Lancet Countdown:
EU Policy Briefing

31st October, 2017

Introduction

The European Union has been active in preventing and responding to the impacts of climate change and has produced the world's most comprehensive body of environmental policy and legislation. The EU was one of the first regions to set out binding targets to cut its greenhouse gas (GHG) emissions and the more recent EU's Low Carbon Roadmap towards 2050 aims to achieve an 80-95% reduction in GHG emissions below 1990 levels by 2050, with intermediate objectives to reduce EU's GHG emissions by 40% by 2030 and by 60% by 2040. The roadmap covers a wide range of sectors including power generation, industry, transport, buildings, construction and agriculture. [1]

At the same time, the EU increasingly recognises the health benefits of policies simultaneously tackling climate change and environmental threats, such as air pollution. The European Environment Agency (EEA) recently highlighted the fact that 'air quality and climate change can be cost-effectively tackled together by using an integrated approach when defining policies and measures', [2] while the 2050 low-carbon Roadmap impact assessment incorporated the health benefits of a low-carbon economy through significant reductions in air pollutants. [3]

Since the Paris agreement, the EU has put forward a series of legislative proposals to further reduce greenhouse gas emissions and limit global temperature increases, as it was acknowledged that existing commitments were insufficient to meet the objective of keeping the planet's temperature rise below 2 degrees Celsius. [4]

This briefing has been developed jointly with the European Public Health Alliance (EPHA), and focuses on three indicators from the 2017 Lancet Countdown report, which are particularly relevant to the EU:

• Exposure to air pollution in European cities
• Coal phase-out in the EU
• Exposure to heatwaves in the EU

Acknowledgements

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About the Lancet Countdown

The Lancet Countdown: Tracking Progress on Health and Climate Change is a global, interdisciplinary research collaboration between 24 academic institutions and inter-governmental organisations. It monitors progress on the relationships between health and climate, and their implications for national governments, reporting annually. It was launched following the 2015 Lancet Commission on Health and Climate Change, which concluded that, left unmitigated, climate change will undermine 50 years of public health gains, whilst responding to it could represent "the greatest global health opportunity of the 21st century".

The 2017 report presents data on the indicators selected following a consultation process in 2016. These span 5 domains, from impacts and adaptation to mitigation, and the economics and politics of climate action.

About The European Public Health Alliance

The European Public Health Alliance (EPHA) is member-led organisation made up of public health NGOs, patient groups, health professionals and disease groups, we work to improve health and strengthen the voice of public health in Europe. The mission of the EPHA is to bring together the public health community to provide thought leadership and facilitate change; to build public health capacity to deliver equitable solutions to European public health challenges; and to improve health and reduce health inequalities. Ultimately, the EPHA aims to promote access to a sustainable and high quality health system for all.

Strategic Partners

THE LANCET   wellcome

Key Recommendations:

Recommendation 1

Ensure a better implementation and enforcement of EU air pollution standards, including the new limits for particulate matter and nitrogen dioxide included in the revised NEC Directive.

Recommendation 2

Accelerate the decarbonisation of the energy sector by phasing out coal by 2030 through the implementation of national coal phase-out plans in all EU countries, including Germany and Poland.

Recommendation 3

Embed climate adaptation in the EU Cohesion Policy to ensure appropriate levels of funding are available to regions and cities to develop plans to build resilience and adapt to climate change.

Climate change:
Health threat and opportunity

Climate scientists are overwhelmingly of the view that man-made climate change is real and that, without urgent, concerted emissions reductions, we are heading towards significant further warming. Climate change is altering weather patterns and sea level, with higher temperatures, heavier rainfall, more intense storms, sea level rise, more frequent droughts and forest fires. All of these pose a threat to human health and wellbeing.

The health impacts of climate change range from deaths or injuries from extreme weather events to the less direct, but no less severe, impacts from repeated droughts on nutrition, livelihoods and security, or climate-driven migration. Those already affected by poverty or discrimination are often the most exposed and vulnerable to such impacts – a global pattern which also applies within the EU (for example, to vulnerable groups, including disabled people, children in need, and homeless or otherwise marginalised communities).

The other side of this story is that well-designed climate mitigation policies offer significant health and economic benefits. Policies that reduce greenhouse gas emissions, whilst also delivering cleaner air, increased physical activity, reduced road traffic accidents and better mental health, can deliver huge health and wellbeing benefits now and into the future.
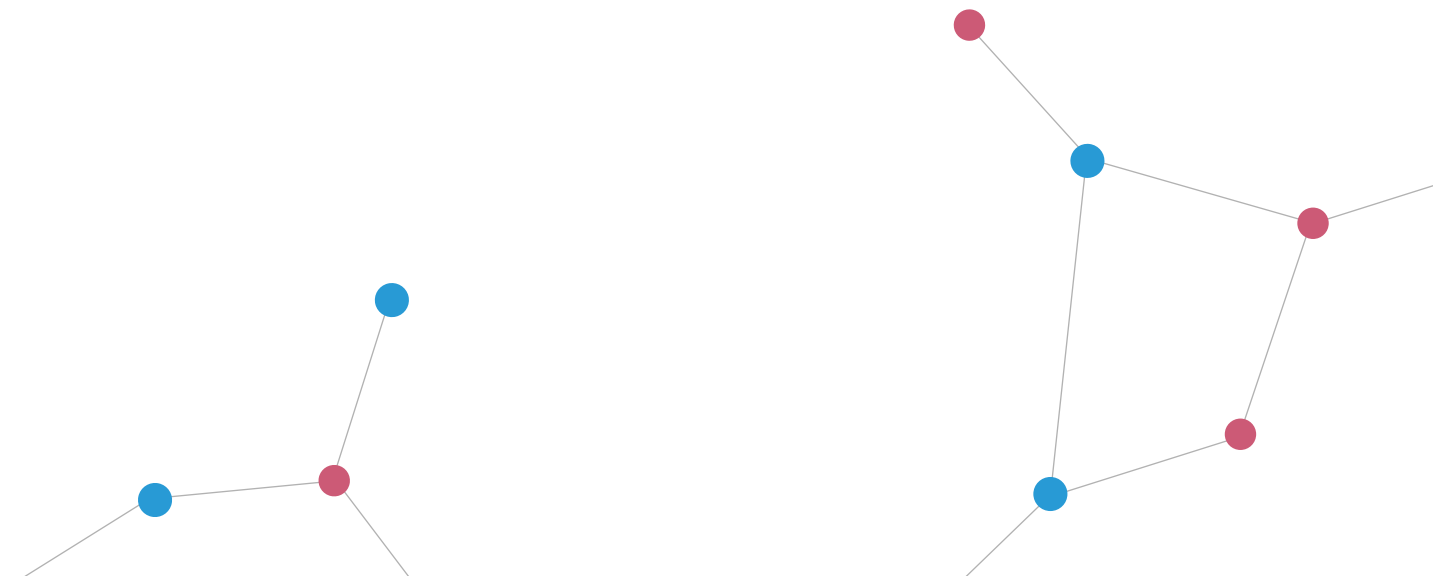
Exposure to Air Pollution
in European Cities

Key finding: According to the WHO's most up to date ambient air pollution database, 216 of the 235 Italian, 228 of the 314 French cities, 152 of the 153 Polish cities and 38 of the 41 Romanian cities in the database exceed WHO's recommended limit value for PM2.5.

Data from the World Health Organization (WHO) shows PM2.5 and PM10 levels in 2,555 European cities, highlighting which cities are complying with the WHO standards and which are exceeding WHO recommended limit values. Across the EU, 1,224 cities have average annual PM2.5 concentrations above the WHO guideline (10 µg/m3) and 918 cities have average annual PM10 concentrations above the WHO guideline (20 µg/m3 annual mean). In addition, average annual values in 887 cities in the EU exceeded both PM2.5 and PM10 air pollution limits set by WHO.

This is consistent with other findings showing that the vast majority of EU citizens are exposed to levels of air pollution directly harmful to their health. In February 2017, the European Commission revealed that European air quality laws are being breached in more than 130 cities across 23 of the 28 EU Member States.[5] Furthermore, the latest European Commission data showed that 9 out of 10 people are exposed to levels of air pollution above WHO guidelines.[6] This is primarily due to widespread non-compliance with EU legislation and poor monitoring.

EU institutions have acknowledged that more needs to be done to reduce air pollution concentrations across the EU, and the European Commission Clean Air Programme adopted in 2013 aimed to accelerate action at the national level by putting in place a new regulatory framework.[7]

The revised National Emission Ceiling (NEC) Directive recently set binding national reduction targets for six air pollutants (SO2, NOx, NMVOCs, NH3, PM2.5 and CH4) to be met by 2020 and 2030. It is the first time that EU standards for PM2.5 are included and the European Commission expects the new Directive to reduce PM2.5 levels by 22% by 2020 and by 51% by 2030.[8] However, the EU legally-binding standard is more lenient than that recommended by WHO - 25 µg/m3 instead of 10 µg/m3.

Also, the adopted NEC Directive[9] excludes the gas methane, an important precursor for ozone, from the Directive despite being included in the initial Commission's proposal.[10] Ozone pollution contributed to 13,600 premature deaths in the EU in 2014.[11] Around 53% of EU methane emissions are attributable to agriculture, with ruminant livestock and manure responsible for 80% of agricultural emissions.[12] Potentially, the exclusion of methane was influence by strong pressure from the farming sector,[13] which is also responsible for 94% of EU ammonia emissions.[14] Coincidentally, the reduction commitments for ammonia are substantially lower than for the other pollutants (6%/year between 2020-2029, 19% from 2030; against 22/49% for PM2.5, 59/79% for SO2, 42/63% for NOx).[15]
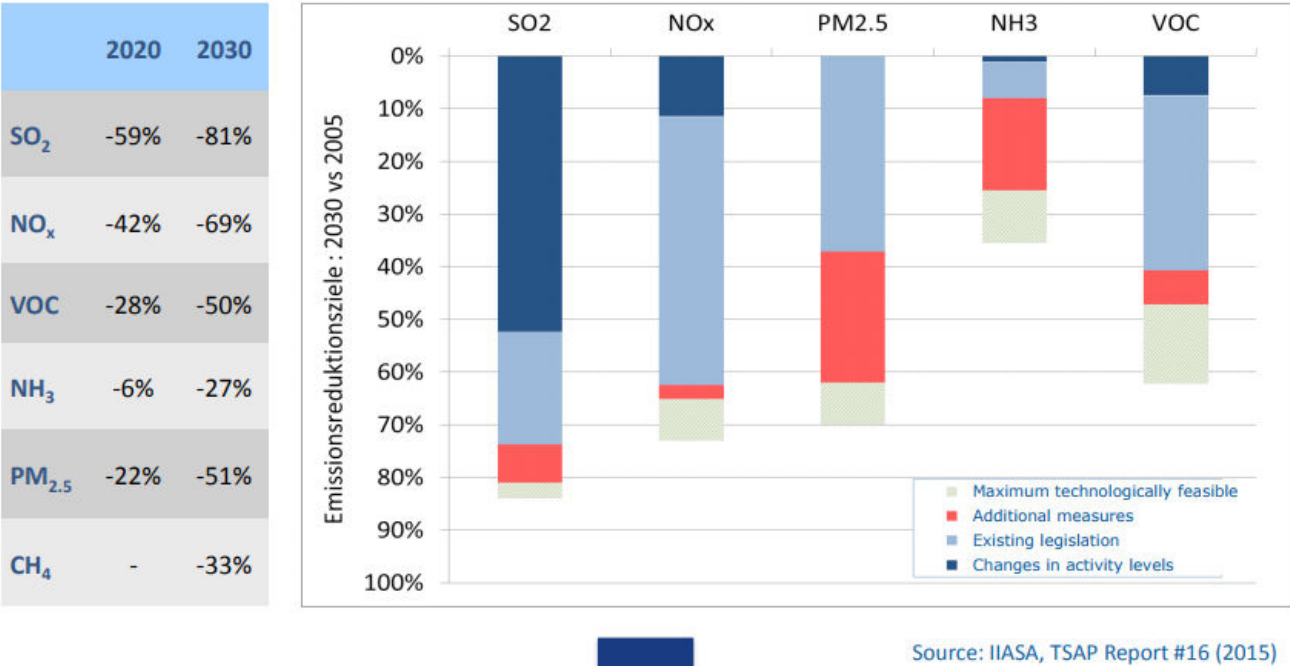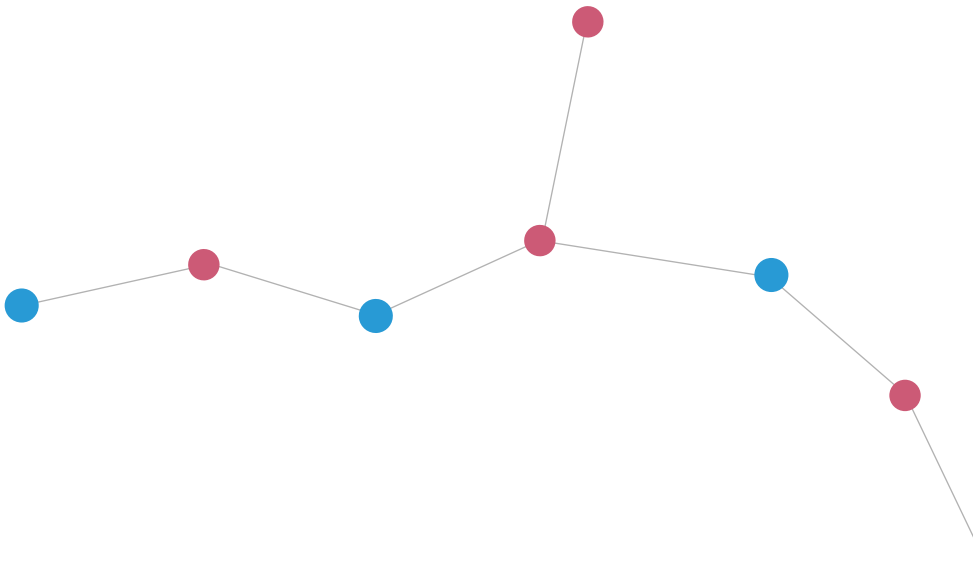
	2020	2030
SO$_2$	-59%	-81%
NO$_x$	-42%	-69%
VOC	-28%	-50%
NH$_3$	-6%	-27%
PM$_{2.5}$	-22%	-51%
CH$_4$	-	-33%

Figure 1. National Emissions Ceiling Direction - a breakdown of emissions reductions.

Importance in terms of health and climate change

The European Commission estimates that health-related costs of air pollution in the EU range from 390 to 940 billion euros per year. The 2013 Clean Air Programme anticipates a 33% reduction in premature deaths by 2020, against the year 2005, and a 52% reduction by 2030, as well as full compliance with existing ambient air quality legislation (including NO2, PM10 and PM2.5) by 2020. It is also expected that the new programme would ensure that most member states reach PM2.5 levels below or close to the WHO guidelines of 10 μg/m3 by 2030.[16]

The European Commission indicated that the new NEC Directive has a benefit factor of 20, as the estimated yearly cost of implementation of 2.2 billion euros is expected to bring 44-140 billion euros per year in indirect economic benefits and 3 billion euros per year of direct economic benefits. The European Commission also reported that the NEC Directive is expected to achieve a 52% reduction in the health impacts of air pollution, as well as 35% less eutrophication and 85% less acidification (thus offering significant ecological benefits too).[17]

Fine particulate matter with a diameter below 2.5μg poses a significant threat to human health as these small particles can enter the lungs and bloodstream. Current PM2.5 levels significantly exceed safe levels as defined by the WHO in many European cities and it is estimated that small particulate matter (PM2.5) is responsible for more than 436,000 premature deaths every year across the EU.[18] In the EU, primary particulate matter mostly comes from traffic and household combustion, whilst secondary particulate matter is predominantly from agricultural, industrial and traffic emissions.

Figure 2. Sectoral contributions to PM2.5 (Source: European Union emission inventory report 1990–2013, European Environment Agency)

Key Recommendations for EU policy-makers:

Recommendation 1

Proper enforcement of EU air quality standards, including the new upper limits for particulate matter and nitrogen dioxide, will unlock health and environmental benefits through improved air quality.

Recommendation 2

Given that several EU countries are still not complying with EU legal limits, and that the vast majority of EU Member States are exceeding WHO limits, it is critical to implement national measures targeting the sectors contributing most to air pollution to achieve the reduction targets embedded in EU law.

Recommendation 3

Better monitoring is needed to track progress and the long-term objectives of new policy initiatives should be to comply with WHO recommended value limits.

Recommendation 4

Make use of the opportunity offered by the reform of the EU Common Agricultural Policy to enhance measures to fight air pollution from agriculture.[19]

Coal phase-out in the EU

Europe is following the global move away from coal in energy production and use. Altogether, coal consumption decreased by over 40% between 1990 and 2014 in the EU and coal power plant emissions fell by 11% in 2016. This was achieved through the implementation of stricter environmental standards limiting emissions, mostly through the Industrial Emissions Directive (IED) and the National Emissions Ceilings Directive (NEC). Strengthening CO_2 emissions reduction targets for coal power plants also contributed to this achievement.

However, the European energy market is not entirely coal free and 280 European coal-fired plants still produce nearly 25% of EU-generated electricity.[20] An International Energy Agency model showed that, to limit warming to 2 degrees Celsius, European coal emissions must fall on average by 8% every year until 2040. However, CO_2 emissions from coal power stations fell on average by just 2.3%, per year, over the last nine years. Evidently, a lot remains to be done to phase-out coal power emissions.

Establishing an Energy Union is one of the ten priorities of the Juncker Commission. Such a Union should have a forward-looking climate change policy, which aims to make the EU a world leader in renewables and Europe's economy low-carbon, energy and resource efficient. To fulfil this vision, the revised NEC Directive has introduced stricter emission limits for coal plants for a wide range of toxic pollutants, such as nitrogen oxide, sulphur dioxide, mercury and particulate matter. The new standards apply to both existing and new coal-fired power plants and will have to be met by 2021. In addition, most EU countries have committed to phase-out coal through the implementation of national plans, outlining the policy mechanisms used and setting deadlines by which all plants should be closed.

Importance in terms of health and climate change

Coal-fired power plants emit large volumes of sulphur dioxide, nitrogen oxides, and fine particulate matter. These air pollutants have serious and far-ranging health effects. Short-term impacts include cardiovascular and respiratory hospital admissions, exacerbated asthma symptoms, and reduced lung function. Long-term impacts include reduced life expectancy, death from stroke or coronary heart disease, lung cancer, bronchitis in children, chronic bronchitis in adults, heart attacks, heart arrhythmia, and chronic obstructive pulmonary disease.[21]

In 2015, the 280 European coal-fired plants were accountable for more than 70% of EU sulphur dioxide emissions and 40% of nitrogen oxide emissions in the industry sector. In 2014, coal-fired power still represented 18% of total EU CO_2 emissions, equivalent to all road transport CO_2 emissions. Pollution from coal plants is a joint concern for all, due to its transboundary nature and the fact that European coal plants are responsible for around 23,000 premature deaths per year.
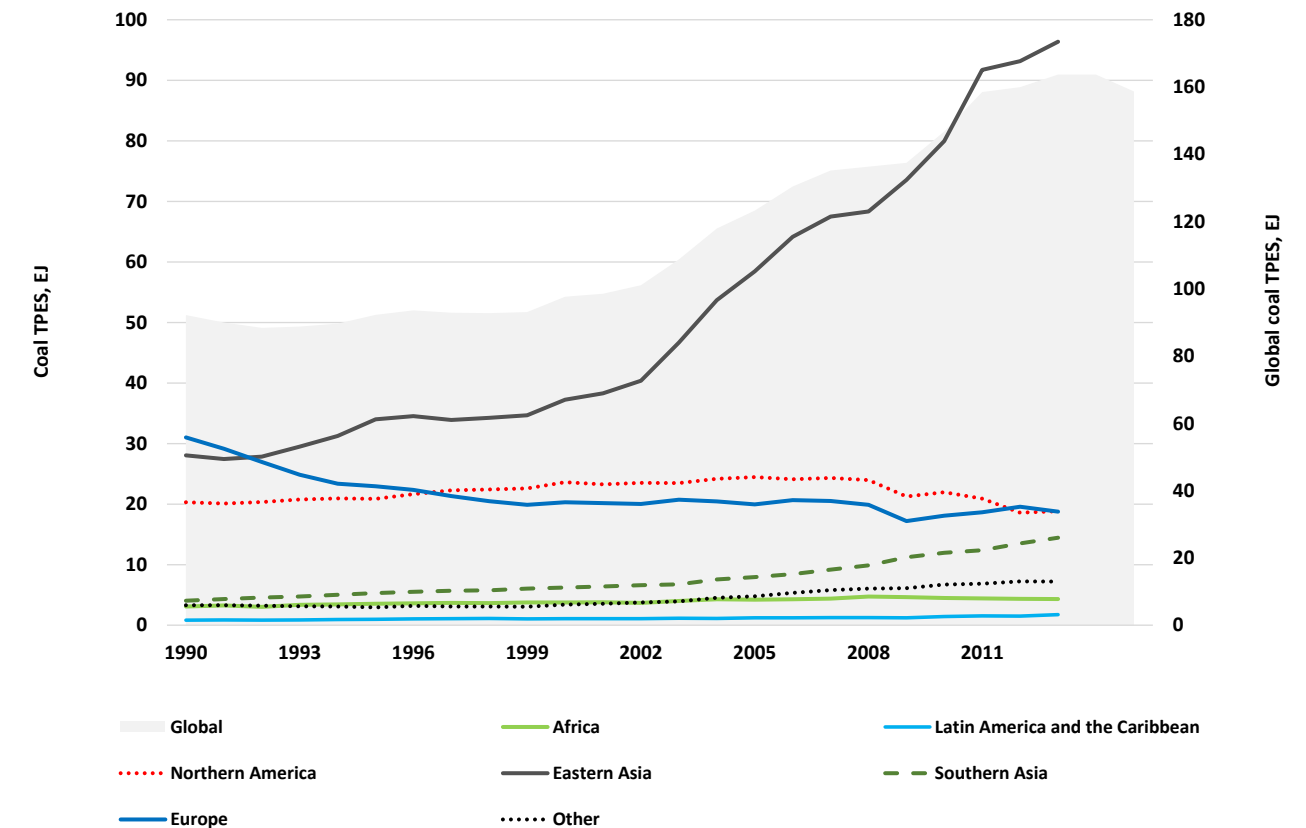

Figure 3. Total Primary Energy Source (TPES) from coal, globally and regionally.

Case study – EU leaders and laggards on coal

EU coal power plant emissions fell by 11% in 2016, almost half was from the UK, with a massive 58% year-on-year fall in coal emissions. Big falls were also recorded in Spain (-27%), Greece (-21%) and Italy (-17%). However, the biggest two coal polluters saw the smallest reductions: Germany's coal power plant emissions fell only 4% and Poland's emission fell by just 1%. Even since 2010, the movements have been small (-5% for Germany and -7% for Poland).

Four facilities appear as top polluters for three different pollutants (CO_2, SO_2 and NO_x):

• Bełchatów (Poland) — Europe's largest thermal power station firing lignite
• Drax (UK) — powered by hard coal and biomass mainly sourced from North America
• Jänschwalde (Germany) — predominantly lignite-fired power station
• Kozienice (Poland) — Poland's second largest coal-burning power station

Figure 4. Emissions of Carbon Dioxide, Nitrogen Oxides and Particulate Matter from coal power plants.

Even in countries with just one or two coal power stations, coal phase-out plans make a significant contribution to climate protection by accelerating retirement of the plants, as shown in the UK. The UK has committed to phase-out unabated coal by 2025, while France announced that it will close its last plant by 2022. Additionally, Finland and Italy both made policy commitments to phase-out coal use before 2030, and Portugal, Ireland, Austria, Sweden and Denmark will end coal use by around 2025.

To the extent that Germany has made good progress by closing two coal power plants on 31st March 2017, it remains the largest user of coal in Europe. Poland's ageing coal power plants still face major challenges in meeting air pollution requirements and the Polish Government still supports coal despite market forces shifting.[22] Neither Germany nor Poland have committed to implementing national plans to phase-out coal, despite the fact that they remain the two biggest polluters in Europe.
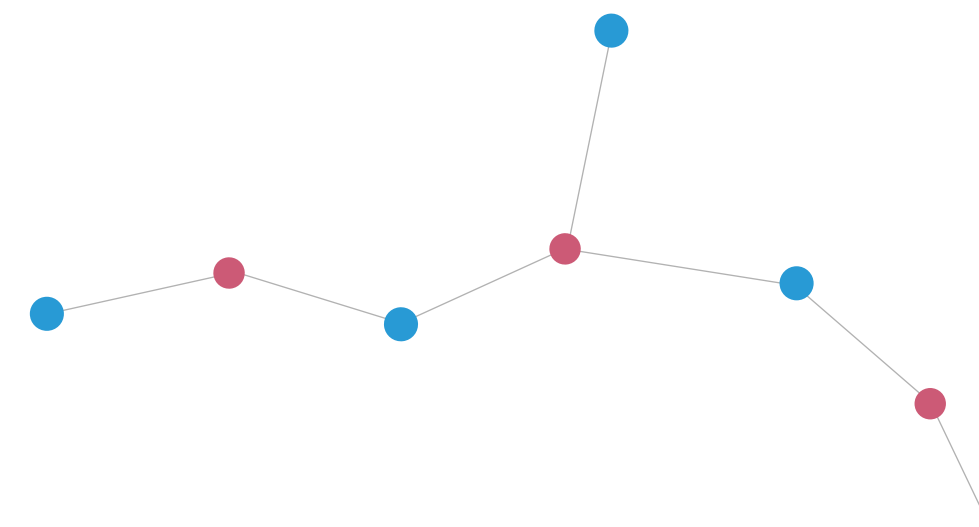
Recommendations for EU policy-makers:

Recommendation 1

Ensure Germany and Poland have national coal phase-out plans in place.

Recommendation 2

Achieve a total coal phase-out by 2030, by enforcing new EU standards in all EU countries.

Exposure to heatwaves in the EU

Key finding: In 2015, an additional 14.4 million vulnerable people (aged over 65) were exposed to heatwaves, with an average of 3,201,303 additional vulnerable people exposed to heatwaves from 2000-2016 compared with the average for 1986-2008.[23]

The effects of climate change are already being seen in cities and regions across Europe and the length, frequency and severity of heat waves are very likely to increase in the future. Therefore, European countries are at risk of experiencing hotter summers and more intense heat waves, such as the recent ''Lucifer'' heatwave. A recent study published by the Joint Research Centre (the European Commission's science and knowledge service) found that super-heatwaves of 55 degrees Celsius may regularly impact many parts of the world, including Europe, if global temperatures rise by 4°C.[24]

Although national authorities remain in charge of defining and implementing adaptation policies, European countries have worked together to encourage collaboration between different levels of Government on adaptation and support cities and regions, especially by facilitating access to financial support for climate adaptation. A number of EU funds (such as, ESIF, H2020, LIFE, EU Solidarity Fund and Natural Capital Financing Facility) exist to support local and regional authorities in climate adaptation. Adaptation to climate change, together with mitigation, has been included in all relevant EU funding programmes for 2014-2020, in line with the objective of spending at least 20% of the EU budget - as much as €180 billion - on climate-related actions.[25] At the same time, accessing EU financing instruments supporting climate action has been described as 'the biggest challenge faced by cities and regions'.[26]

Importance in terms of health and climate change

More frequent high-temperature extremes affect human health severely – most especially vulnerable groups, such as the elderly and infants, as mortality and morbidity increase during extreme cold spells and heatwaves. A clear example of increased mortality during periods of extreme temperatures was the 2003 heat wave, which caused an estimated premature mortality of 70,000 people across the EU.[27] The PESETA project estimates that heat-related mortality in Europe in the 2080s will increase by between 60,000 and 165,000 (without adaptation and physiological acclimatisation, compared to the present baseline).[28]

Climate change-related events also place additional pressure on over-stretched and underfunded healthcare services. For instance, hospital admissions in Italy jumped 15% during the recent Lucifer heat wave, and hospital admissions for respiratory diseases are observed to increase during heatwaves. The Lucifer heat wave also revealed that climate change-related events pose health risks to the entire population, and not only to the sick and elderly. Indeed, several Southern countries, such as Greece, Italy, France, Italy, issued 'red' alert warning messages during the Lucifer heat wave, indicating that even healthy and active people could suffer from possible negative effects.[29]

Recommendations for EU policy-makers:

Recommendation 1

Fully embed climate adaptation in EU Cohesion Policy, and incorporate the health benefits this will bring, so that regions are provided with the adequate resources to become climate-resilient. It is particularly important to raise this as the EU's strategy on adaptation to climate change is currently under evaluation.

Key Policy Recommendations:

Recommendation 1

Ensure a better implementation and enforcement of EU air pollution standards, including the new limits for particulate matter and nitrogen dioxide included in the revised NEC Directive.

Air pollution is the single largest environmental cause of premature death in the EU and is a transboundary environmental problem par excellence. A series of EU directives have progressively imposed more stringent limits on levels of harmful air pollution, but many European countries are still breaching EU limits for several pollutants. In 2015, eleven EU Member States (Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Luxembourg, Spain and Sweden) were not compliant with EU air pollution standards, mostly due to high emissions from agricultural and transport sources.[30]

Recommendation 2

Accelerate the decarbonisation of the energy sector by phasing-out coal by 2030 through the implementation of coal phase-out plans in all EU countries, including Germany and Poland.

Despite the role of coal across all sectors decreasing steadily since 1990, 280 European coal-fired plants still produce nearly 25% of EU-generated electricity[31] and coal remains responsible for the largest releases of carbon dioxide (CO_2), sulphur dioxide (SO_2) and nitrogen oxides (NO_x) to the environment.[32] Three of the four top polluting facilities are located in Germany and Poland – two of the few EU countries without a coal phase-out plan.[33]

Recommendation 3

Embed climate adaptation in the EU Cohesion Policy to ensure appropriate levels of funding are available to regions and cities to develop plans to build resilience and adapt to climate change.

Accessing EU financing instruments supporting climate action has been described as the biggest challenge faced by cities and regions.[34] Whilst the EU's strategy on adaptation to climate change is currently under evaluation, it is critical to emphasise the need to fully embed climate adaptation in the EU Cohesion Policy, to provide regions with adequate resources to become climate-resilient.
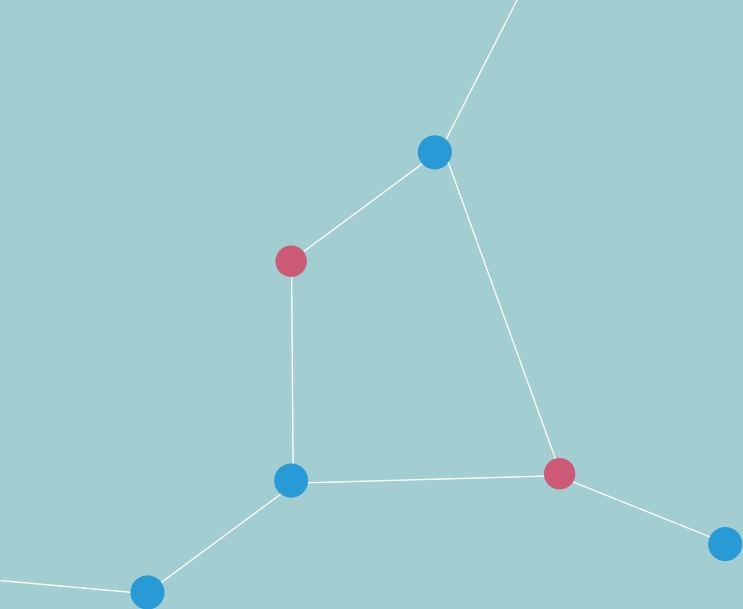
Additional Information

• www.lancetcountdown.org

WHO UNFCCC Climate and Health Country Profiles

The WHO UNFCCC Climate and Health Country Profiles form the foundation of WHO's national level provision of information, and monitoring of progress in climate change and health. The climate and health country profiles, first published in 2015, are developed in collaboration with ministries of health and health determining sectors with the aim of empowering Ministers of Health to engage, advocate and act to protect health from climate change. The most recent and relevant scientific evidence from the health, environment and meteorological communities is presented to highlight country-specific climate hazards and the potential health impacts facing populations. National action on health adaptation and mitigation is reported in the profiles and opportunities to promote actions that improve health while reducing carbon emissions are presented. For more information on the WHO UNFCCC Climate and Health Country Profiles please visit the website and watch the introductory video.

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