com/environment/2023/sep/21/what-can-be-done-to-combat-air-pollution-in-europe>

The 6 subtitles have been removed from the article and jumbled up. Put them back in the right space.

- A Agriculture
- B What can I do?
- C Industry and power generation
- D Shipping
- E Home heating
- F Traffic