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# Towards a cleaner air in Europe: Time for a stronger vision and more action

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# Executive summary

Hundreds of thousands of people die prematurely every year in the EU due to air pollution. Furthermore, hundreds of billions of euros are lost yearly in the EU due to the economic costs of air pollution.

As scientific evidence on the impact of air pollution on human life continues to grow, accepting air pollution as a given side product of our economies and activities can no longer be tolerated. With the EU keen to boost its competitiveness, promote well-being across the continent, and minimise its climate and environmental footprint, the relevance of cleaner air in these efforts cannot be ignored.

It is time to get our priorities right and recognise clean air for what it is: a necessary component for healthy societies and people and, as such, for long-term economic prosperity and social well-being in Europe. It is time to integrate actions for clean air in our efforts to achieve sustainable prosperity.

The EU must not be complacent. Considerations around clean air should be at the core of its decision-making (see Figure 1).

**As highlighted in this paper, the EU needs:**

## 1. A stronger vision and framework for action:

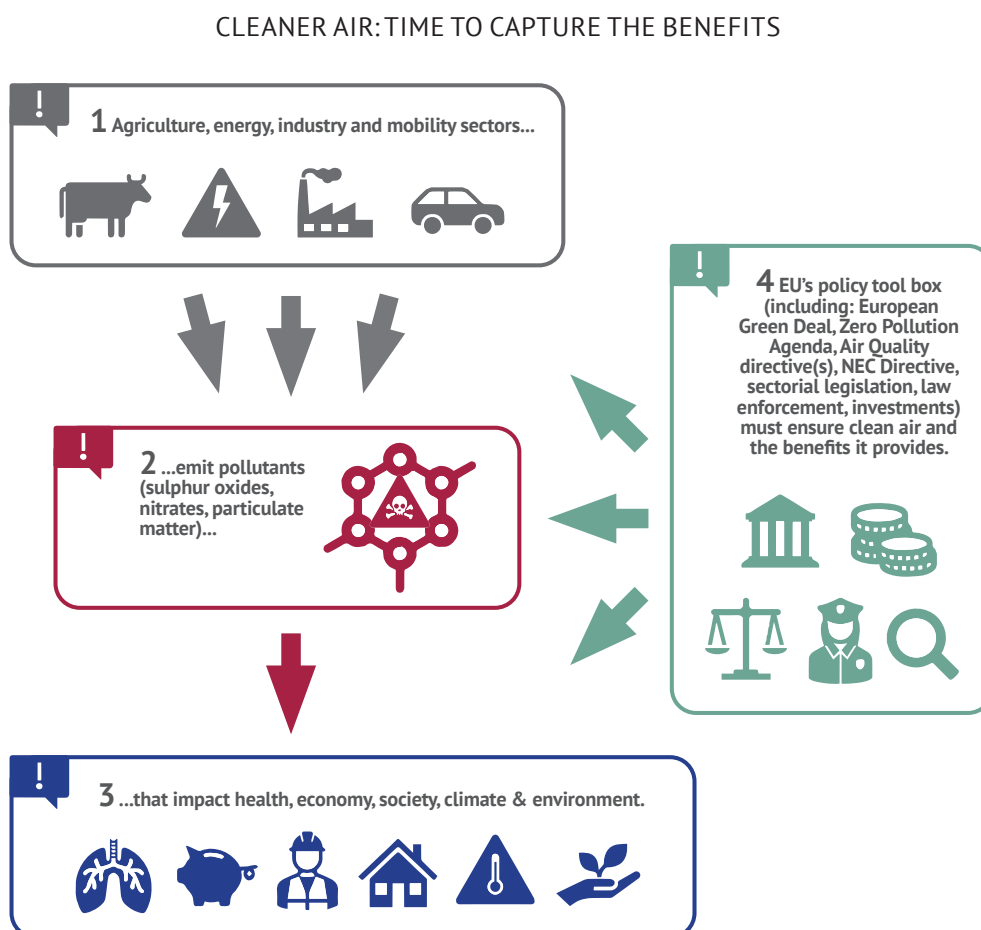
- ▶ Adopt an ambitious and comprehensive clean air agenda;
- ▶ Make cleaner air an integral part of the EU's vision and framework for greater well-being;
- ▶ Better enforcement of the air quality standards and monitoring;
- ▶ Raise awareness about the causes of air pollution, benefits of action and measures to be taken.

## 2. Concrete measures to address air pollution:

- ▶ Ensure all key sectors, including the agri-food, industry, energy and mobility, play their role;
- ▶ Encourage, empower and enable regional, local and citizen action.

The EU must take a comprehensive approach to ensure clean air for Europeans. We need leaders that recognise and communicate the benefits of cleaner air and demonstrate the political will to push for a stronger clean air agenda.

Fig. 1



# 1. Introduction

Clean air is vital if we wish to grow, live, and work. Its importance, however, is continuously disregarded in practice. Our activities, including the production of energy, heat, industrial goods, food, and transport, pollute the air we breathe.

Despite the fact that air quality in the EU is generally better than in other parts of the world, hundreds of thousands of EU citizens die prematurely every year due to air pollution. We are also paying for poor air quality in increased disease-burden, cognitive decline and mental health, healthcare costs, productivity loss and lower GDP. The most affected are the most vulnerable in our societies: children, the poor, and unborn babies.<sup>1</sup>

The benefits of cleaner air and the costs of air pollution for people, societies, and economies are often ignored in policymaking. They are too often forgotten in the implementation of policy and investment decisions.

This paper analyses the state of play and trends with air quality in the EU. It considers the health, economic, social, and environmental impacts of air pollution, as well as the major sources of air pollution (energy, agriculture, mobility, and industry). It reviews the relevant EU policy framework for achieving cleaner air, including the revisions of the air quality standards recently proposed by the European Commission, and provides policy recommendations for action for the EU, member states, and sub-national authorities.

## THE TIME TO ACT IS NOW

There has not been a better time to get our act together. Scientific and public understanding of air pollution is growing. The measures to contain the COVID-19 pandemic led to a reduction in road traffic, for example, and gave Europeans an idea of what cleaner air could mean. Moreover, everyday decisions are made on different levels of our society, in cities, regions and member states, with direct impacts on the air we breathe – and with short and longer-term consequences for our society and economy.

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**We must step up the ambition and action, including in communication, decision-making, and investments, and overcoming existing contradictions.**

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We must step up the ambition and action, including in communication, decision-making, and investments, and overcoming existing contradictions. A good example

is implementation of the ‘polluter pays principle’, enshrined in the European treaties. In reality, polluters in Europe do not pay for the damage they cause. The health and clean-up costs are paid for by society: European citizens and EU taxpayers.<sup>2</sup>

This failure to value healthy environment is also well reflected in the actions today. As the EU faces multiple simultaneous crises and competing priorities that demand immediate attention, European leaders have taken and are taking decisions that risk worsening air pollution across the continent.

First, while the pandemic gave an incentive for many European cities to improve, for example, infrastructure for walking and cycling, thus helping address air pollution more permanently, arguably much more could have been done. The mobility transition and talks about ‘building back better’ have not been realised on the scale needed.

Second, several European reactions to the energy crisis risk worsening the air we breathe. Russia’s war in Ukraine has forced Europeans to rethink their energy system and reduce dependency from Russian oil and gas. However, while energy savings, energy efficiency and the switch to renewables have rightly gained attention, we have also seen a push to burn more domestic resources like coal and biomass to produce electricity and heat, with devastating impacts on the air we breathe. Promoting e-fuels and biofuels as alternatives to fossil fuels in road transport ignores the pollution these solutions create.<sup>3</sup>

Third, the decision-makers have a tendency to ignore the synergies and co-benefits of addressing climate change, biodiversity loss and air pollution together. There is a real risk that, if the planetary crisis is not addressed in a comprehensive manner, this will lead to unwanted consequences and costs.

## THE EU’S RESPONSE

While the EU has made a significant progress in tackling air pollution over the years, Europeans are still breathing air that damages their health and comes with a great cost to the economy. According to the European Environment Agency (EEA), for example, 96% of the EU urban population is exposed to fine matter above the health-based guidelines defined by the World Health Organization (WHO).

The European Green Deal, with its goal of achieving climate neutrality by 2050 and the zero-pollution agenda, is an important foundation for action. The EU’s current revision of its rules on air quality, as set out in the proposed Ambient Air Quality Directive, is a concrete step on the journey to cleaner air.

Achieving and implementing ambitious targets on air quality will require effort, especially by member states, sub-national authorities, and those economic sectors that

contribute to air pollution, including energy, mobility, agriculture, and industry. This will not be easy. Many of the EU member states are struggling to meet even the existing air quality standards. In addition, more ambitious targets will require investments and a review of the legislation that regulates the polluting sectors.

There is no time to waste. The clock is also ticking from the perspective of the EU institutional calendar. The EU institutions – the European Commission, the European Council and the European Parliament – must agree on new air quality standards and how to achieve them before the European elections in 2024. The outcome of the negotiations matters, and it will have a major short and long-term impact on the European economy, society and the environment.

## 2. Impact of air pollution and benefits of cleaner air

### 2.1. HEALTH IMPACTS

**Air pollution results in hundreds of thousands of premature deaths across the EU. This is equivalent to a COVID-19 crisis every few years – without the much-needed mobilisation for action.**

In 2020, up to 655,000 premature deaths in the EU can be attributed to air pollution. The highest proportion of these was related to exposure to particulate matter (PM), which was linked to 412,000 premature deaths, while nitrogen dioxide (NO<sub>2</sub>) accounted for 136,000 deaths and O<sub>3</sub> 107,000 deaths.<sup>4</sup>

**Air pollution kills more than 1,200 children prematurely every year in Europe.** Children and adolescents are particularly vulnerable to the adverse impacts of air pollution. Exposure to air pollution enhances the risk of asthma, reduced lung function, respiratory infections and allergies in children and adolescents. It also has longer term implications as it increases the risk of chronic disease later in life.<sup>5</sup>

These health effects of poor air cause not just personal suffering but also significant costs to the healthcare sector, the society and economy. In 2019, acute exposure to ozone resulted in hospital admissions for lower respiratory infections for 12,253 individuals across 23 European countries.<sup>9</sup>

### 2.2. SOCIO-ECONOMIC IMPACTS

**Europe could gain billions of euros from cleaner air.** If the EU adopts proposed higher targets on air quality, the total gross benefits for society by 2030 are estimated at €42 to 121 billion per year, compared to a total cost of €5.7 billion per year to counter air pollution.<sup>10</sup>

**The most vulnerable in our societies suffer the most.** Especially children, older people, and pregnant women have a high risk of contracting air pollution related diseases.<sup>11</sup>



#### Air pollution

Air pollution is considered the largest environmental health threat, contributing massively to the disease burden in Europe. The presence of particulate matter, carbon monoxide (CO), ozone, nitrogen dioxide, and sulphur dioxide (SO<sub>2</sub>) pose significant risks to public health, resulting in morbidity and ultimately mortality.<sup>6</sup>

Heart disease, stroke, lung diseases, lung cancers and numerous lifelong diseases can be attributed to air pollution. Studies also point to a link between exposure to air pollution and greater risks for diabetes, cognitive impairment, and neurological diseases.<sup>7</sup> Poorer air quality does not only affect physical but also mental well-being, as it is linked to higher levels of depression and anxiety. Recent studies have shown, for example, that long-term exposure to common levels of air pollution increases the risk of depression in populations over 64.<sup>8</sup>



#### Healthcare costs

When air pollution causes or contributes to health problems, this has a direct impact on healthcare. Around 8% of GDP in the EU is currently spent on healthcare and treating preventable diseases, such as those caused by air pollution.<sup>12</sup> While polluters are let off the hook, citizens are paying for the impacts via taxes or directly from their wallets when they seek help for illnesses caused by air pollution.

As public budgets are limited, and the healthcare systems are under enormous pressure to deliver what is expected of them, spending money on treating preventable diseases rather than addressing the causes of ill health makes little sense from the system's perspective. There would certainly be numerous competing uses for taxpayers' money, not only for improving health systems but also education, innovation, and infrastructure developments.





### Impacts on productivity

Cleaner air improves people's health and productivity. Bad air worsens them. The link has been studied closely, and the evidence leaves no doubt about how important the air we breathe is for workers' productivity.<sup>13</sup> Air quality impacts the performance of individuals and the workforce. Sick people are less productive. When they are absent from work, this negatively affects European firms' performance.

Modern economies are built on having a productive workforce. Population decline<sup>14</sup> and the rising age gap<sup>15</sup> in Europe are already creating enormous pressures on our labour market. Therefore, the EU cannot afford to ignore self-caused problems like air pollution, which weakens workers' ability to work.



### Costs for society

While our societies have been slow to recognise healthy societies as an asset or health promotion as an investment with significant economic and welfare gains, the unfortunate reality is that air pollution comes with a great cost. Moreover, these costs are not spread equally, and air pollution contributes greatly to growing social inequalities.

The uneven distribution of the health consequences of air pollution is closely tied to socio-demographic disparities. Regions in the EU with lower GDP per capita tend to have higher levels of PM<sub>2.5</sub> and higher numbers of air pollution related premature deaths.<sup>16</sup>

Moreover, vulnerable groups, such as older people, children, unborn babies, those experiencing economic disadvantage and those with existing medical conditions, are more exposed to air pollution and suffer far more compared to the rest of the population.<sup>17</sup> Research shows that maternal exposure to air pollution may lead to adverse birth outcomes, including pre-term birth, low birth weight, and small gestational age births.<sup>18</sup> In addition to this, evidence demonstrates a link between air pollution and diabetes and neurological development in children.<sup>19</sup>

Current polluting practices have impacts on future generations and their prospects to prosper, and this raises serious questions also around intergenerational justice. Air pollution affects children's development, resulting in diseases, school absenteeism or even death. This is short-sighted as our future societies and economies depend on skilled and productive citizens and workforce.



### Economic costs

Preventable health problems, leading to early retirement, sick leave, and poor educational or work achievement, cost money. When air pollutants cause damage to ecosystems, crop yields, forests, and buildings, thus devaluing our natural-based assets, infrastructure,

and real estate upon which our industry, agriculture, and social well-being depend, this costs money.

Numerous efforts have been made to estimate the economic cost of air pollution. While it is difficult to calculate and the estimates vary, the latest research suggests that the EU member states lose annually €231-853 billion due to air pollution.<sup>20</sup> The WHO again estimates that Europe as a whole loses €1.6 trillion every year due to premature deaths and ill-health across the continent.<sup>21</sup>

There are estimates that an average European resident loses €1,276 per year due to air pollution.<sup>22</sup> A 1 µg/m<sup>3</sup> increase in PM<sub>2.5</sub> concentrations causes a 0.8% reduction in GDP in Europe. Economic costs of air pollution equal 3% of the GDP in Germany and 2% of the GDP in France.<sup>23</sup> These economic costs of air pollution should speak for themselves. However, too often, they are ignored in policy and decision-making.

## 2.3. ENVIRONMENTAL AND CLIMATE IMPACTS

**Air pollution harms the environment on which we depend on for living.** Air pollutants damage plants and crops, degrade water and soil quality, and worsen the health of animals. In 2019, ozone's negative impact just on wheat yields costed Europe €1,4 billion.<sup>24</sup>

**Air pollution and global warming are intertwined.** Ozone, black carbon and methane contribute to air pollution and global warming. Extreme temperatures exacerbate negative impacts of ozone on public health.



### Air pollution and biodiversity

Functioning ecosystems are vital for purifying the air we breathe. At the same time, air pollutants damage our ecosystems and biodiversity, which are crucial for sustaining life, fighting global warming, and safeguarding our economy.<sup>25</sup>

Ground-level ozone (O<sub>3</sub>) – created when air pollutants (NO<sub>x</sub>, NH<sub>3</sub>, CO) mix – can damage crops, forests and other vegetation, impairing their growth and affecting biodiversity. Nitrogen compounds emitted into the air can eventually end up in water, causing eutrophication, an oversupply of nutrients, which can damage life and biodiversity. Sulphur and nitrogen oxides, emitted into the air, can eventually cause acidification of soils and water, which can negatively affect biodiversity.

When air pollution exerts a strong negative impact on the EU's ecosystem, this hampers the EU's nature restoration efforts and climate action, given that healthy forests and ecosystems are vital carbon sinks.



## Air pollution and climate change

Air pollution and climate change are closely intertwined. First, certain air pollutants (e.g. O<sub>3</sub>, black carbon – a constituent of PM) contribute to global warming.<sup>26</sup> Methane is both an air pollutant and a greenhouse gas that also contributes to the ozone formation.

Second, climate change worsens the impacts of air pollution on the environment and people's health. Global warming further aggravates the impacts of air pollution on biodiversity as plants become more vulnerable and less resistant to the intrusion of ozone.

# 3. Sources of air pollution

Air pollution in Europe has different sources, the most important ones being agriculture, industry, energy, and road transport. What air pollutants are emitted and how varies per sector. Also, progress in addressing air pollution and the challenges met are different in each of these sectors. What follows is a more detailed overview of the state of play and trends concerning air pollution from agriculture, industry, energy and transport.



## 3.1. AGRICULTURE

### **Livestock is a major contributor to air pollution.**

Ammonia emissions are mainly caused by livestock farming and the use of synthetic nitrogen ammoniacal fertilisers. Around 80% of ammonia emissions come from only 5% of farms in the EU.<sup>29</sup>

Agriculture is one of the main sources of air pollution in Europe. It has seen the least reductions in air pollutant emissions in the previous decades compared to other sectors.<sup>30</sup> Industrial agriculture is a major contributor to air pollution in European cities such as Paris.<sup>31</sup>

Agriculture is responsible for 94% of total emissions of ammonia, and these emissions are on the rise.<sup>32</sup> Emissions of ammonia can lead to the eutrophication of water and acidification of soils; ammonia also contributes to the creation of PM<sub>2.5</sub>.

Agriculture, driven by livestock farming, accounts for 56% of overall emissions of methane, which is an air pollutant, a greenhouse gas and a precursor to the formation of ground level ozone.<sup>33</sup> Agricultural activities also emit nitrate oxides and non-methane volatile organic compounds (NMVOC). Burning biomass residues and forest fires produce particles with a diameter of 10 micrometres or less (PM<sub>10</sub>).<sup>34</sup>



## 3.2. INDUSTRY AND ENERGY

### **In 2017, 2% of the largest industrial sites in Europe were responsible for half of the total damage from air pollution in Europe.**

That is, 211 industrial facilities were responsible for costs that accounted for 2-3 % of EU GDP. In the EU, these air pollutants are mostly emitted from Germany, Poland, Spain and Italy.<sup>35</sup>

Industrial activities - including large-scale energy production and manufacturing facilities - are major sources of air pollutants, especially SO<sub>2</sub>, NMVOC, CO, PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>x</sub>. Air pollution occurs after pollutants are released in toxic emissions from facilities' industrial processes into the air. Most industrial emissions can be attributed to energy production and heavy industry, followed by fuel production and processing. Thermal power plants, especially when powered by coal, cause significant damage to health and the environment.<sup>36</sup> The damage caused by air pollution from the industry sector was estimated to be €277-433 billion in 2017.<sup>37</sup>

Residential, commercial, and institutional energy consumption heavily impact air quality. Energy use in buildings is responsible for over half of PM emissions in Europe. Air pollution caused by the burning of fossil fuels and wood for home heating and cooking results in health-related costs of €27 billion a year across the EU and UK.<sup>38</sup>

Coal is still widely used to produce electricity in several member states (e.g. Czechia, Bulgaria, Greece, Poland), the countries of the Western Balkans, and Ukraine.<sup>39</sup> This not only negatively affects the air quality domestically but also across borders, with pollution from Europe's coal plants responsible for up to 34,000 deaths each year.<sup>40</sup> While coal-fired power generation has not made the feared comeback during the energy crisis,<sup>41</sup> continued efforts will be needed from member states to ensure its timely phase-out.



The rising trend in residential wood burning as a consequence of high electricity and gas prices also poses a risk to air quality in Europe.<sup>42</sup> Moreover, if Europe is to increase industrial production and shift facilities from, for example, China to the EU, this can increase air pollution if not addressed proactively.

The adverse impacts of air pollution from the European industry have drastically reduced in the past decades. For example, energy-related sulphur dioxide levels decreased by 79% between 2005 and 2020, mainly because of the reduced use of coal as fuel.<sup>43</sup> Thus, gradual shift to renewables coupled with nuclear power is important as it can help reduce air pollution from the energy and manufacturing sectors.



### 3.3. TRANSPORT AND MOBILITY

**The transport sector remains one of the only sectors of the EU economy where emissions are still above 1990 levels.** Transport emissions account for large volumes of CO, Nitrogen Oxide (NO<sub>x</sub>), Nitrogen Dioxide (NO<sub>2</sub>), PM<sub>10</sub>, and PM<sub>2.5</sub> in the air across Europe. In 2020, the largest proportion of greenhouse gas emissions from the transportation sector in the EU came from road transport, accounting for 77% of all emissions.<sup>44</sup>

**The number of deaths in Europe caused by air pollution is more than ten times the number killed in car accidents in Europe each year.<sup>45</sup>**

While great efforts are made to improve road safety in Europe, the efforts to address transport related emissions have been slow.

Transport is a major source of multiple air pollutants. In 2020 transport was responsible for 44% of NO<sub>x</sub> emissions, in Europe, with 37% of the emissions attributed to road transport. In addition to this, 21% of CO emissions were caused by road and non-road transport combined. Road transport was the second largest emitter of lead, while the non-road transport sector was the third highest source of nickel emission, accounting for 18%.<sup>46</sup>

The world saw a drastic reduction in traffic, including road transport, aviation, and international shipping, during the COVID-19 pandemic, demonstrating the impact of mobility on the air we breathe. Lockdown measures across Europe resulted in a significant reduction in emissions of air pollutants. According to research conducted by the European Environment Agency, the cities with the most stringent lockdown measures, such as Barcelona and Milan, observed the highest reduction in pollutants associated with transport, such as NO<sub>x</sub>.<sup>47</sup> Several European cities are now on the right track, taking measures to change how people move, by reducing speed limits and investing in infrastructure for pedestrians and cyclists.

## 4. Policy framework

In the last 20 years, the EU has implemented a comprehensive policy framework, with policies and legislation aiming to reduce air pollution. The emissions of most air pollutants have decreased since 2000. However, the actual reductions depend on a particular pollutant and sector. Moreover, implementation of the legislation is pending, and additional measures are needed to counter air pollution.<sup>48</sup>

In 2021, the Commission adopted a Zero Pollution Action Plan, a spin-off strategy of the European Green Deal. The Action Plan sets an overall ambition for 2050: “air, water, and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems, and that respect the boundaries our planet can cope with, thus creating a toxic-free environment”. It lays out specific 2030 targets for the EU, including at least a 55% reduction in premature deaths due to air pollution and reducing damaging effects of bad air in 25% of the EU ecosystems.

The Action Plan reaffirms the importance of the polluter pays principle, the precautionary principle and that environmental damage should be rectified at the source.

In line with these principles, the Action plan introduces the zero-pollution hierarchy: 1) prevent 2) minimise and control, and 3) eliminate and remediate.<sup>49</sup>

The Zero Pollution Action Plan is an important basis for directing the EU’s future work on reducing air pollution, including new policies and revisions of the existing legislation. Some of these policies will be elaborated henceforth, including the general requirements in the Ambient Air Quality Directive, specific national contributions required under the National Emissions Reduction Commitments (NEC) Directive, and sectorial legislation affecting air quality.

### 4.1. AMBIENT AIR QUALITY DIRECTIVE(S)

#### 4.1.1. Current legislation

The EU’s general policy framework on air quality is set in the Ambient Air Quality Directives 2008/50/EC and 2004/107/EC. The Directives set air quality standards<sup>50</sup> and require member states to adopt plans for improving air quality. The Directives also establish rules on

monitoring and assessing the air quality and information sharing between the EU and member states.

Since adopting Directive 2008/50/EC, the EU's air quality has improved, albeit insufficiently.<sup>51</sup> Directives are not implemented adequately in all member states. The air quality standards defined by the Directives are outdated, as they do not guarantee public health and environmental protection in alignment with the WHO guidelines.

Current Directives also fail to ensure the enforcement of air quality standards. The legal action taken by the Commission vis-à-vis potential breachers of the law has been slow. While European citizens can, in principle, take action via their national courts, the member states can hinder the legal processes.<sup>52</sup>

Under the Founding Treaties, member states have time to fulfil their legal obligations after the ruling of the European Court of Justice (ECJ), before the Commission asks the ECJ to fine them.<sup>53</sup> Thus, while the Commission has already initiated proceeding against member states and the ECJ has ruled against 10 member states for failing to meet the air quality standards, this has not led to much change.<sup>54</sup>

Fining a member state for continued breach of air quality standards after the first ECJ's ruling is easier said than done. For example, the Court ruled in 2017 that Bulgaria failed to meet the legal requirements and gave it more time to take the needed measures. Observing that Bulgaria continued to breach the air quality standards, the Commission reopened the case in 2021 and asked the ECJ to fine the country. However, the Court found the Commission's action inadmissible because it failed to provide "detailed explanations or a factual analysis" on Bulgaria's failure to make significant improvements.<sup>55</sup>

#### 4.1.2. Proposed revisions

In 2022, the European Commission proposed a revision of the current legislation to address some of its shortcomings. A single Directive on ambient air quality and cleaner air for Europe would replace previous Directives. The proposal features several updates on:

1. Air quality standards. Higher air quality standards will be implemented in 2030, contributing to achieving a toxic-free (zero pollution) environment at the latest by 2050. A regular review would update standards in line with the latest scientific findings and technology.
2. Monitoring and assessment. This would entail simplified and improved monitoring with the help of digital technologies, such as modelling applications. Pollutants of emerging concern (e.g. ultrafine particles, black carbon, ammonia) would also be monitored.
3. Governance and enforcement. National air quality plans would become more effective in ending and preventing exceedances of EU standards. The proposed Directive would introduce new provisions on access to justice, compensation, and penalties. More trans-boundary cooperation on air quality is also envisaged.

4. Information and communication. More up-to-date air quality information, notably to the wider public, is envisaged. The proposal includes requirements for air quality indices to provide hourly reporting of available air quality data. The proposal also contains provisions for informing the public about possible health impacts and providing recommendations.

The proposed Directive is expected to overcome many limitations of the existing Air Quality Directives, provided that member states and the European Parliament accept the current proposal. Its implementation has been evaluated to reduce annual morbidity rates caused by air pollution by 75% and bring an annual total gross benefit of an estimated €42 billion in 2030. This is not bad considering implementing new air quality rules will cost the EU an estimated €6 billion per year. The proposal is expected to reduce eutrophication by 22%, acidification by 63% and reduce crop loss and damage to forests. It would also deliver more benefits for vulnerable groups by introducing stricter limit values, requiring member states to ensure access to the public information about the health impacts of air pollution and facilitating access to justice.

It must be pointed out that the proposed Directive fails to align the EU's air quality standards with the WHO recommendations. Nonetheless, the review mechanism and long-term objectives offer the possibility of meeting WHO requirements in the future.

But the path to cleaner air will not be easy. Many member states are failing to meet the existing air quality standards, and just setting more ambitious targets will not automatically lead to better implementation. As elaborated in section 4.6. on transport and mobility, the proposal does not adequately build on the prospects of using low emissions and zero emission zones in cities. It also fails to recognise the citizens can play in ensuring cleaner air.

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**Even with additional law enforcement provisions under the proposed Ambient Air Quality Directive, there is a risk that member states can use legal loopholes to avoid being held accountable for breaching air quality standards.**

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Even with additional law enforcement provisions, there is a risk that member states can use legal loopholes to avoid being held accountable for the breach of air quality standards and other legal requirements under the proposed Ambient Air Quality Directive.<sup>56</sup> The proposed Directive allows approximately until 2028-2029, for member states to adopt the air quality plans to prevent the breach of air quality standards from 2030 onward.

Such delay in formulating plans risks hindering the development of effective cleaner air policies. If these plans fail to attain required air quality standards, member states only need to update the plans; and this cycle can be repeated.<sup>57</sup> Lastly, infringement cases on air pollution in the ECJ, between the Commission and member states, may also still entail a lengthy and tedious process with no certainty that polluters will rectify their wrongdoings.

## 4.2. NATIONAL EMISSION REDUCTION COMMITMENTS DIRECTIVE

The NEC Directive was introduced in 2016 to implement the UN's Convention on long-range transboundary air pollution. The Directive sets national emission reduction commitments for member states for nitrogen oxides, non-methane volatile organic compounds, sulphur dioxide, ammonia and fine particulate matter.<sup>58</sup> These reductions vary from one state to another and are divided into a period from 2020-2030 and then from 2030 onwards with higher emission reduction requirements.

The European Environment Agency assessed that in 2020 – the first year of mandatory reduction commitments – only 13 member states met their national emission reduction commitments for each of the five main pollutants.<sup>59</sup> There is also a risk that member states will not achieve stricter national emissions reductions that will apply from 2030 onwards.<sup>60</sup>

The Commission has issued a letter of formal notice to 14 member states requesting further information on the implementation of the NEC Directive. However there have been no cases in front of the ECJ thus far. While an important signal, as pointed out in the previous section, court cases brought to the ECJ do not yet necessarily ensure effective law enforcement.<sup>61</sup>

## 4.3. AGRI-FOOD POLICIES

The EU's Common Agricultural Policy (CAP) and member states' national policies envisage the greening of European agriculture by setting conditions under which farmers and rural communities can access EU funding. However, while agriculture's contribution to air quality is significant, the CAP does not place adequate focus to reducing air pollution.

The new CAP 2023-2027 is more decentralised. While the Commission sets the overall rules and objectives, member states can elaborate on the funds' use via their national strategic plans. Although the new CAP does not place a strong focus on air quality, it could do more to reduce air pollution than the previous CAP as it aims to cut greenhouse gasses and preserve nature, which could indirectly reduce air pollution.

The EU's Farm to Fork (F2F) strategy mentions reduced air pollution as one of its objectives and carries the potential to influence the CAP. It envisages reducing nutrient losses by at least 50%, decreasing fertiliser usage by at least 20% by 2030 and cutting pertinent air pollution.

Full implementation and enforcement of the existing legislation would help reduce nutrient losses. An integrated nutrient management action plan, developed by the EU with member states, would address nutrient pollution at source and increase the livestock sector's sustainability. Member states' agricultural strategic plans should facilitate better nutrient management. This would be achieved via investments and advisory services. Satellite data could be used for information sharing between farmers, governments, and developers of digital solutions for better farming.

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**While agriculture's contribution to air quality is significant, the CAP does not place adequate focus to reducing air pollution.**

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The Commission's methane strategy envisages a plethora of soft law measures and investments to tackle methane emissions from agriculture. These include setting up expert groups to analyse these emissions and look at new technologies to reduce them; developing an inventory of best practices; developing tools for carbon-balance calculations at the farm level; promoting the uptake of methane mitigation techniques in CAP strategic plans and targeting research, under Horizon Europe, on how to reduce methane emissions, including via dietary shift.<sup>62</sup>

However, due to the war in Ukraine and the ensuing global food crisis, the EU and member states have prioritised agricultural productivity over sustainability. There is a true risk that in this environment, yet again, agriculture's impacts on air pollution continue to be ignored.

Finally, the greater ambitions under the new CAP, F2F strategy and methane strategy mean little as long as the EU undermines these efforts by heavily subsidising livestock farming and the production of feed for animals, major sources of both greenhouse gas emissions and air pollutants.<sup>63</sup> Moreover, the decentralised nature of the new CAP, where member states have a greater say in how CAP funds are to be used, opens the possibility of downplaying the importance of air pollution reduction measures at the national level, especially if law enforcement measures under the Ambient Air Quality Directive(s) and Industrial Emissions Directive continue to be weak.

## 4.4. INDUSTRIAL EMISSIONS

The Industrial Emissions Directive (IED), adopted in 2016,<sup>64</sup> regulates emissions into the air - from 52,000 large industrial installations, including intense agricultural facilities (pig and poultry rearing) and energy production facilities (e.g. power plants). Installations must obtain a permit from a competent member state

authority to operate and apply the best available techniques (BAT) in accordance with the rules established at the EU level.<sup>65</sup>

It is estimated that between 2010-2017 the costs of damage caused by air pollution were halved thanks to the IED.<sup>66</sup> Nonetheless, the current IED falls short of the Zero Pollution Action Plan and the European Green Deal goals.<sup>67</sup> Thus, in 2022, the Commission proposed a revision of the IED.

Recognising the notable share of air pollution from agriculture, the revised IED rightly includes new emission standards for pigs and poultry installations and adds cattle farming in its scope. As competent authorities in member states tend to apply minimum requirements for BAT when issuing permits, the revised IED would require the authorities to apply stricter requirements. In an attempt to incentivise the uptake of emerging technologies, the Commission would establish an innovation centre for industrial transformation and emissions. It would also improve public access to information, participation, and people's access to justice.<sup>68</sup> It would specify the minimum content of penalties so that they are effective, proportionate, and dissuasive.

The IED revisions offer a great opportunity to cut air pollution from industrial energy and agricultural installations even further. However, there is an ongoing discussion about the proposal and whether its current level of ambition will survive the negotiations between the EU institutions.<sup>69</sup> Since there are no stringent requirements for the uptake of emerging technologies, it is doubtful that the new IED would make significant progress in incentivising the deployment of novel technologies to cut air pollution.

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## **The Industrial Emissions Directive (IED) revisions offer a great opportunity to cut air pollution from industrial energy and agricultural installations.**

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### **4.5. CLIMATE AND ENERGY**

Under the Fit for 55 Package and the REPowerEU Plan, various measures are being taken to reduce the share of fossil fuels in the EU's energy mix by accelerating the renewable roll-out and enhancing energy efficiency and savings. These include revising the EU Emissions Trading Scheme, Renewable Energy Directive, the Energy Efficiency Directive, Energy Performance for Buildings Directive, and the product eco-design rules on energy efficiency and faster permitting for renewable energy projects.

As discussed in section 3.2., the use of coal in energy production continues to drop, and despite the energy crisis, it has not made the feared comeback. Nonetheless, coal remains an important source of air pollution across Europe, and some of the policies adopted by member states in response to the energy crisis, such as Poland's decision in September 2022 to lift a ban on the use of lignite for heating homes, are cause for concern.

Equally concerning is how the EU's current policy framework continues to allow and even encourage biomass burning as a viable 'renewable' alternative to fossil fuels.<sup>70</sup> Not only does burning wood emit more CO<sub>2</sub> per unit than burning fossil fuels,<sup>71</sup> it also leads to deforestation (in turn undermining the ability of European forests to act as 'carbon sinks')<sup>72</sup> and levels of air pollution similar to coal power - and the accompanying adverse consequences for human health.<sup>73</sup> The EU's lacklustre approach has become especially problematic in light of Russia's invasion of Ukraine and the ensuing energy crisis, leading to a run on wood-burning stoves by European households seeking to save on their electricity and gas bills.<sup>74</sup> While the EU's eco-design rules for energy efficiency of products do apply for stoves, they do not sufficiently take health impacts of air pollution into consideration.<sup>75</sup>

### **4.6. TRANSPORT AND MOBILITY**

Road transport is a major source of air pollution. Under the Green Deal, the Sustainable and Smart Mobility Strategy of 2020 focuses on replacing existing fleets with zero-emission vehicles, increasing the use of renewable and low-carbon fuels, and shifting freight transport from the road to rail and inland waterways. The strategy rightfully acknowledges that alternative mobility modes such as public transport, walking and cycling should be made available and easy to combine. However, while the Commission has yet to present proposals for the greening of freight transport and corporate fleets, the key legislative initiatives for road transport risk watering down the set ambition.

European policymakers' failure to take a comprehensive approach and implement measures that support both climate action and cleaner air is not new. The EU's focus on reducing CO<sub>2</sub> emissions over NOx emissions led to 'Dieselgate'.<sup>76</sup> Europeans' love affair with diesel vehicles has proven to be bad for the environment, health, society, and the economy, but some have still not learned from the previous mistakes as well reflected with the in developments on CO<sub>2</sub> emission performance and Euro 7 car standards.

The initial agreement on reducing the CO<sub>2</sub> emissions produced by new passenger cars and light commercial vehicles by 100% (compared to 2021) has been undermined by Germany and several other member states calling for an exemption for combustion engine cars that run on synthetic fuels or e-fuels. This does not only hinder reaching zero-emission road mobility by 2035, but it also risks prolonging unnecessary pollution of Europe's



air. Burning e-fuels in combustion engines produces as high NOx emissions as standard E10 EU petrol, and it can triple carbon monoxide emissions and double ammonia emissions.<sup>77</sup> Based on the assumption of 46 million new conventional and hybrid cars being sold by 2050, this would mean releasing 160 thousand tonnes of unnecessary NOx emissions in the air.<sup>78</sup> This clearly contradicts the objectives of the revised Ambient Air Quality Directive.

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**Several member states are calling for an exemption for combustion engine cars that run on synthetic fuels or e-fuels. This does not only hinder reaching zero-emission road mobility by 2035, but it also risks prolonging unnecessary pollution of Europe's air.**

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The proposed new CO<sub>2</sub> standards are also easy on heavy-duty vehicles, although they are responsible for 28% of road transport related greenhouse gas emissions in Europe.<sup>79</sup> Also, small trucks, which are used for delivery, garbage collection or construction would not be regulated under the proposal.

The Commission's proposal for new Euro 7 standards targets combustion engine cars sold before 2035 and their air pollutants emissions such as NOx and toxic particles. The proposal could have been more ambitious. Also, while it rightfully considers that air pollutant emissions happen not only at the tailpipe but also by tyres and brakes, it does not set limits for particulate emissions from tyres (though it is proposed that these will come via secondary legislation). European car manufacturers' general reluctance to address air pollution, as well evidenced by Dieselgate, and thus opposition to the proposal is not surprising. However, it is extremely worrying that member states such as Italy, France and the Czech Republic, whose citizens are heavily impacted by air pollution from road transport, aim to block the regulation.<sup>80</sup> This would mean a weaker EU framework to support cities and regions in reducing air pollution from road transport, as required under the new Ambient Air Quality Directive.<sup>81</sup>

The current EU policy framework also lacks incentives for low and zero-emission zones (LEZ and ZEZ), even though the new EU Urban Mobility Framework recognises their effectiveness.<sup>82</sup> LEZ and ZEZ have proven successful in incentivising the switch to zero-emission vehicles, the adoption of alternative modes of transport and improving air quality. For example, the Ultra Low Emission Zone in London has brought a 44% reduction in NO<sub>2</sub> concentrations.<sup>83</sup> In Brussels Capital Region, NOx and particulate matter (PM<sub>2.5</sub>) were reduced by around 11% in one year by introducing low emission zones.<sup>84</sup>

#### **4. 7. HEALTH IN ALL POLICIES AND A WELL-BEING ECONOMY**

The recognition of the links between health and the environment, including the need to tackle environmental determinants of health, has grown in recent years. At the global level, the UN Sustainable Development Goal calls for a substantial reduction in deaths and illnesses from air pollution. The EU's effort to align the agendas is reflected in its 'One Health Approach', which seeks to design and implement programmes, policies, legislation, and research in a cross-sectoral manner with the aim of achieving better public health outcomes.<sup>85</sup> To this end, in 2022, the European Commission established a One Health Directorate within Commission's DG SANTE, which signals at least a recognition of the interdependence between health and the environment.

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**While the health implications of air pollution are widely documented, they should be better communicated to citizens. Here, health professionals can play a vital role in bridging the information gap.**

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More recently, there have been attempts to change or expand the narrative towards 'Health for all Policies'. According to a recent publication by the European Observatory on Health Systems and Policies, it is not enough to recognise that the wider determinants of health are critical and controlled by policy areas other than health. Instead, they argue for the need to highlight the mutual benefits of health and other sectors working together.

Air pollution is cited as a public health threat with evident implications for healthcare systems. As recognised also in the proposed EU Ambient Air Quality Directive, the health implications of poor air provide a strong rationale for the need to act and improve current standards.

It should not be forgotten that also healthcare systems themselves have a role to play in improving the air we breathe. Healthcare systems, primarily due to fossil fuel combustion, account for approximately 4.4–4.6% of global greenhouse gas emissions and comparable proportions of hazardous air pollutants. A Health For All Policies approach could have benefits for air quality as not only should non-health policies consider health implications for health and therefore impacts on air quality, but health policies too should consider their external impact on the environment, working to improve air quality.<sup>86</sup>



A recognition of the need for a multi-sectoral approach is, however, only a start. In reality, national, and EU policymakers still continue to adopt a siloed approach to policymaking. To derive positive outcomes for people and the environment requires embedding well-being objectives into economic and social policies and their implementation.<sup>87</sup>

Moreover, while the health implications of air pollution are widely documented, they should be better communicated to citizens. Here, health professionals (HCPs) can play a vital role in bridging the information gap. However, to achieve this, HCPs must be equipped with the required knowledge and skills. Research has indicated that HCPs are willing to educate and communicate the health implications with patients but cite a knowledge gap as a deterring factor.

The FAIR project run by Irish Doctors for the Environment, Children's Health Ireland and the Environmental Protection Agency serves as an interesting example of a communication campaign on air quality. The pilot project at Temple Street in Dublin seeks to encourage patients, parents, and staff to improve local air quality and reduce exposure to air pollution by displaying air quality information on screens at the hospital, accompanied by a short, animated video emphasising the importance of clean air for good health. It is hoped that the project will be scaled up to a national initiative across all health settings.<sup>88</sup>

#### 4. 8. BOTTOM-UP ACTION FROM CITIES

Cities can play a central role in taking measures for cleaner air – and much remains to be done. Air quality in European urban areas remains poor. 96% of the urban population in the EU was exposed to levels of fine particulate matter above the WHO guidelines in 2020.<sup>89</sup> Only 11 EU cities out of 340 analysed present good air quality according to WHO standards.<sup>90</sup> Faro in Portugal shows the best air quality while the most polluted cities are in Italy and eastern European countries.<sup>91</sup>

Several European cities have pledged to become climate neutral by 2030 and are currently taking measures that also address air pollution.<sup>92</sup> These can provide inspiration and worthwhile good practices also for others to consider.

**Brussels** has shown only moderate air quality in the last two years.<sup>93</sup> The strategy to tackle air pollution consists of improved air monitoring, building renovations and sustainable mobility. Brussels plans to install new measuring stations in the most polluted places and establish a secondary network of smaller, cheaper measuring points that can be used to identify air pollution hotspots. In addition, the city aims to triple building renovations to reduce energy use by 75% in 2050 through better insulation, while the remaining energy should come from renewable sources. The city has established a speed limit of 30km/h across the entire city, with exceptions for certain major roads and residential areas and a low emission zone all over the territory.

**Gothenburg** has shown fair air quality in the last two years.<sup>94</sup> Improvements have been made by focusing on transport as a pollution source and integrated urban planning. This has included redirecting heavy traffic to ring roads and introducing a congestion tax, environmental zones and initiatives such as electrified transport of goods. Gothenburg also considers turning some of the roads into public transport lanes, electrifying the bus fleet, improving cycle lanes and building cycle highways all over the city. The city is integrating access to public transport and cycle lanes for every new area built. It uses a green space factor for new developments and a digital twin of the city to create traffic scenarios. The city also focuses on reducing the impacts on the more vulnerable, by developing, for example, green infrastructures outside preschools.

**Krakow** was named amongst the most polluted cities in the world in January 2021.<sup>95</sup> The main pollution sources are transport and fuel heating, including coal but also household waste. Incinerating rubbish and the burning of coal and wood is illegal in the city, and it is taking measures to monitor and tackle this. The city uses drones to supervise chimneys and citizens are encouraged to report suspicious smoke by sharing geotagged pictures of buildings.<sup>96</sup> Krakow is also launching a low-emission zone that will enter into force in 2024.<sup>97</sup>

**Sofia** recorded the highest rate of premature deaths due to fine particulate matter in the EU, in 2019.<sup>98</sup> Recently, the city started to step up efforts to tackle the main pollution sources, coal and firewood heating (accounting for 60% of the city's pollution) and transport (accounting for 15% of the city's pollution).<sup>99</sup> These include programmes for citizens to change their stoves to less polluting models, heat pumps, more energy-efficient trams and electric buses, the expansion of the underground network, on-demand public transport, and an app rewarding cyclists and pedestrians for their trips. Additionally, a Low-Emission Zone was introduced in January 2023.<sup>100</sup>

**Warsaw** is one of the most polluted capitals in Europe, in light of the World Health Organization guidelines and EU pollution limits. While Warsaw has the largest air quality monitoring networks on the continent, collected data could be utilised in a better way and its quality can be improved. In 2022 a *Breathe Warsaw initiative* was launched by the city, Bloomberg Philanthropies and Clean Air Fund. This initiative will help develop an air quality database, and it will provide technical assistance to design an ambitious low-emission zone in the capital by 2024; advance cleaner heating systems and support the phase-out of coal heating; connect local leaders and organisations to share best practices across the region; and mobilise local partners around clean air campaigns.<sup>101</sup>

Even though cities can be drivers for action, the impacts can be limited due to the transboundary nature of air pollution. For example, air pollution from surrounding towns and villages where illegal heating practices are not banned contributes to the persisting smog problem in Krakow. Likewise, Brussels suffers from PM<sub>2.5</sub> pollution,

which arrives not only from outside of Brussels but also from outside Belgium.

Many cities in recent years have also carried out citizen science projects to monitor air pollution, which involves citizens in decision-making.<sup>102</sup> In Gothenburg, for example, citizens build sensors that provide real-time data on air quality. In Brussels, the project 'Curieuzenair' distributed NO<sub>2</sub> tubes to measure air pollution in places

outside regular measuring stations.<sup>103</sup> Citizen science projects can help to make citizens aware of air pollution and, at the same time, enable them to act or to get involved in decision-making. Additionally, to further raise citizens' awareness about clean air, cities can build on the positive impact of air quality measures, especially on health. For example, in Krakow, improved air quality correlates with a decrease in children's asthma.<sup>104</sup>

## 5. Conclusion and policy recommendations

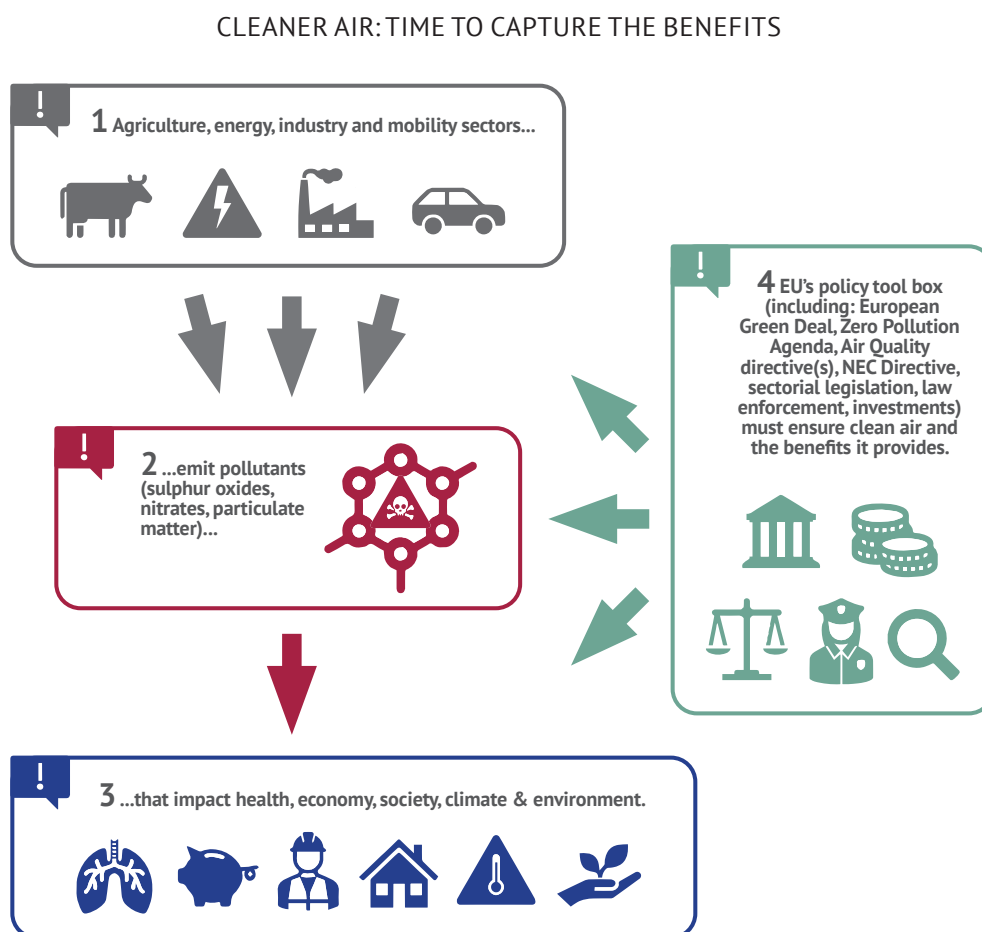
Air pollution affects every one of us – globally and in Europe – with dire consequences. The state of the air we breathe is a health emergency. It is a source of enormous unnecessary costs for our economies and societies. It leads to serious questions about social and inter-generational justice.

While clean air is an indispensable necessity, its importance is continuously disregarded in practice. Human activities – how we produce energy and heat, industrial goods, and food, and how we move – continue

to pollute the air we breathe. The benefits of cleaner air and the costs of air pollution are often ignored and forgotten in policymaking, as well as in the implementation of policy and investment decisions.

It is time to get our priorities right. It is time to recognise clean air as a key ingredient for long-term economic prosperity and social well-being in Europe. It is time to integrate actions for clean air in our efforts to achieve sustainable prosperity.

Fig. 1



## 5.1. GENERAL RECOMMENDATIONS



### THE EU NEEDS AN AMBITIOUS AND COMPREHENSIVE CLEAN AIR AGENDA

- ▶ **Considerations around clean air should be at the heart of decision-making in the EU today.** Taking a strategic, comprehensive approach to managing the multiple crises we face today, including pollution, is the only way to avoid short-sighted decisions that risk damaging air quality and downplaying the importance of clean air. Actions should respond to people's needs and wishes, as laid out in the conclusions of the citizen-led Conference of the Future of Europe, where Europeans called for safeguarding air quality in the EU.
- ▶ **The EU clean air agenda must build on the recognition that there is no safe level of air pollution.** The aim must be to minimise and put an end to the harmful effect of air pollution on health, the economy, society and the environment.
- ▶ **The EU's review of the Ambient Air Quality Directive must lead to ambitious air quality targets.** The EU should align its air quality standards with the WHO standards by 2035. It cannot afford to wait until 2050 to accomplish this goal.
- ▶ **The EU must focus on air pollution prevention rather than remediation.** The member states must develop their air quality plans by mid 2020s to avoid breaching stringent air quality standards that will take effect in 2030.

**The EU's review of the Ambient Air Quality Directive must lead to ambitious air quality targets. The EU should align its air quality standards with the WHO standards by 2035.**

- ▶ **The EU must ensure that the clean air objectives are adequately recognised and implemented as part of industrial, mobility, energy, climate, agriculture and health policies, both in short- and long-term.** This requires recognising and managing the impact of sectoral policies and measures on air quality. It requires aligning, for example, mitigation and adaptation (e.g. green infrastructure) as well as clean energy transition (e.g. energy efficiency and renewables' uptake) efforts with the clean air agenda. The EU financing and investments must help reduce air pollution in all relevant sectors, and it should develop an enabling framework to help channel private investments towards clean air projects.

- ▶ **The EU must focus more on addressing the climate emergency, ecological degradation and pollution** to achieve synergies in action and co-benefits for people, the economy and the environment.
- ▶ **The EU must extend its requirements on air quality standards, emissions into air quality monitoring to include pollutants not covered thus far,** namely: black carbon, ultrafine particles and ammonia.
- ▶ **The EU must ensure an ambitious and coherent policy framework to support cities in their efforts for cleaner air.** The EU framework should allow and encourage ambitious clean air policies on the national and regional level. The EU, with member states, regional and municipal authorities, must ensure a just transition by providing financial support and relevant information to vulnerable groups and minimise their exposure to air pollution.
- ▶ **The EU should take measures – including diplomacy, information exchange, and financial support – to help improve air quality in non-EU countries** in accordance with the Convention on Long-Range Transboundary Air Pollution and the 'Gothenburg Protocol'. The EU and member states should intensify collaboration with other European countries, including the Western Balkan countries, to counter transboundary air pollution.

**The member states must develop their air quality plans by mid 2020s to avoid breaching more stringent air quality standards that will take effect in 2030.**



### THE EU'S CLEAN AIR AGENDA SHOULD BECOME INTEGRAL PART OF THE EU'S VISION AND FRAMEWORK FOR GREATER WELL-BEING

- ▶ **The EU must adopt a well-being framework to promote a more holistic "planetary health" vision** that benefits both citizens and the environment and leads to cleaner air. This requires embedding well-being objectives into economic and social policies to achieve positive outcomes for people and the environment. This also requires leadership, and thus an Executive Vice President for the Well-being Economy should be appointed in the next Commission and made responsible for the coordination and strategic political leadership.
- ▶ **As air pollution impacts disproportionately the most vulnerable, it is essential that the taken measures help reduce these inequalities.** For example, while

Low-Emission Zones in areas where vulnerable groups reside would reduce their exposure to air pollution, to mitigate the economic impact, this would need to be accompanied by investment in public transport, infrastructure to encourage cycling and walking or subsidies for electric vehicles.

- ▶ **At the national level, Ministries for Environment, Health, Transport, Agriculture and Energy must work together to improve air quality.** The national air quality plans must include targets for each sector to improve air quality.
- ▶ **Member states must also be encouraged to share good practices for achieving cleaner air.** This could be facilitated by the European Commission, in particular DG REFORM, which should support member states in exchanging best practices in transdisciplinary decision-making and achieving multiple benefits for society and economy.
- ▶ **Health systems should accelerate their clean energy transition,** from fossil fuels-based energy to energy efficiency and renewables to reduce hospitals' adverse impacts on air and climate.



#### IMPROVE ENFORCEMENT OF THE AIR QUALITY STANDARDS

- ▶ **The EU should assess how law enforcement gaps can be overcome and ensure that the 'polluter pays' principle is applied.** The EU and member states should discuss the provisions in the Founding Treaties that delay the fining of member states and consider how to speed-up infringements procedures.
- ▶ **Member states should be fined immediately after the ECJ decides that they have breached the air quality standards,** as set by the Ambient Air Quality Directive(s) and the NEC Directive.
- ▶ **The Ambient Air Quality Plans should ensure air quality standards are respected.** In case member state's plan fails to deliver agreed results, a fine should be imposed by the ECJ.
- ▶ **The Commission should consult citizens, municipalities and regions** when opening judicial proceedings against member states for breaking the air quality standards.

**Member states should be fined immediately after the European Court of Justice decides that they have breached the air quality standards.**



#### ENHANCE AIR QUALITY MONITORING

- ▶ **The EU and member states must ensure efficient air monitoring across the Union.** They must improve and extend monitoring in the areas currently not properly covered, such as ports and areas with vulnerable groups (e.g. lower income populations). The EU and its member states should ensure that the official monitoring stations operate with clear rules and have sufficient funding.
- ▶ **The EU should invest more in satellite imagery and support the European Environment Agency and national environment protection agencies** in using digital solutions, including artificial intelligence, to gather more data on air pollution in member states.
- ▶ **The EU should develop guidelines and provide financial support to citizen initiatives** for monitoring air quality in their communities.
- ▶ **The EU should request that industrial facilities are equipped with sensory equipment** that can send real-time updates to the European Environment Agency and national environment protection agencies concerning the level of emissions of pollutants into the air.

**The EU and its member states must ensure efficient air monitoring across the Union. They must improve and extend monitoring in the areas currently not properly covered.**



#### RAISE AWARENESS ABOUT THE CAUSES OF AIR POLLUTION, BENEFITS OF ACTION AND MEASURES TO BE TAKEN

- ▶ **The EU, member states and cities should work together to improve communication around the benefits of clean air.** The communication needs to be made more attractive by translating abstract health risks to individual risks and explaining the benefits of action for individuals, especially the vulnerable, children, society and the economy.
- ▶ **The EU, member states and cities must raise awareness about the causes of air pollution, its impacts and needed measures** by encouraging the training of healthcare professionals and school teachers. The citizens must be informed about the need for action and be empowered to contribute to measures taken across sectors.
- ▶ **Training of healthcare professionals on the impacts of air pollution on health should be incorporated into their education and degree programmes.** While most doctors will inform their patients about



the impact of smoking on health, many still do not make the same link with polluted air. An EU-level programme should be established to train healthcare professionals on air pollution, its impacts and preventive measures. The plan could build on the lessons of the inter-speciality cancer training programme, included in Europe's Beating Cancer Plan, which promotes cross-border training and information sharing.

- ▶ **The EU needs its leaders and relevant stakeholders across society and the economy to recognise and communicate that we cannot afford to continue paying for the unnecessary costs of air pollution.** It is time for the member states and citizens to capture the economic and social benefits of clean air, and the co-benefits that come from aligning the clean air agenda with climate goals, improvement of our energy, mobility, and food systems, and greening our production and consumption patterns.

**The EU needs its leaders and relevant stakeholders across society and the economy to recognise and communicate that we cannot afford to continue paying for the unnecessary costs of air pollution.**

## 5.2. SPECIFIC RECOMMENDATIONS



### THE IMPACT OF OUR AGRI-FOOD SYSTEM ON THE AIR CAN NO LONGER BE IGNORED

- ▶ **For CAP 2023-2027**, the Commission should insist that when member states implement their national CAP strategies, greater focus must be placed to reducing air pollution and promoting cleaner air.
- ▶ **In the post-2027 CAP**, the EU must promote cleaner air, together with other climate and environment goals, as an objective and condition for farming subsidies.
- ▶ **The EU must re-assess its support for livestock consumption and production**, under CAP, due to associated emissions that damage air and our climate. Building on its Farm to Fork Strategy, the EU should remove barriers and create an enabling environment for a shift to a more sustainable, plant-based food production and consumption that will be beneficial for the environment and climate, as well as for farmers, people's health, society, and the economy. This includes ensuring that the Industrial Emissions Directive, which is undergoing revision, includes stronger provisions for using the best available techniques for large agricultural installations, notably those for cattle rearing.

- ▶ **The EU must put more effort into reducing ammonia emissions from agriculture.** The Commission should adopt an ammonia and methane strategy. The EU should establish a multi-stakeholder platform to discuss how ammonia emissions can be reduced.
- ▶ **The EU should put forward more stringent rules to minimise the use of synthetic fertilisers and associated emissions of ammonia** via the uptake of organic farming, in accordance with the Farm to Fork goals and the soil strategy for 2030. The EU must ensure that the upcoming Directive on soil health and its implementation help maximise synergies and co-benefits of soil protection and cleaner air.



### THE EUROPEAN ENERGY AND INDUSTRY SECTORS MUST ALSO PLAY THEIR ROLE

- ▶ **The EU and member states must actively seek to reduce the share of biomass and coal in the European energy mix for climate and air quality reasons.** National authorities should discourage installation and use of wood-burning stoves in residential buildings, for example, via information campaigns that educate citizens about the negative health impacts. The EU must revise its eco-design policies to ensure that product standards on stoves duly take into consideration indoor air pollution. Member states must phase out coal in their respective energy mixes as soon as possible. As air pollution from coal-fired power affects the entire continent no matter the source, the EU must also work together with heavy-polluting countries in the Western Balkans and with Ukraine to reduce the share of coal burning in electricity generation as well as the air pollution deriving therefrom.
- ▶ **The Industrial Emission Directive revisions should be adopted** as proposed by the European Commission, which would reduce the emissions of air pollutants from manufacturing, agricultural and energy installations. In addition, the EU should consider strengthening provisions on innovation and ensure that the industry periodically reviews best available techniques applied to its facilities and introduces novel technologies to reduce air pollution.



### THE EU SHOULD FULLY ALIGN ITS MOBILITY AND CLEAN AIR AGENDAS

- ▶ **The EU must reduce transport related GHG emissions as well as air pollutants – at the same time.** This is especially urgent for road transport, which is a major source of air pollution.
- ▶ **The European Commission should propose an ambitious greening freight package and greening corporate fleets initiative with targets for fleet electrification as soon as possible.** As part of the country-specific recommendations under the European Semester, it should also continue to suggest



to member states to change their national company car schemes and accelerate a transition towards more sustainable mobility systems.

- ▶ **As the Ambient Air Quality Directive does not provide an EU framework or guidance on low and zero-emission zones, cities should continue to share their experiences and collaborate when developing such zones.** EU funding programmes such as Interreg can support cross-border projects to help cities in sharing good practices.
- ▶ **The EU institutions must adopt ambitious Euro 7 standards for road vehicles, including trucks.** They should introduce a timeline for the European Commission to propose limits for particulate emissions from tyres while ensuring road safety.
- ▶ **Recognising the negative impacts of synthetic fuels or e-fuels and biodiesel on air pollution, it is in the interest of the EU and its member states to avoid their use in road transport,** where alternative, cleaner and more affordable options already exist, namely in the form of electric vehicles.
- ▶ **The EU and member states should support cities and regions struggling to achieve more ambitious clean air targets.** National legislation should complement local efforts, especially in cases of transboundary air pollution and when the sources come from, for example, major industrial and agricultural facilities.
- ▶ **Local policymakers should encourage citizen participation such as citizen assemblies when designing measures for cleaner air.** They should collaborate with scientists to develop citizen science projects that can help inform people about the scale and impacts of air pollution and mobilise them to support needed countermeasures. The aim should be to empower them to contribute to monitoring and policymaking, by enabling citizens to measure air pollution in their neighbourhood.
- ▶ **Municipalities must protect the most vulnerable people from air pollution, including limiting traffic on school streets to protect children.** Local governments should create low-traffic neighbourhoods combined with greener public spaces that allow for safer walking or cycling while reducing air pollution. They should start in the districts where the most vulnerable are highly impacted by air pollution.



#### **STRENGTHEN LOCAL EFFORTS TO CUT AIR POLLUTION**

- ▶ **The EU should create a one-stop shop to support the exchange of cities' good practices on clean air.** This could build on existing efforts of the 'Green Deal Going Local' platform of the European Committee of Regions and the resources section of the European Climate Pact.

**The EU must ensure that the clean air objectives are adequately recognised and implemented as a part of industrial, mobility, energy, climate, agriculture and health policies.**

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