



Llywodraeth Cymru
Welsh Government

The Clean Air Plan for Wales

Healthy Air, Healthy Wales



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Foreword

This is our first Plan setting our commitment and long-term ambition to improve air quality and the steps we will take to deliver this.

Fundamentally, the health of the people of Wales depends on the quality of the environment in which we all live.

This is most apparent in relation to the air we breathe, with poor quality air being the single biggest risk to human health. Beyond this, air quality affects our wider environment.

Air pollution is damaging to our ecosystems, leading to degradation of habitats and waterways, which ultimately risks the quality of our food and water supplies.

We are proud to have areas where air quality is amongst the best in the UK. However, we know problems persist. It is essential everyone in Wales is able to enjoy the benefits of clean air and our immediate priority is addressing impacts of pollution on vulnerable members of our communities, who are most affected.

Lifestyle changes during the COVID-19 pandemic allowed communities to rediscover their local environment.

Many people experienced a life without long car journeys, and a better appreciation of which journeys we truly need to take.

People became accustomed to walking and cycling, avoiding long commutes by working from home and enjoying local green spaces for exercise and recreation.

Lessons learned from COVID-19 will inform the delivery of our actions in the Plan. It is essential we tackle, and reduce, pollution from all sectors.

This Plan therefore brings together work across many Government departments and public bodies to tackle air pollutants from many sources, including reducing emissions from industry, agriculture and heating our homes.

Sustainable change to support air quality improvements requires all parts of society to work together. We will work with our partners and the public to co-produce and deliver measures in the Plan.

Our Clean Air Plan will be a living document as we go forward to secure clean air for all of us and for future generations to come.



Lesley Griffiths, MS
Minister for Environment,
Energy and Rural Affairs

Executive Summary

The aim of the Clean Air Plan for Wales is to improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and our economy.

This Plan supports delivery of commitments under Prosperity for All: our national strategy. In particular, ‘reducing emissions and delivering vital improvements in air quality’ to support ‘healthier communities and better environments’.

We are undertaking work to understand the impact of COVID-19 on air quality. As this is an emerging picture, we will take account of any impacts of COVID-19 when reviewing this Plan and implementing actions within it.

Our first Clean Air Plan for Wales brings together work across many Government departments and public sector organisations.

It includes ambitions to meet and where possible exceed requirements set down in UK and international guidance and legislation.

This Clean Air Plan:

- Provides context about what we mean by clean air and the challenges we face.
- Explains how air quality policy aligns with wider Welsh Government policy and the priorities and principles we will apply in delivering the Plan.
- Considers the impacts of COVID-19 on society and our action to improve air quality.
- Sets out how we will work collaboratively across sectors and with the public, to put in place new evidence based policy, legislation, regulations and investment to reduce air pollution in line with highest international air quality standards.

This Plan sets out a 10-year pathway to achieving cleaner air. We have structured the Plan around four core themes, with actions to enable collaborative approaches to reducing air pollution.

- **People:** Protecting the health and well-being of current and future generations
- **Environment:** Taking action to support our natural environment, ecosystems and biodiversity
- **Prosperity:** Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales
- **Place:** Creating sustainable places through better planning, infrastructure and transport.

The themes were designed through the lens of the Well-being of Future Generations Act to enable collaborative and integrated approaches to improving air quality, across a range of policy areas and sectors.

The timescales for delivering actions are framed within three Senedd periods, short term: 2020 to 2021, medium term: 2021-26 and longer term: 2026-2031.

We will ensure actions in the Plan are evidence based.

Our Clean Air Programme Board will regularly review progress against actions in the Plan through monitoring specific projects.

These will build in a range of milestones to enable accountability, delivery and evaluation. We will establish appropriate mechanisms to collaborate with and involve stakeholders in the development and delivery of actions in the Plan.

We will publish annual reports detailing progress against actions and milestones.

The Clean Air Plan for Wales

Healthy Air, Healthy Wales – Thematic approach and key commitments

People

Protecting the health and well-being of current and future generations

Everyone has a role to play in reducing air pollution, health risks and inequalities in Wales. This section of the plan highlights our current and planned actions to improve air quality through:

- New evidence-based, health-focused targets for fine particulate matter (which take account of stringent WHO guidelines values) and improving national air pollution monitoring and modelling capabilities.
- A Clean Air Act for Wales, to create a fit for purpose legislative and regulatory air quality management framework. This will include the LAQM regime and emissions from domestic burning activities.
- Delivering enhanced behavioural change communications to support improved air quality.

Environment

Taking action to support our natural environment, ecosystems and biodiversity

Improvements in air quality benefit the environment. This section highlights actions to improve air quality through:

- Establishing baseline indicators and data sets for air quality and biodiversity.
- Strengthening the control of emissions in the agriculture sector.
- Improving the resilience of biodiversity and ecosystem health, to improve resilience to air pollution and climate change impacts through tree planting and other nature based solutions.

Prosperity

Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales

Reductions in emission from industry will be achieved through:

- Working with key sectors to secure further emission reductions.
- Ensuring there is a clear process for determining Best Available Techniques (BAT) for addressing emissions industry.
- Promoting a shift to ultra-low emissions vehicles for waste collection. We are also working on a proposal for all new cars and light goods vehicles in the Public Sector fleet to be ultra-low emission by 2025 and where practicably possible, all heavy goods to be ultra-low emission by 2030.

Place

Creating sustainable places through better planning, infrastructure and transport

Sustainable infrastructure, planning and travel choices will improve air quality. This section will achieve this through:

- New planning guidance which enables air quality, noise and soundscape improvements.
- Over £84M investment into active travel infrastructure.
- Promoting walking and cycling to school through our Active Journeys Programme in collaboration with over 400 schools.
- Improved rail services which will bring about a 65% increase in capacity, reduce emissions and greatly increase the attractiveness of rail travel.
- Achieving air quality improvements as well as decarbonisation of the fleet through our bold aim for a zero tailpipe exhaust emission taxi and bus fleet by 2028.
- Tackling roadside nitrogen dioxide concentrations in Wales.
- Working with UK Government, Local Authorities, the energy sector and business to plan for and implement the roll out of electric vehicle (EV) charging infrastructure across Wales.

Introduction

The aim of the Clean Air Plan for Wales is to improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and our economy.

This Plan sets out a 10-year pathway to achieving cleaner air. We have structured the Plan around four core themes:



The themes have been designed through the lens of the Well-being of Future Generations Act to enable collaborative and integrated approaches to improving air quality, across a range of policy areas and sectors.

Our air pollution challenge: Reducing exposure to air pollution

Air pollution is the release of particles and harmful gases into the atmosphere. These emissions can be natural or human made. Natural emissions of particles come from the sea, soil and plants. The World Health Organisation (WHO) has described air pollution as the world's largest single environmental health risk¹.

In addition, poor air quality can adversely affect wildlife through widespread changes to species distribution and the quality of habitats. It also contributes to acidification of soil and surface water, eutrophication² in sensitive habitats and damages vegetation through exposure to ozone. Emission controls have enabled air quality improvements at a local, national and international level. However, problems persist.

Air pollution carries severe social costs, through its impact on the health and therefore the productivity of people of working age, resulting in the risks of adverse effects on economic growth. We will reduce emissions of air pollutants and minimise exposure to air pollution.

The actions in this Plan will tackle well-known sources of air pollution. These include transport, industry (including agriculture), and emissions from homes and businesses. We will place a particular focus on protecting vulnerable individuals and sensitive habitats from the harmful effects of air pollution.

COVID-19

COVID-19 has caused a significant disruption to our way of life. The unprecedented changes in living and working patterns during the pandemic resulted in a varying picture for air pollution in Wales at this time and potentially for the future. For example, restrictions on travel changed road transport emissions and altered locations where people are exposed to pollution.

We are working with environmental regulators, UK Government, Local Authorities, Public Health Wales and specialist consultants to assess the impacts of the pandemic on air quality. The outcomes from this research will inform future decisions on air quality management. As this is an emerging picture, we will take account of any impacts of COVID-19 when reviewing this Plan and when implementing the actions contained within it.

Delivering our Plan

We recognise air quality improvements can be costly and resource intensive. Forecasts for public finances are uncertain and outcomes will depend heavily on both the future performance of the economy in the context of Brexit, our recovery from COVID-19 and budgetary choices of changing Government administrations.

Analysis by the independent Office for Budget Responsibility has indicated the fiscal prospects of the UK, and therefore of Wales, are likely to remain challenging with major spending pressures and risks to revenues.

The plan timescales for delivering actions are framed within three Senedd periods, short term: 2020 to 2021, medium term: 2021-26 and longer term: 2026-2031. We will ensure actions in the Plan are evidence based.

Our Clean Air Programme Board will regularly review progress against actions in the Plan through monitoring specific projects.

These will build in a range of milestones to enable accountability, delivery and evaluation. We will establish appropriate mechanisms to work with and involve stakeholders in the development and delivery of actions in the Plan.

We will publish annual reports detailing progress against actions and milestones.

1. World Health Organisation - https://www.who.int/phe/health_topics/outdoorair/databases/en

2. "Excessive richness of nutrients in a lake or other body of water, frequently due to run-off from the land, which causes a dense growth of plant life".

Air pollutants we are focusing on

The framework for tackling air pollution is governed by international, European and domestic policies and legislation.

In Wales, several air pollutants either breach or potentially breach legislative limits:

- NO₂ national and European ambient air limit exceedances are a widespread issue, largely due to emissions from transport
- Exceedances of the European ambient air limit for particulate matter (fine dust), known as PM₁₀ continues to be a risk in Port Talbot
- In Pontardawe, levels of Nickel (Ni) from industrial processing exceed European targets
- Levels of benzo[a]pyrene (B[a]P) exceed European targets. Sources are mainly industry and domestic solid fuel burning
- Levels of ground level (O₃) exceed long-term European objectives

We also work with other Government administrations to manage emissions and transboundary pollution to achieve overall UK emission reduction commitments for five damaging air pollutants:

- fine particulate matter (PM_{2.5})
- ammonia (NH₃)
- nitrogen oxides (NO_x)
- sulphur dioxide (SO₂)
- non-methane volatile organic compounds (NMVOCs).

UK emission reduction commitments must be met in two phases, from 2020 to 2029, with more stringent levels to be met from 2030 onwards.

The more ambitious reduction commitments agreed for 2030 are designed to reduce the health impacts of air pollution by half compared with 2005.

The UK National Air Pollution Control Programme (NAPCP) sets out measures and analysis for how emission reduction commitments can be met across the UK³.

As we leave the European Union, we will maintain or enhance air quality standards.

Further details about air quality legislation can be found at Annex C.

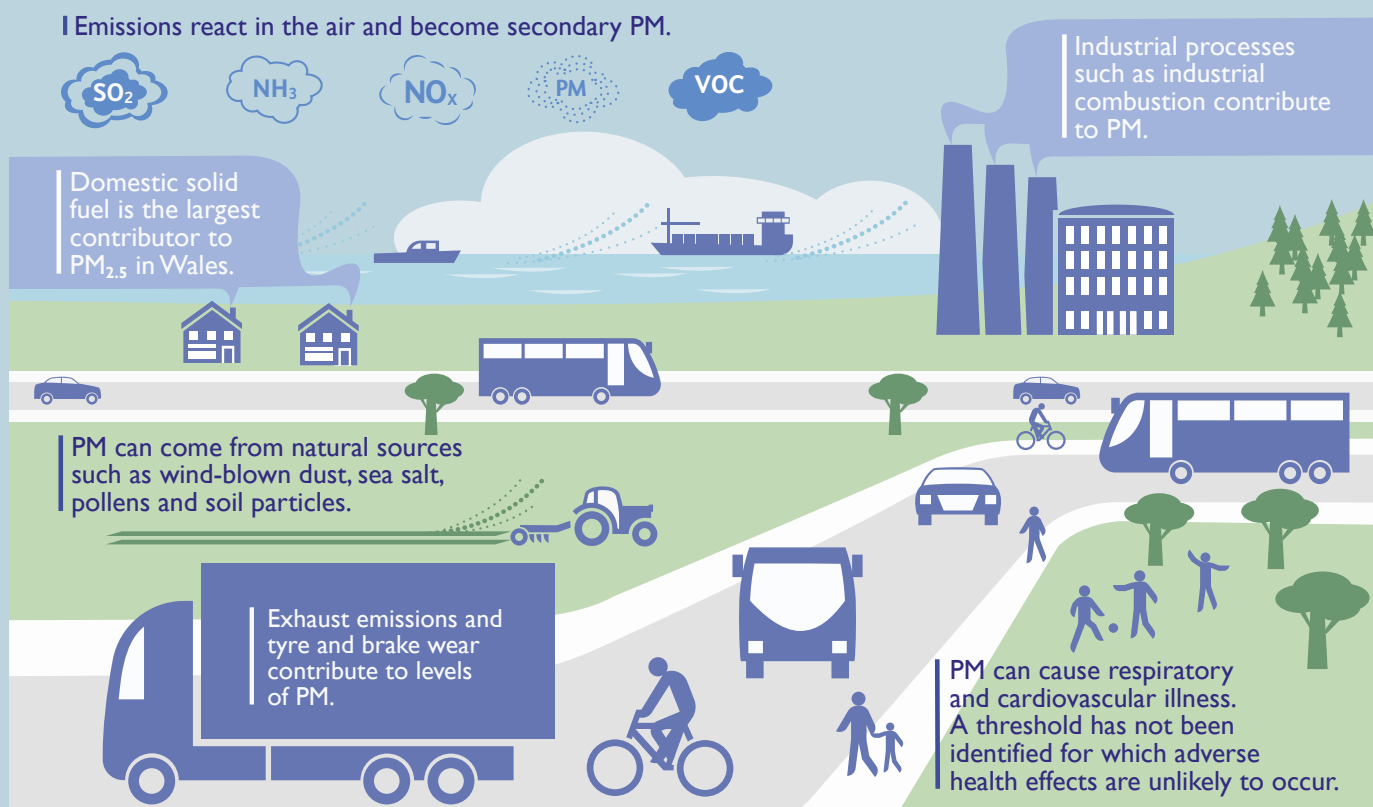
3. UK National Air Pollution Control Programme - <https://www.gov.uk/government/publications/air-quality-uk-national-air-pollution-control-programme>

Air pollutants

The sources and effects of particulate matter (PM_{2.5}, PM₁₀)

Particulate matter (PM) is the term for a mixture of solid particles and liquid droplets found in the air. PM can be emitted directly from a source (primary PM), or form in the atmosphere through chemical reactions between pollutant gases (secondary PM).

PM is classified by size, for example PM₁₀ (inhalable particles $\leq 10\mu\text{m}$ diameter) and PM_{2.5} (inhalable, finer particles $\leq 2.5\mu\text{m}$ diameter). PM is not a single pollutant, it can consist of a variety of chemicals. Both PM and the gases which form it can travel large distances, with impacts occurring far from the original source. Concentrations of PM are a particular concern because of established links with health impacts, although the mechanisms and the relative toxicity of different components of PM are not yet clearly understood.



Sources include:

- Domestic burning
- Road transport (exhaust emissions and tyre and brake wear)
- Power stations
- Industrial processes
- Natural sources include wind-blown dust, sea salt, pollens and soil particles.

Secondary PM is formed from precursor gases such as nitrogen oxides, ammonia (including from agricultural emissions) and sulphur dioxide.

Effects on health:

- Fine particles can travel deep into the lungs
- Links with a range of effects, including respiratory and cardiovascular illness and mortality
- No threshold has been identified below which no adverse health effects occur.

Effects on the environment:

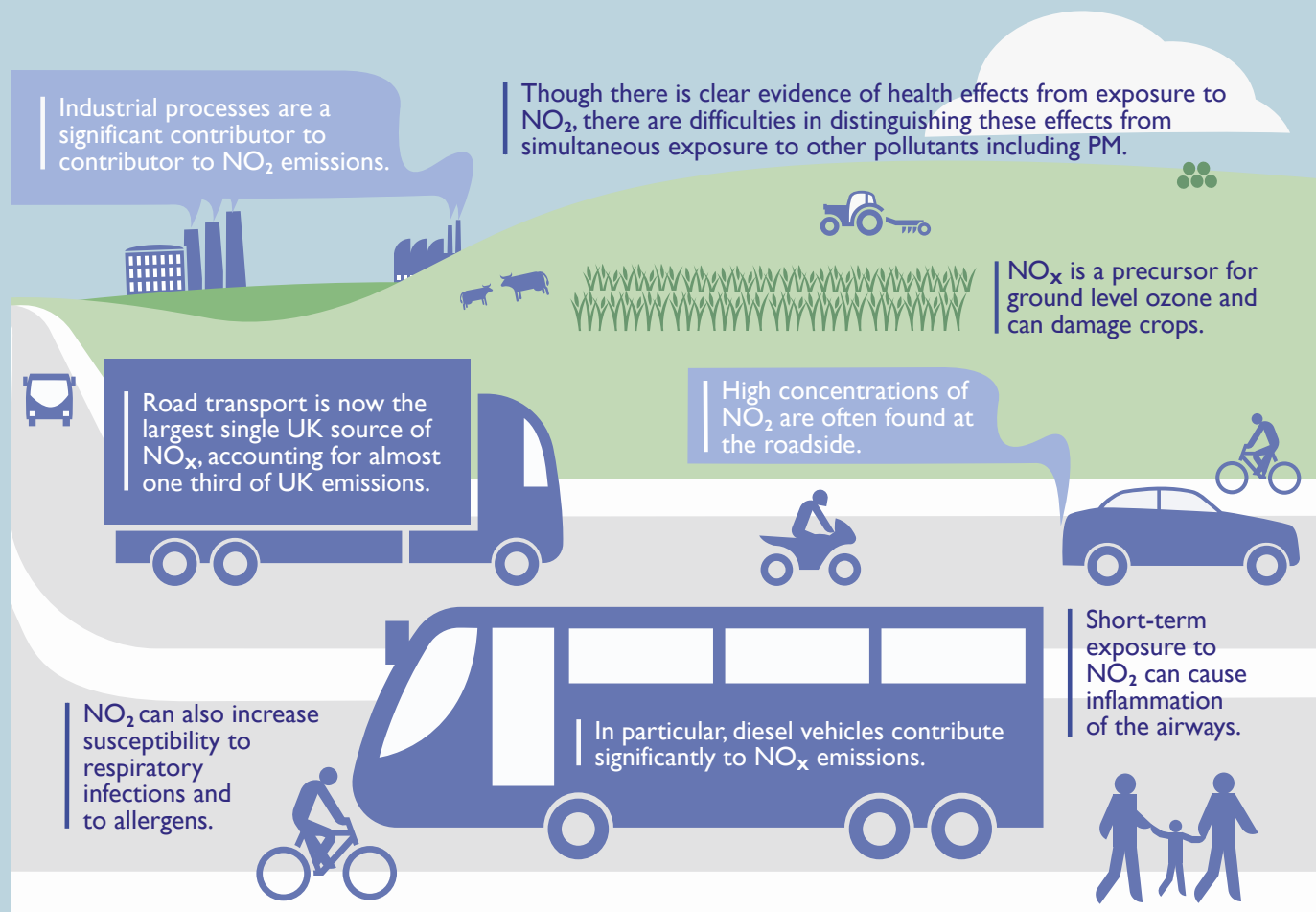
- Emissions of black carbon (soot) from incomplete combustion are associated with effects on climate change.

4. μm is the symbol for micrometre which is one millionth of a metre (10⁻⁶m)

The sources and effects of nitrogen oxides (NO_x)

Nitrogen Oxides (NO_x) comprises nitric oxide (NO) and nitrogen dioxide (NO₂). It is a precursor pollutant for ground level O₃.

Emissions of NO_x are a mixture of NO and NO₂; but chemistry in the atmosphere increases the proportion as NO₂.



Sources include:

- Combustion e.g. sources include power generation, industrial combustion and road transport
- Transport is now the largest source of NO_x in Wales, predominantly due to emissions from road transport, accounting for approximately one third of emissions.

Effects on health:

- Short-term exposure to NO₂ can cause inflammation of the airways
- NO₂ can also increase susceptibility to respiratory infections and to allergens
- Difficult to identify the direct health effects of NO₂ because it is emitted from the same sources as other pollutants such as particulate matter (PM). Long-term exposure to NO₂ is associated with mortality and morbidity.

Effects on the environment:

- Emissions of black carbon (soot) from incomplete combustion are associated with effects on climate change.

The sources and effects of ground level o-zone (O₃)

Ground-level ozone (O₃) is not emitted directly. It is a secondary pollutant formed by chemical reactions in the atmosphere. Concentrations are highest in the summer. O₃ can travel long distances and reach high concentrations far away from the original source of the original pollutants.

O₃ is found in the troposphere, as opposed to stratospheric ozone found high up in the atmosphere, which protects the Earth from the sun's radiation.



Sources include:

- The effect of sunlight on NO_x and volatile organic compounds (VOCs).

Effects on health:

- Respiratory irritant
- High levels may worsen asthma symptoms or trigger asthma attacks in susceptible people, and may cause chest discomfort for others.

Effects on the environment:

- Damage to plant species, forestry and crops

The sources and effects of sulphur dioxide (SO₂), benzene (C₆H₆), non-methane volatile organic compounds (NMVOCs), nickel (Ni), benzo[a]pyrene (B[a]P), noise

Sulphur dioxide (SO₂) is an acid gas, which can also combine with water vapour to form acid rain.



Sources include:

- Power generation
- Refineries
- Industrial processes
- Commercial and residential solid and liquid fuel use.

Effects on health:

- Associated with asthma and chronic bronchitis⁵.

Effects on the environment:

- Damages plant species at high concentrations
- Acidification of habitats leading to loss of biodiversity.

5. WHO Factsheet on Air Pollution. [https://www.who.int/en/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/en/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

Heavy metals

Heavy metals include Nickel (Ni) which is a toxic metallic element.

Sources include:

- Industrial metal processes e.g. refining and plating
- Combustion of heavy fuel oil.

Effects on health:

- Irritation to the nose and sinuses and allergic responses
- Long-term exposure may lead to respiratory diseases and cancers⁶.

Benzo[a]pyrene

Benzo[a]pyrene (B[a]P) is used as a 'marker' for a group of compounds known as polycyclic aromatic hydrocarbons (PAHs). PAHs are a group of chemicals, which accumulate in the environment, people and animals. They also have toxic and carcinogenic effects.

Sources include:

- Industrial processes
- Domestic burning.

Effects on health:

- Toxic and carcinogenic effects, including lung cancer
- Accumulated chemicals can pass up the food chain.

Ammonia

Ammonia (NH₃) is a colourless gas with a strong odour. It can form secondary PM through reactions in the atmosphere, travelling large distances and depositing on land and increasing background levels.

Sources include:

- Agriculture. For example, intensive livestock rearing, storage and spreading of manures, slurries and fertilisers
- Waste sector.

Effects on health:

- Increases in levels of particulate matter are linked with a range of effects, including respiratory and cardiovascular illness.

Effects on the environment:

- Nitrogen-sensitive habitats can receive higher levels of nitrogen deposition than they can tolerate due to acidification and eutrophication, causing changes in biodiversity.

Non methane volatile organic compounds

Non-methane volatile organic compounds (NMVOCs) comprise a large group of organic chemical compounds, excluding methane.

Sources include:

- Solvent processes, largely from domestic applications
- Agriculture
- Combustion processes in the residential, commercial and public sectors
- Fugitive, evaporative losses
- Indoor sources include upholstery, carpets, aerosols and cleaning products

Effects on health:

- Some have direct toxic effects; formaldehyde, for example, is known to cause cancer
- Can worsen respiratory and cardiovascular illnesses
- Indirect contribution to the formation of ground-level ozone, which causes respiratory and cardiovascular problems⁷.

6. World Health Organisation Air Quality Guidelines 2000, PHE Chemical Hazards Compendium

7. Science for Environment Policy Issue 269, 2014: http://ec.europa.eu/environment/integration/research/newsalert/pdf/369na5_en.pdf

Carbon monoxide (CO)

Carbon monoxide (CO) is a gas formed following incomplete combustion, where the level of oxygen is insufficient to convert carbon-based fuels into carbon dioxide (CO₂) and water.

Sources include:

- Industrial combustion
- Industrial processes
- Domestic burning
- Road transport.

Effects on health⁸:

- Absorbed in the lungs, reducing the capacity of the blood to carry oxygen
- Low concentrations can cause fatigue, breathing difficulties and stomach pain
- High concentrations, which are possible indoors or in enclosed environments, can cause dizziness, confusion and unconsciousness (for example, due to poor ventilation)
- High concentrations of CO are less likely to occur outdoors. However, when CO levels are elevated, they can be of particular concern for people with certain types of heart disease
- Very high concentrations can be fatal.

Effects on the environment:

- Can react with other pollutants to form ground-level O₃.

Noise pollution and soundscape

Airborne environmental noise pollution, meaning unwanted or harmful sound from transport and industry, is ranked by the World Health Organisation as the second biggest environmental contributor to the burden of disease in Europe after ambient air pollution⁹.

Noise pollution also affects wildlife as it can interfere with animal communication, breeding and foraging abilities¹⁰.

Sources of air and environmental noise pollution tend to be either identical or else closely linked, their transmission pathways are similar, and the most affected groups are often the same, typically the people situated closest to the source.

For example, the noisiest and dirtiest vehicles are often the same, as are the quietest and cleanest. For these reasons, improvements and actions to address both forms of airborne pollution are best achieved together.

8. PHE Chemical Hazards Compendium

9. www.euro.who.int/__data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf

10. The Effects of Noise on Biodiversity (NO0235) Final Report for Defra 2012 Andrew Radford, Erica Morley, Gareth Jones, School of Biological Sciences, University of Bristol. randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=18136

Supporting delivery of Welsh Government priorities and principles



This Plan supports delivery of commitments under our Prosperity for All: our national strategy¹¹. In particular, ‘reducing emissions and delivering vital improvements in air quality’ to support ‘healthier communities and better environments’.

It is set within the context of our obligations under the Well-being of Future Generations Act and the United Nations Convention on the Rights of the Child (UNCRC).

It is integrated with our cross-Government key strategies and plans, including the Low Carbon Delivery Plan, the Wales Transport Strategy and the Noise and Soundscape Action Plan 2018-2023.

It also aligns to key areas of the Environment (Wales) Act and priorities set out in our statutory Natural Resources Policy and Planning Policy Wales Edition 10.

11. gov.wales/prosperity-all-national-strategy

Well-being goals and air quality

Welsh Government, its public sector partners and stakeholders work together to address air quality using an integrated approach to deliver long-term sustainability and improvement. Under the Well-being of Future Generations Act, we have established average population exposure to NO₂ as an indicator to measure progress towards well-being goals in Wales. Regulations made under the Act require public services boards to consider air quality when carrying out their statutory assessments of local well-being.

Goal	Description	Impacts	Clean Air Plan contribution
A prosperous Wales	An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.	<p>Impacts on businesses, competition and employment, productivity.</p> <p>Effects of exposure to air pollution on health.</p>	<p>We will develop our knowledge, skills and capabilities to address air quality and reduce harmful emissions. Action taken to improve air quality will support economic growth in Wales.</p> <p>A healthy workforce and clean environment would contribute to prosperity through greater productivity.</p> <p>Positive employment impacts would also arise for companies that manufacture, distribute and install clean technologies in the UK.</p> <p>Wales is dependent on a productive workforce and attractive places for businesses to invest.</p> <p>Costs required to ensure reductions in air pollution will affect a wide range of sectors.</p> <p>We will take action to manage any potential adverse impacts on employment, competition and small and medium-sized enterprises (SMEs).</p>

Goal	Description	Impacts	Clean Air Plan contribution
A resilient Wales	A nation which maintains and enhances a bio-diverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example, climate change).	Impacts on air quality, greenhouse gas emissions and effects of pollution on biodiversity and natural habitats.	<p>Emission reduction from transport, industry, agriculture and other sectors has a direct and significant positive impact locally, regionally and nationally on the Welsh environment and ecosystem functioning.</p> <p>The aims of the decarbonisation programme will have a direct effect on air quality and vice versa. Acting on climate change not only reduces emissions and builds resilience but also ensures the Wales we live in has clean air and water, liveable places, productive farmland, energy security and green jobs.</p>
A healthier Wales	A society in which people’s physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.	Impacts on human health.	<p>Poor air quality can have a disproportionate impact on the health and well-being of children, older and other vulnerable people. Reduction of air pollution will have a direct and significant impact on improving human health and welfare for everyone.</p>
A more equal Wales	A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio economic background and circumstances).	Impacts of air quality actions on equality.	<p>All people who live in and visit Wales will benefit from air quality improvements, no matter what their background or circumstances are.</p> <p>Tackling impacts of poor air quality and improving air quality and human health will have a positive impact on promoting equality in Wales, especially where improvements coincide with deprived areas with high pollution.</p>

Goal	Description	Impacts	Clean Air Plan contribution
A Wales of cohesive communities	Attractive, viable, safe and well-connected communities.	Air quality impacts on communities.	<p>Actions to improve air quality led by or co-produced with local communities will carry greater impact. They will also be better integrated with other actions to improve the quality of life, health and well-being, the environment and opportunities for prosperity.</p> <p>Improved air quality in deprived communities will contribute to better quality of life and community cohesion.</p>
A Wales of vibrant culture and thriving Welsh language	A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, sports and recreation.	Impacts on health, environment, culture and population.	<p>Action to support individuals, businesses and Government to understand, value and identify with the importance of improving air quality in Wales will empower everyone to play their own role in supporting reductions in air pollution.</p> <p>We are committed to having air quality, which enables the people of Wales and visitors to enjoy and promote a wide range of recreation activities across Wales. Improved health would provide further opportunities for people to participate in sports and recreational activities.</p> <p>Protection of natural ecosystems and biodiversity will enhance the cultural capital of Wales and support outdoor activities.</p> <p>We will actively encourage, promote and facilitate the use of the Welsh language. We will ensure equal standards of services in both English and Welsh. As we implement the Clean Air Plan, we will foster a Welsh identity which is distinctive.</p>

Goal	Description	Impacts	Clean Air Plan contribution
<p>A globally responsible Wales</p>	<p>A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.</p> <p>Goal 7 recognises that in an inter-connected world what we do to make Wales a sustainable nation can have positive and adverse impacts outside of Wales.</p>	<p>Impacts on air quality, greenhouse gas emissions and biodiversity/habitats.</p>	<p>Air pollution is a major global environmental problem affecting everyone. It does not stop at or respect national and international borders. We will take strong positive action on air quality in Wales to meet our national and international ethical and legal obligations. Actions to improve air quality will be closely aligned with action on decarbonisation.</p> <p>Improved air quality would directly contribute to environmental well-being in Wales. Protection of ecosystems in NATURA 2000 sites and Sites of Special Scientific Interest (SSSIs) is an international contribution to maintaining biodiversity.</p> <p>Compliance with the national emission ceilings contributes to international progress in reducing transboundary air pollution with reciprocal benefits from emission reduction outside Wales, including the rest of the UK.</p>

The Well-being of Future Generations Act describes five ways of working toward achieving sustainable development.

Five ways of working

The Plan aims to deliver in line with the Act's five ways of working by:



Prevention

Reducing the impacts of air pollution on public health and the natural environment, this will be achieved by the adoption of preventative approaches and taking action early to head off new problems before they arise.



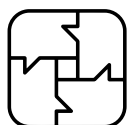
Long term

Taking decisions and acting sustainably to achieve the progressive reduction of emissions and pollutants in the air to ensure long-term impact.



Collaboration

Collaboration with relevant departments within the Welsh Government, UK Government, national partners and at a local level to ensure actions are implemented and well-being objectives are met.



Integration

Improving the integration of air quality management processes with a range of policy areas and sectors.



Involvement

Involving partners and stakeholder representatives throughout the delivery of this plan.

United Nations Convention on the Rights of the Child and air quality

The Plan takes account of the United Nations Convention on the Rights of the Child (UNCRC)¹² and the unique issues around children's exposure to air pollutants.

We recognise there are unique issues around children's exposure to air pollutants, which can affect children's physical and cognitive development.

Long-term health issues can prevent children from attending school, which can in turn damage their future prospects.

Through education, we will empower children with the tools they need to help tackle air pollution, recognising the important roles they have as agents of change.

12. A Summary of the UN Convention on the Rights of the Child, www.unicef.org.uk/wp-content/uploads/2010/05/UNCRC_summary-1.pdf. In particular, there are links to articles 3, 6, 12, 17, 24, 27 and 31

People

Protecting the health and well-being of current and future generations



Air pollution is the largest environmental threat to health¹³. Cleaner air will ensure improved health and well-being for current and future generations.

We will prioritise and sustain action to address the impact of poor air quality on human health (especially vulnerable and susceptible population groups) and ecosystems by reducing exposure to pollution more widely. We will achieve this through evidence-based air quality targets and enhanced air pollution monitoring, modelling and assessment capabilities.

Through a Clean Air Act for Wales, we will consolidate and improve existing legislative and regulatory frameworks to enable the delivery of appropriate actions to tackle air pollution.

This will include the Local Air Quality Management regime and domestic burning. Everyone has a role to play in reducing air pollution, health risks and inequalities. We will take action to empower people to reduce their exposure, risks and impacts from local air pollution through better education and awareness-raising action.

We will develop targeted and integrated communications to inform and enable behavioural change.

This will complement action to reduce air pollution and help achieve associated objectives for decarbonisation, health and environmental improvement.

It will also benefit tourism, sustainable transport and the economy.

¹³ Ten Threats to Global Health in 2019, WHO 2019. www.who.int/emergencies/ten-threats-to-global-health-in-2019

Air pollution and health

Health Effects

The health effects of air pollution have been extensively researched and are well documented.

It is estimated between 28,000 and 36,000 UK deaths each year can be attributed to air pollution. In Wales, the estimated burden of poor air quality on early deaths is in an equivalent range of between 1,000 and 1,400 deaths¹⁴.

Short-term exposure to pollutants can result in eye, nose and throat irritation, headaches and nausea, and exacerbate respiratory disease (e.g. asthma) symptoms. Long-term exposure increases risks of cardiovascular and respiratory disease, and lung cancer. Emerging evidence suggests other body organs may also be affected, with possible effects on dementia, low birth weight and diabetes.

Our Healthier Wales Plan¹⁵ emphasises the need for a prevention-focused NHS. We need to look at all the other things we are responsible for as a government that can make a difference to people's health.

This includes support for families, education, housing, employment and the environment.

Children, older people and those with chronic lung or heart conditions are more vulnerable and/or susceptible to air pollution exposure. There is also emerging evidence children in their early years are especially at risk of exposure to air pollution, with adverse outcomes including asthma and poorer lung development¹⁶.

Beyond these population groups, it is possible others are at a higher risk e.g. those working in polluted places or commuting to work through heavily congested urban areas.

People living in the most deprived areas may also be more susceptible to air pollution than those who live in least deprived areas.

This is a problem because analyses of local air pollution, multiple deprivation and health data in Wales show average air pollution concentrations are highest in 'most' deprived areas where levels of chronic ill health tend to be highest.

It is worth noting the next highest average air pollution concentrations in Wales are experienced by those living in 'least' deprived areas.

Air pollution, impaired health and deprivation status interactions can modify associations and create disproportionate disease burdens within and between communities (inequalities) i.e. a 'triple jeopardy' effect. In the context of particulate matter air pollution, this research suggests, compared with 'low' pollution and 'least' deprived areas, rates of respiratory disease mortality were twice as high in 'low' pollution and 'most' deprived areas, and increased to 2.4 times in 'high' pollution and 'most' deprived areas.

For all-cause mortality, compared with 'low' pollution and 'least' deprived areas, mortality rates were 56% higher in 'low' pollution and 'most' deprived areas and 65% higher in 'high' pollution and 'most' deprived areas.

This available evidence suggests it is a mistake to consider air pollution problems (and solutions) in isolation.

Understanding relationships between air pollution and wider health determinants is essential in informing and targeting effective air quality management activity.

Acting on only a limited understanding of these relationships, or worse ignoring them altogether, could compound problems through ill-informed decisions and ineffective or poorly targeted intervention.

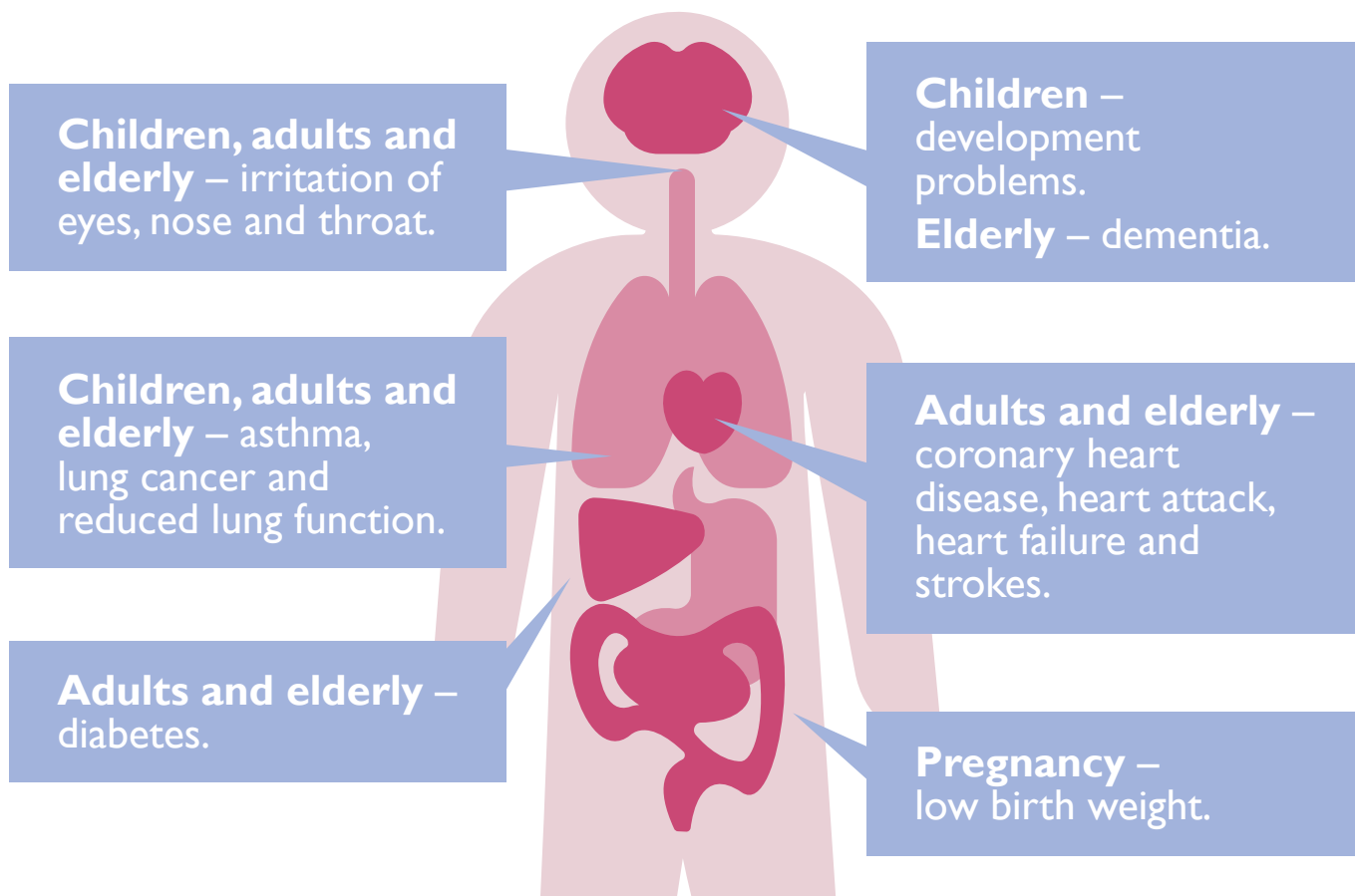
14. Mortality burden estimates are calculations that provide a useful indication of the scale of the air pollution problem in a given area at a certain point in time. They require careful interpretation as the equivalent range of deaths does not refer to 'actual' numbers of deaths. They reflect the sum of the small contributions that air pollution exposure makes to life-expectancy reductions amongst all individuals in a population. They take account of multi-pollutant impacts, and present the burden of attributable all-cause (non-accidental) deaths as an 'effect equivalent to' range, rather than a central estimate.

15. In Brief – A Healthier Wales: our Plan for Health and Social Care, Welsh Government 2019. gov.wales/sites/default/files/publications/2019-04/in-brief-a-healthier-wales-our-plan-for-health-and-social-care.pdf

16. Air Pollution and Child Health: Prescribing Clean Air, WHO 2019. apps.who.int/iris/bitstream/handle/10665/275545/WHO-CED-PHE-18.01-eng.pdf?ua=1

Protecting vulnerable groups from the impacts of air pollution is integral to the development and delivery of actions in this Plan.

Health effects of air pollution



Monitoring and Assessing Air Quality in Wales

National and local air quality monitoring and modelling are used for different purposes. National assessment represents general exposure and must comply with location and sampling point requirements of the Ambient Air Quality Directive. However, local air quality assessments focus on targeting pollution hotspots. Annex B contains details of air quality monitoring networks used across Wales. Modelling helps to assess levels across geographic areas, as well as predicting future levels in different scenarios.

The impacts of poor air quality at a national scale are significant. However, they mask local-level variations in air pollution concentrations, exposures, risks and impacts. These small area differences can lead to health and environmental inequalities. We will take action on airborne pollution where it is most needed, based on robust evidence in relation to airborne pollutants.

We will enhance our air quality monitoring, modelling, assessment and evaluation capability to support targeted action to reduce air pollution. To achieve this we will ensure robust monitoring methods are adopted, enabling monitoring sites in the new network to be affiliated with recognised national networks and standards, where it is practical to do so. This can help improve the accuracy of modelling outputs and future assessments of compliance with relevant air quality targets. More accurate information will inform future health and environmental research and surveillance. This evidence will also support the development of prevention-focused action on air quality management, policy and communications. We will also explore potential opportunities to trial and evaluate the effectiveness of innovative monitoring, modelling and assessment techniques.

When delivering our enhanced monitoring, we will prioritise sensitive receptors, accounting for the effects of air pollution on public and environmental health and deprivation.

Action:

We will enhance our monitoring and assessment capabilities to support targeted action on air pollution. We intend to implement a national air pollution monitoring and assessment service by December 2022.

The service will support annual reporting on the state of air quality in Wales.

In addition, it will make recommendations on interventions required to reduce air pollution and the harm it causes to public health and the environment. We are working in partnership with Natural Resources Wales, Local Authorities, Public Health Wales and other partners to design the framework for air quality monitoring, modelling, assessment and evaluation by autumn 2021.

Lessons learned during the COVID-19 pandemic

The changes in living and working patterns during the COVID-19 pandemic are likely to have had a significant effect on air pollution.

The relative mixtures of the different air pollutants emitted are likely to have changed, along with their associated concentrations and locations of exposure. Weather patterns, from daily to seasonal variations, can mask the effects of these behavioural changes on air quality.

We are working with expert bodies in Wales and across the UK to assess the impacts of the response to COVID-19 on air quality. Partners in this work include Centre for Health and Environmental Research and Innovation: Swansea University, Local Authorities, Natural Resources Wales, Public Health Wales, the Welsh Government's Clean Air Advisory Panel and the UK Air Quality Expert Group and Committee on the Medical Effects of Air Pollution.

An initial study focusing on nitrogen oxides (NO_x and NO₂), particulate matter (PM_{2.5}), and ozone (O₃) from 1 January 2018 to 31 May 2020, was completed in July 2020¹⁷. The results show a complicated picture.

The first two months of lockdown saw significant decreases in some pollutant levels, such as NO_x, consistent with reduced traffic levels.

However, levels of other pollutants increased, such as PM_{2.5} and O₃. More robust conclusions will be able to be drawn as further data emerges.

It will take some time to understand the full impacts of actions related to COVID-19 on air quality. We are continuing to review air pollutant measurements and emissions data as they become available.

This will help us to better understand the relative apportionment of the associated sources across a range of sectors and how they may have changed.

For example, the Centre for Health and Environmental Research and Innovation at Swansea University has extended the assessments referred to above to compare the estimated changes in the concentration of NO₂ with traffic data in Swansea.

The findings from our review will inform the management of air pollution across Wales, the implementation of the Plan and the development of future policies and legislation.

New targets to reduce exposure to air pollution

New targets for particulate matter

Concentrations of fine particulate matter are a specific concern because of established links with adverse health outcomes. Limit values were initially set for PM₁₀, particles of diameter less than 10µm as they were more widely measured. However, emphasis has since moved to the finer fraction PM_{2.5} below 2.5µm¹⁸ as it can penetrate deeper into the lungs. WHO has recommended concentration guidelines for PM_{2.5}, the annual mean guideline of 10µg/m³ being half the current EU limit.

Advice from WHO is solely based on scientific conclusions about public health aspects of air pollution. This does not take into consideration the technical feasibility or the economic, political and social aspects of achieving these levels.

WHO has found the 10 countries with the lowest national PM_{2.5} exposure levels in 2017 were the Maldives, the United States, Norway, Estonia, Iceland, Canada, Sweden, New Zealand, Brunei, and Finland¹⁹. In assessing health effects an informative measure is the population weighted mean concentration (PWMC). The PWMC is the average outdoor PM_{2.5} concentration to which a population is exposed. PWMCs for PM_{2.5} averaged 8µg/m³ or less in these countries.

The estimated PWMC for the population of Wales in 2016 was 6µg/m³, compared with 7.5µg/m³ for the UK as a whole.

Although we comply with current EU legislative limits for PM₁₀ in Wales, we recognise the importance of reducing average population exposure to particulate matter further and the positive health benefits this can bring.

17. Ricardo Energy and Environment, Provisional Analysis of Welsh Air Quality Monitoring Data – Impacts of Covid-19 (July 2020), airquality.gov.wales/reports-seminars/reports

18. µm is the symbol for micrometre which is one millionth of a metre (10⁻⁶m)

19. www.stateofglobalair.org/sites/default/files/soga_2019_report.pdf

The Welsh Index of Multiple Deprivation air quality ranking is based on concentrations of NO₂, PM₁₀ and PM_{2.5} and the associated WHO guidelines, in recognition of these being seen as the pollutants of prime concern to human health nationwide²⁰.

This is also consistent with the pollutants considered under the national well-being indicators. Overall concentrations of PM_{2.5} in most of Wales are low, although there are hotspots of high concentrations in industrial and densely populated urban areas.

However, the potential for adverse health effects from exposure to PM_{2.5} remains even if the WHO guideline value is achieved. There is further work to do reduce air pollution and its toll on public health. Our aim is for concentrations across Wales to be below the WHO guideline for PM_{2.5} where it is possible, and lower still where there is sufficient potential and there is high public exposure or risk to sensitive receptor groups.

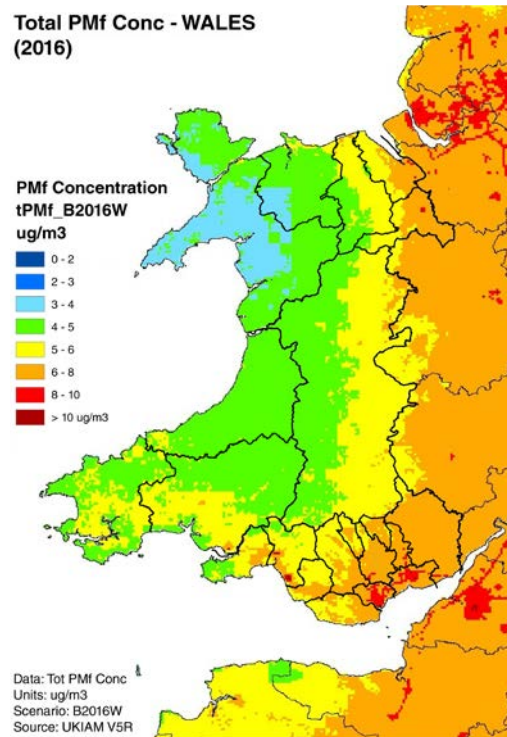
To support this aim we commissioned an assessment of current and future levels of PM_{2.5} in Wales, where it comes from, and the potential for further reductions through measures which achieve a notional Welsh share of the UK's statutory emission reduction targets.

We have assessed the effect of these measures alongside action in neighbouring countries.

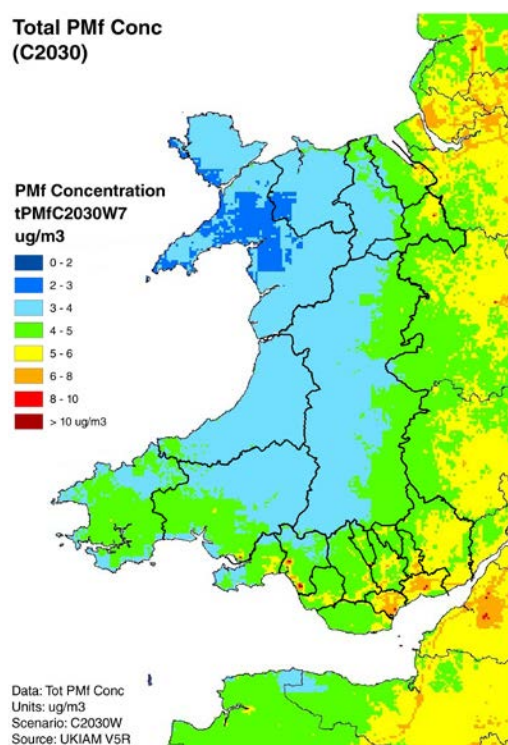
The measures will significantly reduce the number of people exposed to levels exceeding the guideline levels and reduce overall exposure at lower levels too.

20. gov.wales/welsh-index-multiple-deprivation

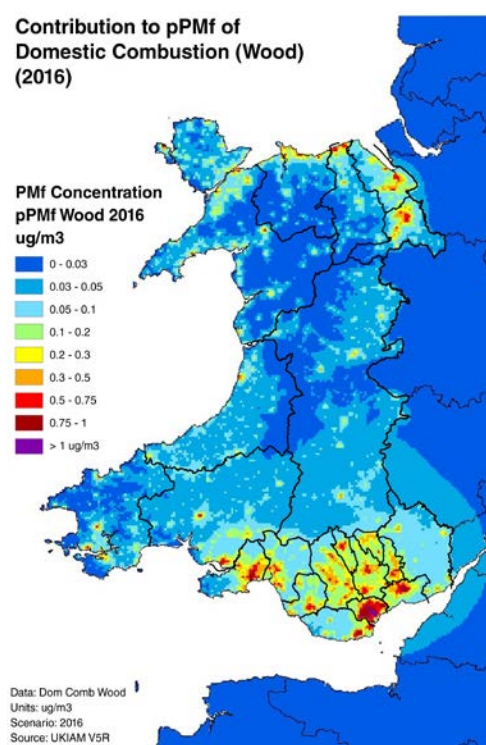
The illustrations show the modelled concentration of PM_{2.5} in 2016, the projected levels in 2030 as a result of measures which achieve a national Welsh share of the UK's NECD emission reduction targets, and the contribution of wood burning to average concentrations in 2016.



Modelled concentration of fine particulate matter in 2016 based on Welsh and NAEI emissions in the UK, reported emissions in other countries and shipping emissions in sea areas surrounding the UK



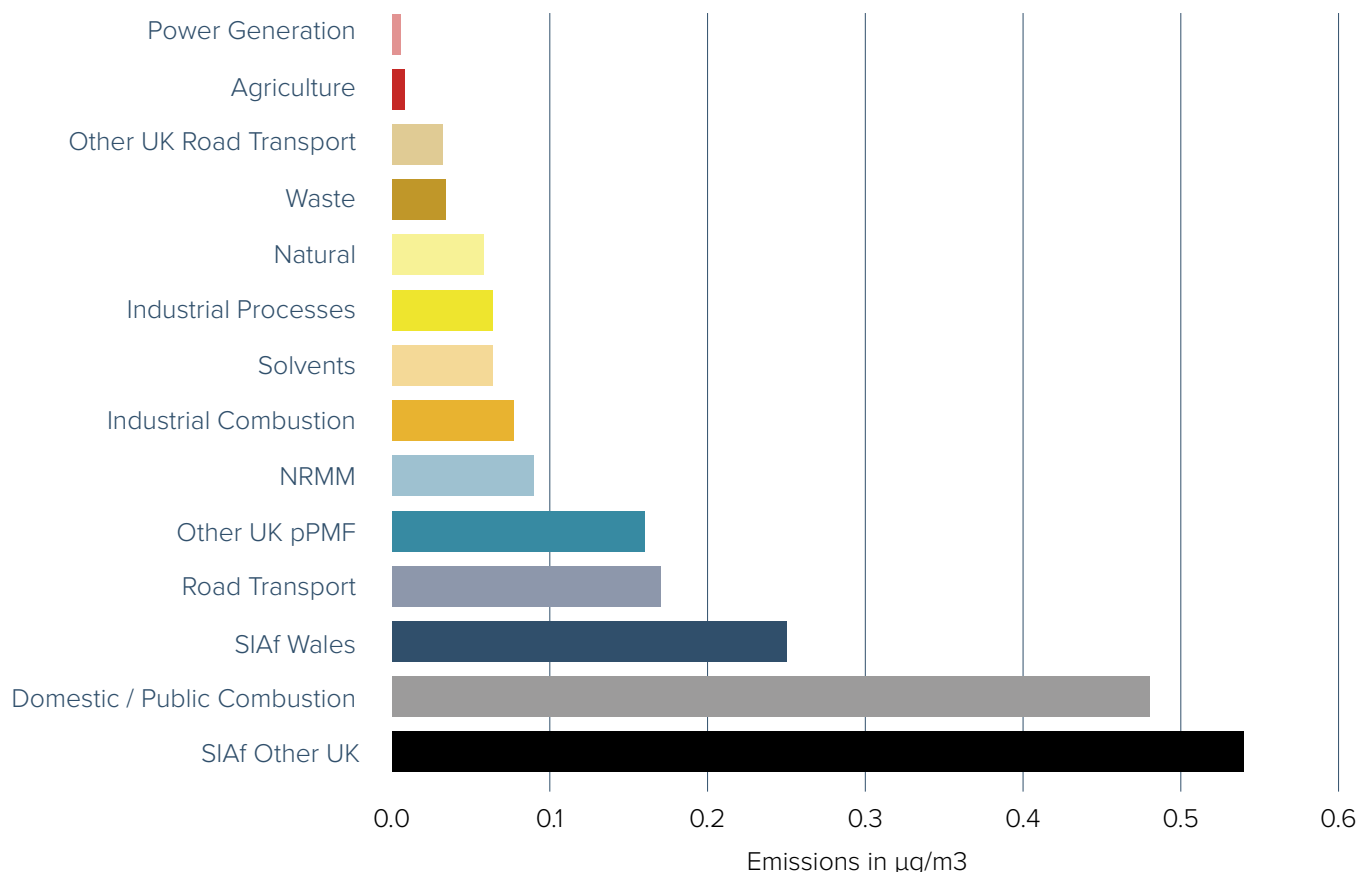
Modelled concentration of fine particulate matter in 2030 as a result of measures which achieve a notional Welsh share of the UK's NECD emission reduction targets



Contribution of wood burning to average concentrations in 2016

The bar graph below gives a detailed break-down of Welsh contributions to PWMC in Wales in 2016, indicating which source sectors are contributing to this primary contribution compared with secondary inorganic aerosols (SIA) from Wales and the rest of the UK (excluding imported and irreducible components).

Contribution to PMf concentrations in Wales (excl. imported & background) 2016.



Source apportionment of Welsh emissions and the rest of the UK to PWMCs in Wales in 2016 (excluding imported and irreducible components)

The assessment, based on outdoor concentrations in 2016, estimates the sources of fine particulate matter in Wales came from:

- Primary emissions in Wales account for approximately 17.5% PWMC.
- Primary emissions in Wales cause local peaks ($3\text{-}5\mu\text{g}/\text{m}^3$ in urban areas) due to traffic, non-exhaust emissions, and industry and domestic combustion.
- Natural irreducible sources (sea salt, and natural rural and urban dusts, secondary organic aerosols: biogenic) account for approximately 1/3 of the WHO standard over areas of South Wales, equivalent to approximately 45% PWMC. Imported contribution (primary and secondary PM) from EU and international shipping reduces from East to West across Wales, equivalent to approximately 20% PWMC.

- Primary emissions from UK (excluding Wales), equivalent to approximately 5% PWMC.
- UK secondary PM precursor emissions (SIA), equivalent to less than 10% of PWMC.
- Welsh secondary PM precursor emissions (SIA), equivalent to less than 5% of PWMC.

Traffic, non-exhaust road transport emissions, domestic and industrial emissions contribute to the local peaks in urban areas.

The contribution of domestic wood burning to PM_{2.5} concentrations makes a significant contribution along the north coast and in urban areas, including for the large urban populations in Swansea and Cardiff.

We have set out measures we will take in Wales to help the UK achieve its NECD targets in this plan.

As we achieve a notional Welsh share of emission reductions, the population in Wales exceeding the WHO guideline threshold is expected to reduce by over 95% in 2030 compared with 2016, leaving just a few hot-spot areas where more detailed spatial modelling and investigation is required.

Based on the PWMC in 2016, it is estimated the exposure of 3.16 million people in Wales to an average concentration of 6µg/m³ of fine particulate matter corresponds to a monetised health impact of £950M per year (central estimate).

Depending on the specific pathway chosen to achieve Wales' share of NECD targets for 2030, the associated reductions in overall population exposure to fine particulate matter is estimated to result in monetised health benefits in Wales of between £50M - £96M per year.

The analysis is subject to uncertainties and considers a subset of all potential combinations of measures and the practicalities of implementation.

However, it has helped us to understand where further action is likely to be needed. Without further analysis, irrespective of cost, we do not yet know the measures it would take to achieve the WHO guideline everywhere. We also do not know by when it could be achieved, if it is possible.

As recognised by WHO, the target setting process needs to aim at achieving the lowest concentrations possible in the context of local constraints, capabilities and public health priorities.

To do this, WHO encourages the adoption of increasingly more stringent standards and tracking their effectiveness over time. We will ensure future targets for ambient levels of PM_{2.5} are underpinned by the right evidence and metrics to achieve the most effective improvement, supporting the delivery of our well-being goals.

We have established a Clean Air Advisory Panel to provide us with independent and evidence-based advice and recommendations on air quality matters in Wales.

Action:

We are working closely with the Clean Air Advisory Panel to receive independent and expert advice on the development of evidence-based and effective air quality targets for the benefit of current and future generations.

We will develop and enact a new target for fine particulate matter, taking account of the WHO guidelines on air quality.

This will drive reductions in public exposure to air pollution as part of the development of a Clean Air Act for Wales and its regulations.

Managing air quality in the event of a pollution incident

Arrangements exist in Wales to respond immediately in the event of an incident, such as a large fire or chemical release, which has the potential to impact air quality. In the event of an incident, the Air Quality Cell facilitates the co-ordination, collection, collation and interpretation of air quality data to inform what level of action is required to protect public health and the environment.

Air quality monitoring equipment is deployed in response to an incident, where members of the Air Quality Cell deem it necessary. The equipment is managed, maintained and operated by NRW. The Air Quality Cell, chaired by NRW, is supported by PHW, Public Health England, the Centre for Radiation, Chemicals and Environmental Hazards Wales, Local Authorities and the Met Office.

Further support is provided by other organisations such as the Food Standards Agency and Fire and Rescue Services as and when required. We recognise the vital importance of the Air Quality Cell and the monitoring capability it provides. This will ensure it is resilient, robust and able to respond quickly and effectively in the event of an incident.

Welsh Government and members of the Air Quality Cell have agreed the existing incident air quality monitoring service is not sufficiently resilient. A single, Swansea based set of monitoring equipment is no longer deemed sufficient to support a national incident response. We will fund all necessary monitoring equipment, vehicles and personnel to equip two field teams on 24/7 standby to respond to air quality incidents anywhere in Wales.

Action:

Working with NRW, during 2020/2021, we will update air quality incident monitoring equipment and build on the existing services provided by the Air Quality Cell to ensure arrangements are in place to respond to air quality incidents 24/7, 365 days of the year, anywhere in Wales.

A fit for purpose legislative and regulatory air quality management framework for Wales

The delivery of our proposals to improve air quality are dependent on effective regulation. We want a clear and joined-up regulatory system, which meets the requirements of our people and policies without placing unnecessary burdens on relevant organisations.

We will consolidate and enhance the existing legislative and policy framework for air quality, including Local Air Quality Management, Clean Air Zones and smoke control, through a Clean Air Act for Wales.

Local Air Quality Management (LAQM)

The Environment Act 1995 provides the framework for Local Air Quality Management (LAQM). LAQM requires Local Authorities to work with others to assess and manage public health risks from air pollution.

They must carry out regular reviews and assessments of air quality in their area against the air quality objectives. Where these are unlikely to be met, Local Authorities must designate Air Quality Management Areas (AQMAs) and implement Air Quality Action Plans (AQAPs) to reduce pollution levels.

We have responsibility for managing compliance with the Environment Act 1995 and have issued statutory guidance setting out what is expected of Local Authorities in fulfilling their duties.

We oversee the appraisal of Annual Progress Reports and Air Quality Action Plans to ensure they meet their statutory obligations^{21,22} and align with the Well-being of Future Generations Act principles.

The current LAQM exposure-based approach has remained largely unchanged since its inception in 1997.

While this has greatly improved our knowledge of the sources and extent of air pollution, at its core the regime continues to operate reactively, requiring actions where a problem area has already been identified as nearing or exceeding legal limits.

Therefore, improvements are required to ensure the LAQM regime is preventative, proactive and health focused. In order to achieve this we propose to undertake a comprehensive review of the LAQM framework and to develop new LAQM legislation.

We will review the appraisal process of LAQM reports to make certain the updated LAQM regime will be appropriately scrutinised and to ensure Local Authorities are receiving relevant technical support.

To build the outcomes of the review into a new regime, we will update the statutory guidance and relevant reporting templates.

Key areas we will investigate through the review are:

- How we can ensure the LAQM regime is public health focused.
- Ways to ensure LAQM is actively responding to the needs of local communities.
- How LAQM and planning regimes can be better integrated.
- Ensuring LAQM is effective for populations in both urban and rural areas.

- Considering how Clean Air Zones and Smoke Control Areas can be integrated with and contribute to LAQM.
- Mechanisms to develop regional collaboration across public bodies to ensure pollution problems are tackled and not displaced across boundaries.

We will ensure public engagement is at the heart of LAQM and will work with Local Authorities to develop ambitious public engagement plans which deliver air quality and well-being benefits for communities.

Additionally, we will explore what resources are required to ensure local communities can more easily participate in decisions affecting the air quality around them.

In the current regime, monitoring of PM_{2.5} is encouraged but not mandatory.

In the context of the known health impacts associated with PM_{2.5}, we propose to investigate the extent to which Local Authorities can support monitoring, reporting and action on PM_{2.5} as part of their existing LAQM functions.

We will take into account the identified causes of local peak concentrations, the development of new air quality targets for PM and a national air pollution monitoring and assessment service.

This work will be defined in part by the outcome of the assessment of current and future levels of PM_{2.5} in Wales.

Our Clean Air Act will enable us to update and strengthen existing LAQM legislation. We will work closely with Local Authorities to identify the main challenges to delivering improvements to local air quality within the current delivery model and legislative framework.

We will consult on the legislative proposals we are exploring which include:

- Clarification and strengthening of wording regarding Local Authority duties.

21. gov.wales/air-quality-management-guidance-local-authorities
22. laqm.defra.gov.uk/technical-guidance/

- Introducing a requirement for Local Authorities to undertake regular monitoring strategy reviews within a specified period
- Introducing a requirement for Local Authorities and Welsh Ministers to agree a projected compliance date for an AQMA, following production and appraisal of an AQAP.
- Introducing the concept of ‘partner’ organisations to improve collaboration and provide support to Local Authorities.

Our ambition is to implement LAQM legislation which ensures delivery of improvements in local air quality in the soonest time possible.

Action:

We will introduce LAQM policy changes by 2023 to ensure the regime is public health focused and proactively finding and tackling areas of pollution.

We will consult on LAQM legislative intent in a White Paper by the end of this Senedd term.

Designation of Clean Air Zones/ Low Emission Zones

Clean Air Zones/Low Emission Zones specifically target a defined geographical area with the aim of achieving reductions in polluting emissions locally. In recent years, there have been increasing calls for charging Clean Air Zones/Low Emission Zones to be introduced as a means of achieving local reductions in polluting emissions largely resulting from road transport.

Powers under the Transport Act 2000 enable Local Authorities and Welsh Ministers to introduce local charging schemes in respect of the use or keeping of motor vehicles on roads for which they are the traffic authority, and may also impose a charge for every parking space provided by an employer.

Workplace Parking Levies may encourage commuters to find alternative means of travel if the direct charge on employers for providing parking is passed on.

Reduced car journeys and road congestion can deliver reductions in polluting emissions and revenue generated by such a scheme may be used to support improvements in local transport provision.

In 2018, we consulted on a Clean Air Zone Framework for Wales²³, with a summary of response published in April 2019.

The framework provides guidance to Local Authorities who are considering options to address local air quality issues to support the achievement of EU limits as well as LAQM actions.

It describes what a Clean Air Zone is, under what circumstances it may be applied and the key considerations for establishing one. The reasons for reducing airborne pollution through a Clean Air Zone may be to reduce exposure to within legal limits, but most importantly, to bring about improvements in the environment and to deliver better health for all.

The consultation on our Clean Air Zone Framework for Wales revealed the need for a clearer integration with the LAQM regime, and also further consideration of how Clean Air Zones/Low Emission Zones could be most effectively introduced in all parts of Wales.

We will work with Local Authorities and other stakeholders to consider how the Framework can and should be utilised as part of routine LAQM, in both rural and urban areas, as a substantial means of delivering reductions to pollution levels. Demand management measures can help tackle congestion, reduce polluting emissions, and support modal shift to active travel and public transport alternatives. In developing our ambitions to deliver decisive reductions in transport emissions over the next ten years, we will consider the findings revealed through our independent review of road user charging²⁴.

We expect to see Clean Air Zones established in towns and cities throughout Wales to reduce the impact of transport emissions on health.

23.. Clean Air Zone Framework for Wales - gov.wales/sites/default/files/consultations/2018-04/180424-clean-air-zone-framework-en.pdf

24. gov.wales/written-statement-independent-review-road-user-charging-wales

Some of these may be supported by a charging element. Clean Air Zones, where appropriate, would enable a range of co-ordinated actions to deliver significant reductions in public and environmental exposure to harmful airborne pollutants from all sources.

These Zones would be applied to geographical target areas which can be local and sub-regional.

Action:

We will publish our Clean Air Zone Framework in spring 2021, taking into account the findings of our review of road user charging which will report by autumn 2020²⁵.

Smoke Control Areas (SCAs)

The Clean Air Act (CAA) was introduced in 1956 after a Government report into the Great Smog of 1952.

The Act aims to control emissions of dark smoke, grit, dust and fumes from industrial premises and furnaces and to give Local Authorities power to designate and control SCAs.

Within a SCA it is an offence to emit smoke from any chimney of a building (including domestic, residential and industrial premises) unless using a fuel or appliance approved for use in a SCA.

In Wales, exempted appliances and authorised fuels are listed in regulations which we aim to update yearly.

Manufacturers obtain a listing in the regulations by submitting their products for testing (under contract to Defra on behalf of the UK Government and devolved administrations).

We propose to introduce legislation to move from updating these lists through regulations to online lists. We recognise this would be more beneficial to businesses as it overcomes the delay between testing the new product and obtaining a listing and results in reduced burdens for businesses.

The proposed changes benefit consumers by allowing new technologies to be brought to market more rapidly as the on-line lists would be updated on a more frequent (e.g. monthly) basis.

Smoke control is currently limited to indoor installed appliances such as log burners and stoves which use the existing property chimney or other suitable infrastructure.

No consideration is currently given to the impact of outdoor solid fuel burning appliances (e.g. barbeques, chimineas, and firepits), or the fuels they use, on air quality.

Existing statutory nuisance legislation exists to deal with incidents of smoke, fumes, gases, dust and odours emitted from premises.

The legislation does not cover outdoor burning appliances.

We will investigate the practicalities, advantages and challenges of regulating outdoor appliances and fuels.

As with burning more generally, we will promote good practice and raise awareness of the impact these appliances can have on air quality, especially in concentrated or built up areas.

We will explore the merits of introducing various tiers of SCA. This will allow Local Authorities to choose a more or less stringent approach to implementation and enforcement based on pollution levels.

Many people enjoy fireworks and traditional bonfires, particularly at certain times of the year.

However, they can also cause distress to certain people and animals, and emit pollutants which may affect the respiratory systems of healthy individuals as well as those already suffering from respiratory diseases such as asthma and chronic obstructive pulmonary disease (COPD).

25. gov.wales/written-statement-independent-review-road-user-charging-wales

We will use the UK Environment Bill to amend legislation to allow Welsh Ministers to publish an online list of fuels and appliances, moving away from the method of updating through Statutory Instruments.

It is expected this Bill will be enacted during this Westminster Parliamentary session.

Action:

We will amend existing Smoke Control regulations, through a Clean Air Act for Wales in the next Senedd term.

This will ensure Local Authorities have the tools required to undertake effective enforcement against offenders.

In 2021, we will investigate the contribution domestic bonfires and fireworks make to levels of PM_{2.5} emissions.

We will work with other UK administrations to develop further regulatory and/or non-regulatory action, where it is needed in this, taking an approach which is sensitive to the cultural significance of these practices.

We will shortly be consulting on domestic burning, and this will include consideration of whether outdoor solid fuel burning appliances and the fuels they use should be subject to regulation.

We will develop necessary regulations during 2021.

Domestic Combustion

The term domestic combustion refers to residential burning for heating, such as boilers and fireplaces, cooking, both indoor and outdoor, and includes housing and garden machinery.

In this Plan, we focus on reducing emissions from indoor domestic burning of solid fuels such as wet wood and traditional house coal.

We recognise a significant number of people rely on solid fuels as a primary means to heat their home, particularly in rural areas which are off the gas grid.

However, we are mindful of the need to ensure mitigation schemes do not promote the burning of other fossil fuels, but rather use those solutions only where other sustainable low pollution options are impractical. We will consider ways in which these households can be supported to transition away from reliance on solid fuels.

This is addressed below in the section on improving domestic energy efficiency.

According to the National Atmospheric Emissions Inventory²⁶ (NAEI), residential sector emissions had fallen significantly from 1990 to 2002, reflecting a decline in coal use.

Emissions from this sector have returned to similar levels seen in 1990. This is attributed in part to increased use of wood as a fuel for homes.

Whilst there is uncertainty around the exact contribution, domestic burning of solid fuels is considered to be the largest single contributing source of the UK's levels of PM_{2.5}.

An increase in use of wood burning stoves, particularly in urban areas, has coincided with a rise in particulate emissions. These appliances tend to complement existing forms of heating such as gas and electricity. Domestic use of fuels creates emissions, which affect households, air quality in the immediate neighbourhood and wider areas.

Measures to reduce levels of harmful PM_{2.5} have the potential to reduce associated levels of PM₁₀, CO, SO₂, VOCs, BaP and other Dioxins. Using cleaner fuels in a correctly installed efficient appliance, maintained by a professional and in an appropriate setting makes a big difference to emission and concentration levels.

26. naei.beis.gov.uk/

We will be using the Multi Pollutants Measures Database (MPMD) findings to better understand the most effective behaviours and interventions to address pollution from domestic combustion. Measures to reduce emissions will be enhanced by raising awareness of the health impacts of burning and encouraging a shift to less polluting fuels and appliances.

A Task and Finish group of key stakeholders was established in February 2019 and includes industry, fuel suppliers, PHW, Healthy Air Cymru and Local Authorities. This group has been considering available evidence and assisting in developing a comprehensive package of interventions.

We will work with industry to support initiatives which provide consumers with advice on the most efficient solid fuel heating appliances and guidance on the use of appropriate fuels.

Action:

We will prohibit the sale of wet wood and traditional/bituminous house coal, subject to consultation. We aim to introduce the necessary legislation in 2021, with bans commencing during 2023.

We will regulate to ensure only the most efficient appliances are available for purchase and installation by 2022. The regulation will include installation of second-hand appliances.

We will regulate to require annual maintenance of domestic burning appliances by a certified professional, subject to review. This review will be undertaken by 2023.

We will work with industry and other governments to establish test standards for new manufactured solid fuels entering the market by 2024 to ensure they are compliant with appropriate regulations on smoke and sulphur emissions.



Improving domestic energy efficiency

Improving the energy efficiency of the homes of people living on a lower income is one of the ways in which we are reducing emissions from homes and tackling fuel poverty.

Since its launch in 2011, the Warm Homes Programme has been supporting the installation of energy efficiency measures in Welsh homes. Measures are recommended based on a “whole house” assessment of need.

This helps to tackle harder to treat homes where the impact of fuel poverty tends to be most severe. Under the programme, our area based Arbed and demand led Nest Schemes provide the best opportunity to lift people struggling to meet the cost of their home energy needs out of poverty by improving the energy efficiency of their home.

We expect to consult on a new plan to tackle fuel poverty by the end of September 2020. We aim to publish the final plan by the end of February 2021. Reducing fuel poverty over the next fifteen years requires expanded advice and support for people experiencing difficulty securing better energy deals. It also requires an expansion and extension, in some form, of the Warm Homes Programme.

Any future programme will be created in conjunction with proposals to decarbonise existing homes to meet our climate change and air quality legal obligations.

Action:

We will investigate options to support households to ensure no-one slips into or remains in fuel poverty as a result of any prohibition on fuels or appliances, or an extension to the use of SCAs.

We aim to have a scheme in place by 2022, before any transition period for use of prohibited solid fuels expires.

Indoor air pollution

Indoor air quality is increasingly recognised as an important aspect of well-being and health because much of our time is spent indoors. Everyone is exposed to air pollution whether in the home, at school or at work, travelling, or during leisure activities.

Levels of indoor emissions and ventilation are important factors in managing personal exposure.

The same external emissions from open fires and stoves also occur in the home. Emissions of formaldehyde or NMVOCs can occur from many other sources including, but not limited to, carpets, upholstery, cleaning products and air fresheners.

Indoor air pollution can affect individuals with existing health conditions. It is important to follow manufacturer’s instructions for product use. It is always important from a public health perspective to ensure good ventilation within any building.

We need improved evidence on which to base the technical, behavioural and policy approaches used to assess and manage the inside-outside continuum of exposure to air pollution.

We are working with researchers to understand how climate and other factors affect indoor air quality. The work will help us take account of current evidence on indoor air pollution and inform future communication interventions on indoor air pollution, including ways to reduce exposure risks in the existing and future housing stock.

During 2020, we will seek funding from the UK Climate Resilience Embedded Researcher scheme (funded by UK Research and Innovation) to appoint a 12 month academic fellowship to examine the resilience of buildings in Wales to climate driven impacts and provide practical recommendations for risk based adaptation.

Part of this work will focus on how housing design, materials and use affect levels of indoor air pollution and consideration of mitigation measures.

Following the UK's exit from the European Union, the regime governing chemicals in the UK has changed.

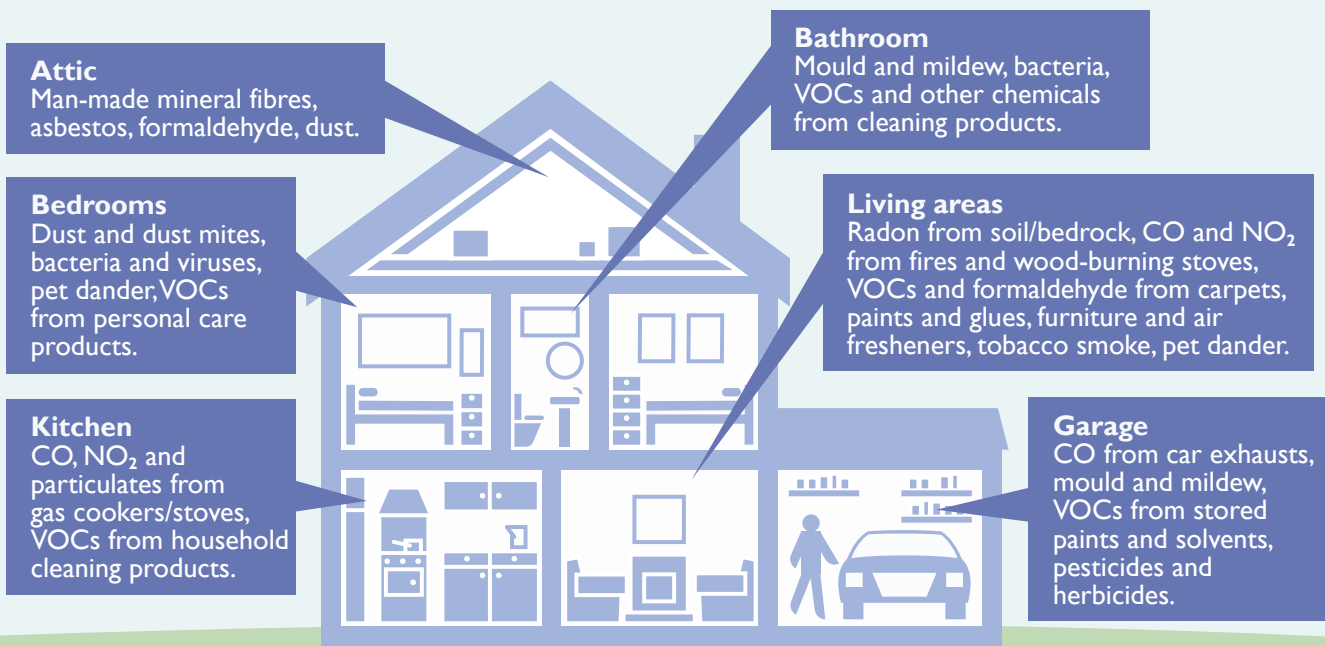
We aim to ensure the chemicals regulations in the UK uphold a high level of protection for human health and the environment, including regulating articles and products containing chemicals which contribute to poor indoor air quality.

Action:

We will continue to work with academia, public health organisations and other partners to develop and respond to new evidence on indoor air pollution as it emerges.

We will raise people's awareness of indoor air pollution through communication interventions, including ways to reduce exposure risks.

Sources of Indoor Air Pollution



Sources and types of indoor air pollution encountered in homes.

VOCs = volatile organic compounds.

Please note that these lists are not exhaustive and that the actual pollutants present, and their amounts, will vary from household to household.

A Clean Air Act for Wales

The First Minister prioritised the development of a Clean Air Act for Wales in his leadership Manifesto to ensure our children can go to school, be active and play outside safely without fear of respiratory problems, such as asthma, because of pollution levels in some of our towns and cities.

We will develop a Clean Air Act to enhance existing legislation and bring forward new legislation to deliver air quality improvements in Wales. The aim of the Act will be to deliver this commitment and reduce the burden of poor air quality on human health, our economy, biodiversity and natural environment. The Act could also support wider actions to address the climate emergency.

The current focus for the Act, based on initial stakeholder and cross-Government engagement, will be to introduce a fit for purpose air quality legislative and regulatory framework.

This is likely to include, but is not limited to:

- New powers for smoke control linked to tackling air pollution from domestic burning (PM_{2.5})
- A requirement for a Clean Air Plan / Strategy to be published / reviewed every 5 years
- Potential new air quality targets (for example, taking account of WHO guidelines for air quality)
- Clarified and strengthened local air quality management legislation
- Strengthened powers to address road vehicle idling
- Consolidated powers to implement Clean Air Zones / Low Emission Zones
- Focused powers to protect vulnerable groups from the effects of air pollution
- Enhanced air quality monitoring and modelling
- A potential new duty on public bodies to adhere to guidance encouraging different ways of working and actions to reduce air pollution and support decarbonisation.

Consideration will be given to existing regulatory powers, enforcement and sanctions, and whether there is a case to strengthen these.

Evidence provided during the Clean Air Plan consultation will be used to inform actions to ensure the most appropriate tools are available.

We will also review legislative measures being taken by other UK administrations to ensure we deliver the greatest benefits to Wales in the implementation of new legislation.

Action:

We will publish and consult on a White Paper on a Clean Air Act for Wales before the end of this Senedd Term.

Cultural change to deliver air quality improvements as individuals, organisations and as a nation

Public awareness about air pollution

Communications and behaviour change

This Plan demonstrates the wide-ranging actions we are developing and delivering to improve air quality. However, we cannot tackle air pollution alone. Everyone has a part to play in supporting collaborative action to achieve cleaner air.

Effective communication about air quality to deliver behaviour change is key to protecting the environment and the health of current and future generations.

We will work with public bodies to be proactive in communicating problems, progress and practical solutions associated with air quality. We are using a focused approach to our communications, which develops and delivers work through the following three streams:

- Information Provision
- Increasing Awareness
- Promoting and Supporting Local Initiatives

Further detail about each stream and how it will be delivered is set out below.

Information Provision

It is vital we provide information regarding air pollution, which is easily accessible to the public. People expect high quality, useful information from government and public health agencies regarding:

- The status of their local air quality.
- The health impacts of air pollution.
- The actions they can take to reduce their personal exposure and potential contribution to air pollution.

The Air Quality in Wales website currently includes data from monitoring sites to help people determine whether they or their families are likely to be at risk from air pollution. Users are referred to health guidance messages corresponding to the forecast level of pollution. However, the website is limited in scope.

We will redesign the existing website and this will become our central information hub with improved maps to provide a clearer picture of air quality across Wales. We will broaden its scope to include easily accessible information on pollutants and their health impacts, exposure reduction guidance, specific guidance for vulnerable groups and an improved children and young people section. The website will also become our central repository for local and national air quality data.

We will use the Air Quality in Wales hub to share ideas, information and best practice between local delivery partners.

This will help foster collaborative ways of working and support connected and cohesive communities.

We will use social media to promote key information and messages to increase awareness and support local initiatives. There will also be a range of behaviour change suggestions and up to date information regarding current action being taken to improve air quality. In addition to digital communications, we will develop physical materials which can be shared with communities.

For example, we will work with PHW and through the Healthy Weight – Healthy Wales Strategy to explore how we can use settings such as hospitals, GP surgeries, and leisure centres to promote healthy and informed choices.

Information about air quality is often deemed to be written in technical language which can create barriers and reduce accessibility. We will work with stakeholders to ensure materials are accessible to all and easy to understand.

Seeking a wide and diverse range of views will be crucial to ensure materials meet the needs of all communities. We will co-ordinate messaging with PHW to ensure information and advice is consistent.

Increasing Awareness

We are committed to taking a lead role in raising public awareness about air quality. We have started this through supporting Clean Air Day.



Clean Air Day is an annual, UK-wide awareness-raising day run by the charity Global Action Plan (GAP). It provides an opportunity to increase understanding about air quality through supporting local activities, developing free resources and delivering social media campaigns²⁷.

We will continue to develop initiatives to increase awareness of air pollution and we will design them using the latest communications and behaviour change research.

27. Resources can be viewed and downloaded for free at: www.cleanairday.org.uk/wales

Promoting and supporting local initiatives

Many areas in Wales share similar air quality issues, however, all communities have unique circumstances. Therefore, we recognise local delivery is key to building sustainable behaviour change. As part of the integrated approach set out in Prosperity for All: the national strategy²⁸, we are striving to deliver communications and behaviour change projects that support, empower and build on community initiatives.

We will work with local delivery partners to support existing and future initiatives. We will also work closely with Local Authorities to ensure resources support communications activities related to their LAQM duties.

Citizen science projects have the potential to encourage behaviour change. In 2018 we funded the 'Young Dragons' initiative which was delivered by Keep Wales Tidy through the Eco-Schools network.

The initiative provided monitors to the participating schools and introduced pupils to the causes, impacts and mitigating actions of air pollution in a local context.

Taking on board the evaluation from this initiative and feedback from stakeholders, we will explore potential future citizen science projects and the best vehicle to deliver them.

Ongoing evaluation helps us to deliver effective activities. We will work with stakeholders at the local, regional and national level to ensure we develop appropriate and relevant indicators to measure impact and highlight areas for improvement.

Action:

We will enhance the existing Air Quality in Wales website to develop a communications and information hub.

The initial redesign will be complete by the end of 2021 and we will add and develop new features over the next five years.

Over the next five years, we will deliver national air quality communications and campaigns such as Clean Air Day.

Over the next five years, we will work with local organisations to support delivery of local air quality initiatives.



Clean Air Day 2019 at Caerphilly Castle

Education and the new Curriculum for Wales

The Curriculum for Wales for 3 to 16 year olds will be taught in schools and settings from 2022²⁹. It includes many opportunities to develop greater understanding of air quality, pollutants and personal contributions to preserving and improving our environment.

The new curriculum is comprised of six Areas of Learning and Experience. Air quality and the impacts on health and the environment are cross-curricular issues which are explored through the Areas covering health and well-being, science and technology, and humanities.

Learning includes:

- Developing an understanding of harmful factors in our environment and how this allows us to make informed decisions, including prevention and treatments for diseases.
- Studying the effects of industrial activities on Wales' ecology and the effects of activities in Wales on ecosystems in other countries.
- Investigating indoor and outdoor environments in a safe and systematic way.
- Investigating how industry past and present has impacted on human health and the environment.

Action:

We are working with education partners to promote and develop educational resources in support of the new curriculum in advance of its introduction from 2022.

This includes developing opportunities which lead to greater understanding of air quality, pollutants, evidence and interpretation, and developing personal awareness and responsibility.

Empowering workforces to improve air quality

There is a vital role for public and private sector organisations to raise awareness of and reduce their impact on air quality. It is important to enable and empower workforces, across the various sectors of the economy, to address air pollution.

In April 2018, Welsh Government and PHW published 'Advice for NHS Wales staff - Working together to reduce outdoor air pollution, risks and inequalities'³⁰. This guidance complements existing air quality responsibilities and uses four principles to influence, communicate and champion air quality improvement within and beyond NHS.

These are:

- Supporting others to assess and appropriately prioritise air pollution in local areas.
- Engaging senior local decision-makers to take local action on air pollution.
- Communicating with the public (including patients) about local air pollution.
- Championing air quality improvement both outside and inside their organisations.

Very few of the actions suggested in the guidance are unique to NHS. The majority are equally relevant to other public and private organisations, including the voluntary sector. Therefore, we will review this guidance with the intention of adapting and maximising its potential reach.

It is important to ensure actions proposed help to deliver air quality, health and decarbonisation benefits simultaneously. Consideration will also be given to establishing a reporting mechanism to help organisations demonstrate progress and share details of how they are implementing the guidance. We will consider how the guidance can be used, acted upon and delivered by organisations and whether it needs to be put on a statutory footing.

Action:

By 2022, we will produce new statutory guidance for the public, private and voluntary sectors to empower workforces to tackle air pollution, subject to consultation.

29. hwb.gov.wales/curriculum-for-wales

30. Advice for NHS Wales staff - Working together to reduce outdoor air pollution, risks and inequalities - <https://gov.wales/sites/default/files/publications/2019-06/working-together-to-reduce-outdoor-air-pollution-risks-and-inequalities.pdf>

Environment

Taking action to support our natural environment, ecosystems and biodiversity



The natural environment provides our essential resources. This includes the air we breathe, the water we drink and the food we eat. Poor air quality has a significant impact on biodiversity and ecosystems, making them less resilient and less able to provide the clean water and food sources upon which we are reliant.

We have a legislative³¹ and policy framework to support the natural environment to ensure the ‘sustainable management of natural resources’ (SMNR). In addition, our Natural Resources Policy³² sets out our priorities for SMNR. This includes the creation, protection and enhancement of resilient and connected ecosystems. The Natural Resources Policy identifies that a mix of actions to address air and noise pollution are needed. These include addressing pollution from traffic and other sources and improving the ability of the natural environment to absorb pollutants, for example through tree planting, green infrastructure and restoring sensitive habitats damaged by air pollution.

To achieve our goal of reversing the decline in biodiversity, we will focus on both restoring our most precious habitats and growing green spaces and nature in our towns and cities. These twin actions will lead to more resilient and connected ecosystems, which can only flourish long term if we undertake the actions within this plan to improve air quality across Wales.

Overall, like human health, our natural environment and ecosystems can be affected by poor air quality leading to direct and indirect losses in biodiversity, modification of habitats and damage to ecosystem condition and functioning. Pollutants can settle out of the air onto land and water bodies, which can be taken up by plants and animals or cause changes to both land and water-based habitats. Poor air quality can also affect our climate with some pollutants having a warming effect while others contribute to cooling³³.

31. Part 1 of the Environment (Wales) Act 2016

32. gov.wales/natural-resources-policy.

33. Climate change and air, European Environment Agency article: www.eea.europa.eu/signals/signals-2013/articles/climate-change-and-air

Evaluating evidence to support policy

Reducing levels of air pollution is a priority, and improved evidence in relation to air quality would provide strong support for the wider implementation of SMNR and natural resources policy.

Predicting the impact and effect of change is part of the Environment & Rural Affairs Monitoring and Modelling Programme (ERAMMP) funded by Welsh Government³⁴. Data from this programme will assist in creating new approaches to supporting the land-based economy. Improved air quality evidence will complement and enhance the ERAMMP evidence base and vice versa, providing mutual benefit.

Action:

A suite of indicators is under development to monitor the state of biodiversity in Wales. This includes the National Indicators under the Well-being of Future Generations Act, and an indicator for air quality.

It is expected the majority of these indicators will be in place by the end of 2021.

Improve biodiversity and ecosystem health to enhance resilience to air pollution and climate change impacts

The evidence and partnerships developed through area statements will enable the development of resilient ecological networks which are an important nature based solution to halting and reversing biodiversity loss.

These networks will underpin Wales' ecosystem restoration approach to support biodiversity and the provision of ecosystem services.

Our overall commitment to biodiversity is set out in our Nature Recovery Action Plan (NRAP)³⁵, the first part of which is our biodiversity strategy and states our ambition to reverse the decline in biodiversity.

The actions to deliver NRAP will include reference to the Clean Air Plan for Wales.

Natural Resources Wales will use their leadership role in encouraging others to take action. The area statements were published in April 2020. Their evidence base includes opportunity and constraint mapping to show where there are opportunities to take collaborative action.

We will undertake a multi-year programme to restore our peatlands, enabling them to better sequester carbon, contribute to biodiversity and water management and help to improve their resilience to pressures such as air pollution and climate change.

Action:

We will develop actions to reduce the impact of air pollution in the context of wider proposals highlighted in the Nature Recovery Action Plan.

34. Environment & Rural Affairs Monitoring and Modelling Programme erammp.wales/en

35. Nature Recovery Action Plan, Welsh Government [2015.gov.wales/sites/default/files/publications/2019-05/nature-recovery-action-plan-2015.pdf](https://www.gov.wales/sites/default/files/publications/2019-05/nature-recovery-action-plan-2015.pdf)

Supporting a Greener Wales

It is essential all communities in Wales are able to enjoy the benefits of nature in their local areas. Our recent experiences of the COVID-19 crisis has shown just how much people value their local green spaces and want to spend time in them.

Action to reduce air pollution has a key role in collective cross-Government and sector action to halt and reverse the decline in nature and to grow the environment for the benefit of future generations.

Action:

Through our Local Places for Nature Programme, we will support communities to create 'nature on your doorstep', with a particular focus on urban and peri-urban areas.

Intelligent tree and hedge planting supporting air quality improvements

Woodlands are known to contribute to improving overall air quality and reduce people's exposure to pollution, not just in urban areas but also in the rural environment ³⁶.

Increasing woodland cover in Wales can bring benefits of improved air quality, particularly where woodland is adjacent to agricultural or industrial buildings, and appropriately designed in urban or transport corridors.

An increase in woodland cover is essential to enable Wales to achieve various international and domestic climate change targets and is in line with the Natural Resources Policy when considered with the wider benefits woodlands provide.

As set out in our Woodlands for Wales Strategy, we aim to increase woodland by at least 2,000 hectares per year from 2020, rising to 4,000 hectares per year as rapidly as possible.

In March, we launched a new window of the Glastir Woodland Creation scheme, with a fourfold increase in the budget to £8 million. This will provide payments to landowners for creating new woodland in Wales and is a significant step towards our targets.

The 'right tree in the right place' is an important consideration to ensure all the ecosystem services woodland provides (including, but not limited to carbon capture) are maximised. Such new woodlands must meet the UK Forestry Standard and the principles of Sustainable Management of Natural Resources (SMNR).

They are expected to be multifunctional – providing a range of ecosystem services such as carbon sequestration, biodiversity habitat, amenity and shelter as well as timber, depending on their objectives. Urban trees and vegetation, if carefully planned, have wider benefits for well-being including reducing people's exposure to air pollution.

The Air Quality Expert Group³⁷ concluded vegetation and trees in particular are beneficial for air quality but the extent of the reduction in pollution is small and they could have negative air quality impacts in urban settings in some scenarios. Guidance is available and designed to help in this area.

Forestry is known to affect the acidification of waters, mainly due to the ability of forest canopies to capture more acid sulphur and nitrogen pollutants from the atmosphere than shorter types of vegetation. Emission control policies introduced in the 1980s have improved air quality and have led to evidence of recovery in acid sensitive catchments ³⁸.

36. ERAMMP Year 1 Report 24: Welsh National Natural Capital Accounts - Ecosystem Service Accounts for Woodland, Farmland and Freshwater Habitats - Environment and Rural Affairs Monitoring & Modelling Programme(ERAMMP) - 2019

37. ERAMMP Year 1 Report 24: Welsh National Natural Capital Accounts - Ecosystem Service Accounts for Woodland, Farmland and Freshwater Habitats - Environment and Rural Affairs Monitoring & Modelling Programme(ERAMMP) - 2019

38. Air Quality Expert Group (AQEG) Report: Impacts of Vegetation on Urban Air Pollution, 2018, uk-air.defra.gov.uk/library/reports.php?report_id=966

Guidance has been introduced as part of the UK Forest Standard, the UK Government's standard for sustainable woodland management, in order to ensure new planting or felling operations do not exacerbate issues in vulnerable areas.

However continuing to decrease the level of pollutants in the atmosphere remains important.

The National Forest programme will see a significant increase in planting across Wales.

This will include trees planted near local communities to support their health and well-being, for biodiversity gain as well as trees offering commercial opportunities and in urban areas to reduce people's exposure to air pollution. In the first year of the programme, we will complete a variety of demonstrator projects to test different approaches and assess their benefits in different areas.

These demonstrator projects will focus on:

- Delivering new community woodlands, including in urban areas.
- Restoring ancient woodlands on the Welsh Government Woodland Estate and establishing initial National Forest sites.
- Developing the resilient forest sector that will be needed to deliver the National Forest.

Action:

We will increase the amount of woodland by at least 2,000 hectares per year, rising to 4,000 hectares. This will deliver a range of ecosystem benefits, including the interception of air pollutants.

We will deliver a National Forest for Wales, which includes new areas of community woodlands in urban and rural areas. These will help to reduce people's exposure to air pollution.

We will promote guidance and best practice to Local Authorities and urban planners to better design urban tree planting and plant species which maximise benefits by reducing people's exposure to air pollution.

Agriculture and Land Use

Ammonia emissions from farming

Farmers are in a unique position as the people who produce food, shape the landscape and support rural communities. For farming, the focus in this plan is on ammonia because it contributes around 85% of Welsh ammonia emissions.

In low concentrations on its own, ammonia has no direct impact to human health but it is one of the gases, along with carbon dioxide (CO₂) and sulphur dioxide (SO₂), which combine to make particulate matter (PM).

When ammonia falls on to the land, it interferes with ecosystems. It can acidify soils and freshwaters, 'over-fertilising' natural plant communities. The extra nitrogen can increase the growth of some species, like rough grasses and nettles. These out-compete other species, which have lower nitrogen needs. Ammonia is also poisonous to lower plants like lichens, making it impossible for many of them to survive. The loss of these sensitive plants leads to a change in the way the ecosystem functions and affects the food available, leading to a loss of species. The location of ammonia sources can be very important for reducing the risk of effects on plants and people.

For the UK to meet the NECD target for 2030, ammonia emissions need to be 16% lower compared to 2005 levels. Compared to the other NECD pollutants, ammonia emissions have gone up and down, falling between 1990 and 2007 but rising since then.

The majority of agricultural ammonia emissions are from livestock farming (mainly cattle). Nitrogen is lost to the air as ammonia when urine mixes with muck and from spreading fertiliser.

The causes of ammonia emission will be different on every farm but, in general order of overall importance, they are:

- slurry and muck spreading
- livestock housing
- fertiliser, especially urea
- grazing
- muck and slurry storage.

Farming-based solutions

The vast majority of farmers take their environmental responsibilities seriously but we will not meet the NECD target for ammonia emission without more improvements. Many of the actions which lower ammonia emissions can also lower those for carbon and have financial benefits for farmers implementing them. We will give farmers the support they need to farm sustainably, producing nutritious food as well as improving air quality and other environment benefits.

We will do this by:

- Giving farmers up-to-date advice on how to lower ammonia emissions.
- Supporting them to farm sustainably through a new payment scheme.
- Introducing new legislation (when advice and support are unlikely to reach the same outcome).

One of the focuses of our new payment scheme will be on low input grass-based systems because this will allow Welsh family farms to produce food at a low cost and in a way which is amongst the most sustainable in the world.

Nutrient management planning will also be important to reduce fertiliser use and the unnecessary loss of nutrients.

As well as from fertiliser use, ammonia can be emitted whenever slurry or muck is exposed to the air, which means any gains in one part of the process can be undone in another.

Because of this, the scheme's on-farm actions to lower emissions need to be used together from when muck and slurry is produced, stored and then spread.

Through supporting the creation of more local supply chains, we will help farmers add value at the same time as improving air quality and lowering their carbon footprint.

Information and advice

Information and advice are important tools for us to help farmers understand how actions to lower ammonia emissions can improve air quality and bring real business benefits. Our Code of Good Agricultural Practice (CoGAP) guidance on reducing ammonia losses from agriculture explains the practical steps farmers, growers, land managers, advisors and contractors can take.

Farming Connect is our service for farmers to access knowledge, help and advice to improving their business.

For example, advice is available on an individual or group basis for slurry and farmyard manure management and storage plans, farm infrastructure including clean-dirty water separation as well as slurry and manure storage.

Action:

We will make sure Farming Connect continues to give farmers advice and support to ensure best available practices are adapted to lower ammonia emissions.

This will include improving uptake of current and future support schemes, such as Sustainable Production Grant and Farm Business Grant, which support farmers to invest in infrastructure and technologies to achieve these reductions.

Sustainable farming scheme

The Sustainable Farming and Our Land green paper, published in July 2019, described how improvements in air quality may be delivered through the concept of Sustainable Land Management (SLM). It will also implement specific actions on the land, including soil and animal husbandry, habitat and nutrient management and tree planting.

An effective regulatory framework will help to protect and maintain Wales' natural resources and deliver SLM outcomes. We propose to introduce National Minimum Standards based on the verifiable standards which are currently enforced within the EU's 'Cross Compliance' regime.

The National Minimum Standards will provide clarity to farmers, land managers, businesses and the public about the legal requirements which should be met. This regulatory baseline will provide the foundation for any future agricultural support scheme.

To support the implementation of the standards we propose to streamline the inspection and monitoring approach where necessary to ensure monitoring is efficient, risk-based and effective.

They will require effective and proportionate enforcement mechanisms and apply to all farmers and landowners, not just those who are receiving financial support from the Welsh Government.

We want to ensure enforcement acts as an effective deterrent, is applied fairly, proportionately and ultimately helps to deliver the SLM outcomes we all want to see.

Action:

In December 2020, we will consult further on proposals for a reformed regulatory framework and financial support scheme to support delivery of SLM outcomes through the Agriculture in Wales White Paper. SLM outcomes include air quality, which will be supported through actions on the land to improve soil and animal husbandry, habitat and nutrient management and tree planting.

Regulation

NRW regulates larger intensive pig and poultry units under the environmental permitting regulations. The Best Available Techniques Reference Document for the Intensive Rearing of Poultry or Pigs³⁹ set the standards these farms have to meet.

NRW will only issue an environmental permit allowing the unit to operate if it is satisfied communities, the environment, including any sensitive habitats, will be protected and no significant pollution will be caused.

Land use planning has a role managing the cumulative effects of agricultural emissions. Each Local Planning Authority (LPA) determines planning applications in line with its Local Development Plan (LDP).

LDPs have not previously addressed agricultural developments in any great detail. We have set up an intensive agriculture working-group to consider how LPAs can better understand the impact on the environment during plan preparation and the consideration of planning applications.

We intend to introduce a new law to tackle agriculture pollution. It will replace the rules for Nitrate Vulnerable Zones and for the storage of silage and slurry. This will simplify the rules giving one set of minimum standards which apply to all farms. The new rules are based on good practice standards, will target polluting activities and will contribute to achieving air quality targets.

This will include:

- Nutrient management planning.
- Matching fertiliser application to the requirement of the crop.
- Protecting water from pollution related to when, where and how fertilisers are spread.
- Manure storage standards.

The table at Annex A provides a summary of the range of advice, support and legislative commitments and actions, which are designed to meet air quality targets.

Where evidence shows new legislation may be required to reduce emissions from agriculture, further consultation will be carried out.

Emissions from manufactured fertilisers is an area which has been identified as potentially requiring regulatory change.

Our general approach will be to use future legislation only where advice and support is unlikely to reach the necessary outcome. We will support farmers through the sustainable farming scheme to help them make changes before future legislation comes in to force.

We will consult publicly, with impact assessments, on any changes to legislation we are proposing to make.

Action:

We intend to consult on a new Technical Advice Note, by the end of 2020.

This will make sure planners know how to access the right advice to help prepare LDP policies and robustly determine planning applications.

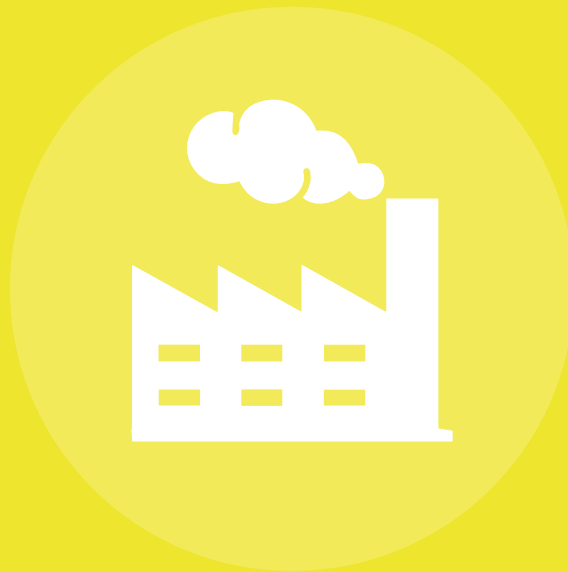
We will introduce regulations to tackle agricultural pollution, which will contribute to achieving air quality targets including Wales' contribution to a 16% reduction of UK ammonia emissions by 2030.

In co-ordination with other UK administrations, a consultation on reducing emissions from manufactured fertilisers will take place before the end of 2020 to ensure Wales' contribution to a 16% reduction of UK ammonia emissions by 2030 is achieved.

39. ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/best-available-techniques-bat-reference-document-intensive-rearing-poultry-or-pigs

Prosperity

Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales



This section of the Plan focuses on how we will support delivery of our well-being goal to achieve a 'Prosperous Wales'. Businesses need to be innovative, productive and contribute to a low carbon society whilst recognising the limits of the global environment.

We will work with industry to ensure resources are used efficiently and proportionately. We will work with business to develop a skilled and well-educated population in an economy which generates wealth and provides sustainable employment.

Industrial Air Pollution

We recognise the level of investment many companies have already made in their businesses to reduce pollution.

We have made significant progress to reduce air pollution from industry through a combination of regulation, investment and technical advances.

However, further reductions must be achieved. We will work with stakeholders to identify the most appropriate mechanisms for industry to reduce air pollution further as they achieve our decarbonisation and energy efficiency goals.

Action:

Working with partners including Defra, the Environment Agency's Local Authority Unit, Local Authority regulators and NRW we will review process guidance for Small Waste Incineration Plant (SWIPs) and crematoria.

This will bring them up to date to support more effective emissions controls at these sites.

We will consider the evidence on emissions from small-scale combustion plant, including small-scale commercial biomass combustion plant.

This includes combustion plants in the 500kW to 1MW thermal input range, where initial evidence suggests there is a regulatory gap.

We will introduce new regulatory controls where evidence supports this.

Action:

We will consider the evidence on emissions from Specified Generators used for research, development and testing, introducing measures excluding them from the provisions of the environmental permitting regime if the evidence supports this.

This would align them with the provisions which apply to Medium Combustion Plant used for research, development and testing purposes.

We will consider the opportunity to take forward the above actions collaboratively with the other governments of the UK to deliver a consistent approach for industry, where this is appropriate.

Best Available Techniques

The Environmental Permitting (England and Wales) Regulations 2016 aim to achieve a high level of protection of human health and the environment by reducing harmful industrial emissions, including to air.

Amongst the integrated industrial pollution control requirements the regulations set out, they apply the concept of Best Available Techniques (BAT) for pollution control. BAT Conclusions, which define BAT for every regulated sector, are updated at EU level.

From the end of the Transition Period, a new domestic process for updating BAT across the UK nations will begin.

Action:

We will implement a new, domestic, process for developing and adopting BAT Conclusions.

This will ensure pollution control techniques applied by industry in Wales, including those used to reduce emissions to air, continue to develop and improve according to best evidence from the EU and elsewhere.

Pollution in Port Talbot and the Swansea Valley

In the short term, we will work with industrial regulators to focus on geographical regions and sectors facing particular industrial air quality challenges such as Port Talbot and the Swansea valley.

We introduced our Short Term Action Plan (STAP) for Port Talbot in 2012 in recognition of the risk to exceeding the legal limit of PM₁₀. The STAP was established to ensure systems, process and defined actions are in place to minimise exceedances of PM₁₀.

Through engagement with key stakeholders, we will undertake a review of our STAP during 2021 to ensure it remains effective and fit for purpose. This will be informed by the findings of a review undertaken by the University of the West of England. As part of this review, we will consider approaches to address nuisance dust. We will also investigate the merits of repeating a high time resolution monitoring study over a longer period to better define the source contributions in the area.

We will continue to review and act on evidence in relation to concentrations of benzo[a]pyrene in Port Talbot, to bring about compliance with the Target Value. We will also work with stakeholders to explore opportunities for addressing concentrations of nickel in the Swansea Valley to deliver compliance with the Target Value as soon as practicable.

Action:

We will undertake a review of our Short Term Action Plan (STAP) for Port Talbot in 2021 to ensure it remains effective and fit for purpose in its aim of minimising short term air pollution (PM₁₀) episodes in the area.

Economic Development

The Welsh Government's approach to business and the economy is set out in our Economic Action Plan (EAP) published in 2017.

This outlines the range of actions we are taking to drive inclusive growth and future-proof the economy.

Decarbonisation is a clear and consistent thread throughout the EAP and features strongly in our prism for delivering direct support for businesses.

This is centred on the Economic Contract, Calls to Action and the Economy Futures Fund.

To access direct financial support through the Economy Futures Fund, businesses must demonstrate they share our values (the Economic Contract) and they are delivering investment designed to future proof the Welsh economy (the Calls to Action).

As part of the Economic Contract, we test a business' attitude to managing and lowering its carbon footprint (amongst other positive behaviours), whilst decarbonisation forms one of five Calls to Action designed to target future proofing investment.

The Economic Contract is intended to constantly evolve to ensure it fully reflects our priorities. Work is ongoing to consider how it can be strengthened and potentially extended to other forms of support provided to businesses.

Innovation and Research and Development (R&D) feature within other Calls to Action and are highly relevant given decarbonisation will in part be shaped by technological advances, driven by innovation and R&D.

Resource efficiency

Wales is on course to become a zero waste nation by 2050. We consulted on a new circular economy strategy, Beyond Recycling from 19 December 2019 to 24 April 2020.

The consultation proposed a pathway to achieving the Welsh Government's strategic objectives of zero waste by 2050, reducing emissions and taking the opportunities from a more circular economy. We will publish a final strategy document by the end of 2020.

Using resources more efficiently by keeping them in use and avoiding waste is important to air quality because pollution is a side effect of inefficient processes. Adopting more efficient and circular solutions can prevent as much pollution arising.

Circular economy action is therefore an important contribution to the prevention of pollution. Put simply, less waste will reduce emissions to air as will reducing the use of landfill and incineration.

We have a legal duty to take necessary measures to ensure waste management is carried out without endangering human health and without harming the environment.

This is reflected in the way waste facilities are permitted and regulated in Wales.

Measures to reduce emissions to air, water and land from waste activities are achieved through environmental permitting.

As part of ongoing regulatory work, NRW have worked with operators to help deliver improvements in the collection and use of landfill gas where possible. Regulatory effort has resulted in improvements in infrastructure and operating techniques on a number of sites in Wales.

NRW continues to work with operators to ensure they manage landfill gas appropriately, and ensure gas management forms part of the compliance plan for each site.

Further contributions to improved air quality from the sector will be achieved through reduction of biodegradable waste to landfill.

We have introduced a range of measures, including work on waste prevention, landfill disposals tax, statutory targets for Local Authorities and separate food waste collection to reduce biodegradable waste being landfilled.

Our target is for less than 5% of all wastes to be landfilled by 2025.

We are supporting the transition from diesel to ultra-low emission refuse collection vehicles in the public sector fleet. Although these vehicles only making up around 1% of the public sector vehicle fleet, they contribute around 20% of vehicle emissions.

Taking action here will reduce carbon emissions and improve air quality.

Ultra-low emission powered vehicles (ULEVs) can reduce dependency on imported fossil fuels and help support local renewable energy generation projects and green jobs.

We are currently testing electric refuse vehicles with Local Authorities. We have just successfully undertaken the first trials of ULEVs in Merthyr, RCT and Cardiff in June and July 2020.

Such a scheme can deliver key co-benefits including a positive impact in urban areas with air quality issues.

We have allocated £1m of capital funding in 2020-21 to accelerate and de-risk the deployment of ULE-Refuse Collection Vehicles (RCVs) and Resource Recovery Vehicles (RRVs) in the Welsh public sector.

Action:

We are determined to accelerate the transition from diesel-powered waste and recycling vehicles to ultra-low emission powered vehicles (ULEVs).

We recognise the contribution it can make to air quality alongside the fact Welsh Government and many Local Authorities have declared a Climate Emergency and resolved to be a net zero carbon user within ten years (2030).

We are working on a proposal for all new cars and light goods vehicles in the Public Sector fleet to be ultra-low emission by 2025 and where practicably possible, all heavy goods to be ultra-low emission by 2030.



Place

Creating sustainable places through better planning, infrastructure and transport



Reducing airborne pollution and its effects in public places is essential to support well-being.

This requires all relevant parties to take a multifaceted approach to the planning, design and management of public places to ensure air quality and soundscapes are not compromised.

Planning policy supporting air quality, noise and soundscape improvements

The planning system is a key mechanism for delivering sustainable places. Planning Policy Wales (PPW) was refreshed in 2018.

PPW underpins all future planning decisions, puts an emphasis on people and places and ensures developments built today leave a legacy of well-designed, sustainable places which improve lives.

Air quality, noise and soundscape are addressed in the new PPW as a key component of the natural and built environment, placing the issues on an equal footing with other objectives such as housing, transport and economic development. Planning policy in relation to air quality, soundscape and noise emphasises the requirement to secure opportunities as part of the planning process, rather than just avoiding the worst negative impacts.

It also encourages integrated solutions which aim to reduce average levels of airborne pollution.

A joined up approach between national transport and planning policy is recognised as an effective way of supporting an increase in public transport use and active travel and reducing emissions from existing vehicles over time⁴⁰.

Spatial planning, based on placemaking, can be used to reduce the need for vehicle use by ensuring well-located and designed development. It can also play a wider role in reducing emissions from buildings through energy efficiency measures and use of renewable energy technologies.

Other key changes to Wales' planning policy which will contribute towards improved air quality whilst at the same time creating places where people can live well include:

- Promotion of Active Travel (walking and cycling) to create good places and support health and well-being. Services will need to be easily accessible by active travel and a new transport hierarchy has been introduced for planners to consider.
- Policy on Ultra-Low Emission Vehicles (ULEVs) which requires new non-residential developments to have charging points in at least 10% of the spaces available. This is the first national policy of its kind in the UK.
- Promoting renewable energy developments (wind, solar and other renewables). It will require planning authorities to define areas where wind and solar developments will be permitted and set renewable energy targets.
- Restricting extraction and use of fossil fuels (including fracking) by placing them at the bottom of the energy hierarchy. Proposals for opencast or deep-mine development should not be permitted and oil and gas (including fracking) should be avoided.
- The agent of change principle has been incorporated into national planning policy and will require a business or person responsible for introducing a change is responsible for managing that change. For example, a developer constructing a new shopping centre which has the potential to generate a significant amount of additional traffic on surrounding roads is responsible for ensuring this does not result in unacceptable levels of air pollution for local residents.

40 Review of interventions to improve outdoor air quality and public health - www.gov.uk/government/publications/improving-outdoor-air-quality-and-health-review-of-interventions

We must ensure future development in Wales is sustainable, and contributes towards our clean air and positive noise and soundscape goals⁴¹.

To achieve this, we will update our existing ‘Technical Advice Note (TAN) 11: Noise’ and incorporate guidance on air quality and soundscape to support local planning authorities and developers in designing and building sustainable places.

We will ensure integration between the Clean Air Plan, Planning Policy Wales and the forthcoming Wales Transport Strategy to ensure infrastructure and service investment across Wales supports reduction in air pollution.

Action:

We will produce further planning guidance specifically on air quality, noise and soundscape for local planning authorities and developers in Wales, within this Senedd term.

Transforming Towns

Town (and city) centres are vital to Wales. They create a sense of belonging and identity and they are key economic, environmental and social drivers. Our vision for our town centres is as great places to live, work and play, which are sources of local/civic pride, confidence and well-being. To deliver this vision, encapsulated in our ‘Transforming Towns’ approach, we aim to make towns more user-friendly and sustainable to ensure they don’t just survive but they thrive long into the future. Ensuring clean air and appropriate soundscapes in our towns and cities is a key part of their sustainability, making towns more attractive places to spend time.

Our support for green infrastructure is an integral part of the Transforming Towns agenda. It demonstrates our commitment to sustainability and to promoting opportunities for biodiversity, improving air quality and better managing surface water at source.

The National Infrastructure Commission for Wales

The National Infrastructure Commission for Wales (NICW)⁴² was established in 2018 as a non-statutory advisory body to provide advice and recommendations to the Welsh Ministers on the economic and environmental infrastructure needs of Wales over five to thirty years. Its remit includes energy, transport, water and sewerage, drainage solutions, waste, digital communications, flood and coastal erosion management. NICW’s remit extends to devolved, cross-border and non-devolved infrastructure and will evolve in line with the devolution settlement. The advice provided by NICW will be impartial, strategic and forward looking in nature.

The NICW’s long-term aim is for Wales to be a place of clean air and water, cohesive communities, energy security and good jobs. Infrastructure is key to achieving this. Within this aim, air quality is a threat to health and NICW will seek opportunities to contribute to air quality improvement.

NICW will carry out studies into Wales’ most pressing infrastructure challenges and make recommendations to Welsh Ministers. NICW needs to be able to take into account current and upcoming infrastructure projects when identifying future needs. However, its remit does not include reviewing programmes and work that have already been decided or are near decision.

NICW may consider cross-cutting delivery issues, such as governance, costs, financing and programme/project management, if it considers them a barrier to delivering infrastructure needs. NICW will not override statutory processes but may advise and recommend improvements to such processes should significant barriers to delivery be found.

Action:

We will amend NICW’s remit so the commission looks for opportunities to safeguard and improve air quality.

41. gov.wales/noise-and-soundscape-action-plan-2018-2023-0

42. gov.wales/national-infrastructure-commission-wales

Transport Emissions

Transport is responsible for a significant proportion of air pollution particularly in urban environments and areas of high traffic and congestion. The primary air pollutants from transport are NO₂, PM₁₀ and PM_{2.5}.

Road transport, rail, aviation and domestic shipping are responsible for 50% of NO_x and 16% of PM_{2.5} emissions in the UK⁴³.

Road transport is responsible for approximately 80% of NO_x concentrations at roadside (Defra figure for UK average in 2017), with diesel vehicles the largest source, affecting local air quality.

Evidence suggests harmful emissions from transport are reducing, largely driven by international legislation on standards for new vehicles, but poor air quality remains a significant concern.

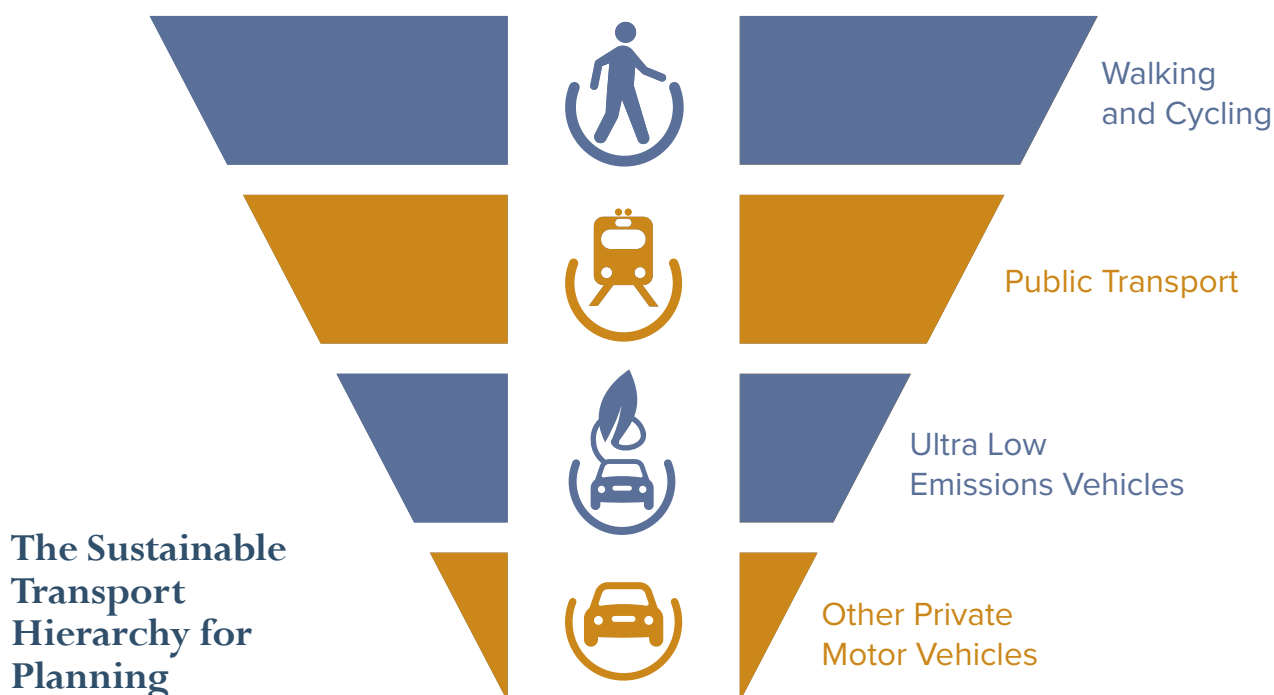
As set out below, a range of actions to tackle emissions from all forms of transport are being developed and implemented across Wales at both a national and local level. Many of these actions also contribute towards the aims of Prosperity for All: A Low Carbon Wales.

Impact of COVID-19 on transport and transport emissions

The impact of COVID-19 on travel, leading to reductions in transport emissions and improvements in air quality has been widely observed. In Wales, we have experienced reduced concentrations of NO₂ during the period of restricted travel although it is important to note air quality is sensitive to a number of factors including weather and seasonal effects.

Social distancing and travel restrictions have resulted in unprecedented challenges for public transport operators in Wales, as well as opportunities for increasing active travel. Both have potential significance for transport emissions in the longer term.

Welsh Government action has sought to protect public transport provision for essential travel and to support the longer-term financial viability of public transport operators, and provide safer spaces for walking and cycling. We will build on this work to encourage the embedding of practices which have a favourable impact on air quality whilst supporting actions to mitigate potential negative impacts.



43. Defra, 'UK Emissions inventory Report under NECD and CLRTAP' (2019) uk-air.defra.gov.uk/assets/documents/reports/cat09/1904121008_GB_IIR_2019_v2.0.pdf

Wales Transport Strategy

The new Wales Transport Strategy will sit under Prosperity for All: our national strategy and the Economic Action Plan. The Wales Transport Strategy provides the strategic framework within which future decisions on investment options will need to be made.

We will consult widely on our vision of for an effective, affordable and accessible transport system which is good for the economy, good for individuals and communities, good for the environment and good for Wales.

Our goal is to move away from the overreliance on the private motor vehicle and for people of all ages and abilities to be confident they can make every day journeys by walking and cycling, or by public transport, and do so safely.

This will empower people to move around affordably and conveniently, enabling positive impacts on their health and environment.

The Strategy will also highlight action being taken to meet current and future air quality legal obligations, clean air intentions, carbon budgets and targets and wider environmental growth. This will encompass all transport modes, and will include encouraging the use of low emission vehicles in Wales, particularly in rural areas with limited public transport services.

The Strategy will also look at the role of freight and logistics and what actions can be taken to reduce air pollution, CO₂ and other emissions from this sector including through better logistics planning.

In 2018, the UK Government's Department for Transport (DfT) published Road to Zero: Next steps to cleaner road transport. Welsh Government and DfT policy will align where appropriate to ensure cross-border transport arrangements and contractual specifics about emissions standards are similar.

We will investigate successful UK and international city and regional examples of air quality improvement, impact and benefit.

In doing so we will draw from the existing knowledge within Government teams and seek mutually beneficial solutions, considering both urban and rural context to approaches.

Action:

We will develop a new Wales Transport Strategy in 2020/21, which will set out our policy framework to achieve our decarbonisation targets and required air pollution reduction.

Promoting the shift from the private motor vehicle to active travel and public transport

We are investing in a number of schemes to promote a 'modal shift' from over-reliance on the private car to more sustainable modes of transport such as walking, cycling and public transport and support safer, healthier and attractive options for citizens.

The usual method of travel to work in Wales is 81% car, 2% bike, 4% bus or coach, 4% rail and 8% walk⁴⁴; working from home has an impact on both travel and domestic combustion. We recognise the challenges involved in challenging personal convenience, reconsidering habitual behaviour and adapting to change and we will monitor changes in behaviour as a result of COVID-19.

44. Source: DfT TSGB0109 www.gov.uk/government/statistical-data-sets/tsgb01-modal-comparisons

Demand management measures can help tackle congestion, reduce polluting emissions, and support modal shift to active travel and public transport alternatives. In developing our ambitions to deliver decisive reductions in transport emissions over the next ten years, we will consider the findings revealed through our independent review of road user charging⁴⁵. We expect to see Clean Air Zones established in towns and cities throughout Wales to reduce the impact of transport emissions on health.

Some of these may be supported by a charging element. Clean Air Zones, where appropriate, would enable a range of co-ordinated actions to deliver significant reductions in public and environmental exposure to harmful airborne pollutants from all sources.

These Zones would be applied to geographical target areas which can be local and sub-regional. Further details about Clean Air Zones can be found at under the section titled 'Designation of Clean Air Zones/Low Emission Zones'.

Action:

We will continue to work with partners to achieve improved provision of public transport.

Active Travel

For shorter journeys, we want walking and cycling to become the preferred choice. Beyond improved air quality, active travel modes offer many benefits, both for the individual and for society. Most notably these modes improve mental and physical health, are emission free and reduce congestion and peak time demand on public transport.

Our Active Travel (Wales) Act 2013 came into force in 2014 and one of its key elements is the need for Local Authorities to plan and develop integrated walking and cycling networks which connect where people live with where they need and want to go.

Planned networks must meet community needs, increasing the likelihood people are motivated to use them.

There is an emphasis on effective consultation and engagement in all stages of the process, from initial planning through to scheme design. These plans must be regularly updated with the next update due in September 2021.

We are supporting the creation of Active Travel networks with significant capital investment. The Active Travel Fund was established in 2018 to accelerate delivery of the networks in 2019/20. We have allocated over £69M to Local Authorities to develop new walking and cycling routes and facilities, and make improvements to their existing infrastructure.

Funded schemes include major new links, packages of measures to tackle multiple smaller gaps and barriers on a whole town basis, as well as public bike share schemes, including the first electric public bike share scheme in Wales.

Electric bikes have great potential to attract new user groups to cycling for transport, including those whose journeys are longer or include steep inclines, and older people.

45. gov.wales/written-statement-independent-review-road-user-charging-wales

We have allocated a further £15.4M to Local Authorities to introduce measures to improve the safety and conditions for sustainable and active travel modes in their area in response to the COVID-19 crisis. This aims to achieve sustained changes in travel behaviour in the future. Local Authorities have been asked to clearly prioritise delivery of those schemes which can be completed quickly within the next three to four months and have the greatest impact in their local area.

On allocating the funding, Local Authorities were reminded that "where there are known air quality issues and they are introducing measures that have the potential to worsen air quality, they need to ensure effective air quality monitoring is undertaken to assess the impact of the intervention. We also need to ensure that there are no adverse biodiversity or wider environmental impacts.

Permanent removal or loss of habitat, vegetation or vegetated land cannot be justified in order to meet the 2m distancing requirement or other temporary issues. Such permanent negative impacts would need to be subject to an assessment of long term requirement and consideration of mitigation and/or compensation".

Providing the right infrastructure is an important part of achieving modal shift, but not necessarily sufficient on its own. Infrastructure investment needs to be supported by behaviour change interventions.

We will work across government and with external partners to develop and align behaviour change programmes to encourage uptake of healthy and active travel modes. Active Journeys is the key programme which promotes walking, cycling and scooting to school.

The programme has been refreshed in 2020 and will run until 2023, with a budget boosted by over 50%. The programme was updated to include elements aimed at parents and the wider school community and wider support and communication for schools outside the programme.

Led by Public Health Wales, the Healthy Travel Charter, pioneered by Cardiff Public Services Board will be rolled out to encourage employers across Wales to support their employees to make healthier and active travel choices.

As part of our ambition to put place making at the top of our agenda for our towns, villages and cities, we are working on a programme to change the default speed limit from 30mph to 20mph in built up areas. This will reduce traffic related injuries and fatalities and also help create places where conditions for walking and cycling are improved.

Action:

We will be issuing updated Delivery and Design Guidance, setting out planning and consultation approaches and requirements and the design specifications for walking and cycling infrastructure by autumn 2020.

We will provide tools and training to support Local Authorities in effective planning and design of active travel infrastructure, as well as community engagement, by end of 2020.

As part of the work to introduce default 20mph speed limits in built up areas, we will develop a monitoring and evaluation framework to track and assess impacts, including on air pollution.

Our Active Journeys Programme, which promotes walking and cycling to school, was refreshed in 2020 and is running until 2023. This is in close collaboration with over 400 schools over the next three years and provides curriculum resources and support available for all schools in Wales.

We are funding cycle training for children and adults and child pedestrian training. In 2021, we will review how this training can be optimised to go beyond acquisition of skills to include behaviour change elements.

Public Transport

The transformational change in public transport management to Transport for Wales (TfW) has provided the opportunity to review, improve and integrate all elements of the services. Greater use of public transport has the potential to reduce traffic and improve air quality.

Coupled with innovations in active road network management there is considerable potential for optimising public transport reliability and efficiency and achieving reductions in congestion and air pollution.

Better integrated public transport can bring enhanced employment opportunities and increased wealth into Wales. The greater the shift to public transport achieved, the more justification there is to develop and adapt services.

Our support for the bus and rail industry during the COVID-19 lock-down period has sought to protect the viability of public transport services and set out guidance for the industry on safety measures which would also serve to reassure the travelling public.

Bus and Taxi

We have a strong commitment to bus services in Wales, spending over £220 million each year. We have set out proposals to put in place the legislative tools to provide improved bus services tailored to different circumstances and challenges. This legislation is intended to be taken forwards during the next Senedd term.

We have set out a bold ambition for all buses to have zero exhaust emissions by 2028, which will bring about significant improvements to air quality in urban areas. Tackling areas of high pollution will be a factor in these plans.

Retrofitting buses with filters may allow the continued use of the existing (diesel) fleet while improving its environmental performance but this does have a detrimental impact on fuel consumption and CO₂ emissions.

This action will integrate with new approaches to urban planning to encourage greater use of public transport, safer and healthier school transport, discouraging private vehicles whilst preserving access to work, community, and health and retail services.

Action:

We are developing a vision document, delivery plan and governance structures to progress the work of reforming the provision of Taxi and Private Hire Vehicles.

This will include the key themes of how we achieve air quality improvements as well as the decarbonisation of the fleet to meet our bold aim for a zero exhaust emission taxi fleet by 2028.

Rail

Our vision of 'A Railway for Wales' demonstrates the expansion of rail services can help us to address some of the underlying causes of the climate emergency we face by making it possible for far more of us to access affordable, efficient, and attractive public transport services and so reduce road congestion, carbon emissions and air quality impacts.

Our new Wales and Borders rail service will bring about a 65% increase in capacity, reduce emissions and greatly increase the attractiveness of rail travel.

New Metro schemes will be developed taking account of how air quality improvements can most successfully be achieved. We are also developing plans for other Metro schemes in North East and South West Wales. The North Wales Metro is a priority identified in Prosperity for All as a key contributor to delivering modern and connected infrastructure. The projects will facilitate modal shift, and deliver our objectives of improving air quality and reducing carbon emissions across North Wales.

From 2022 onwards, electrification will see bi-mode and tri-mode trains introduced on the Cardiff Central Metro, where they will operate entirely from overhead electric power, supplemented by batteries on the Core Valley Lines, replacing the diesel trains.

TfW is introducing the first hybrid trains in the UK, on the Wrexham to Bidston service. These combine the use of modern batteries with lightweight diesel engines which comply with latest European emission standards.

From 2023, the majority of long-distance services will be powered by diesel engines which will meet the latest Euro Stage V emissions regulations with greatly improved fuel consumption.

TfW is committed to trialling future technology during their contract. The rolling stock which has been ordered have adaptable power units, so the diesel engine could eventually be swapped for hydrogen (or other alternative) if trials are successful and funding is available.

Action:

We will increase capacity through the delivery of new and innovative Metro systems. The South Wales Metro will bring about a step change in the integration and frequency of public transport services to offer a compelling alternative to car journeys by 2023.

Ultra-low emission vehicles

Promoting a switch from petrol and diesel road vehicles to electric and other ultra-low emission power is an essential element of our approach to tackle transport CO₂ emissions and reducing air pollutants.

Electric vehicles produce no exhaust emissions, reducing air pollutants such as NO₂ and some particulates as well as CO₂ emissions which contribute to global warming. However, electric vehicles still contribute some non-exhaust emissions from brake, tyre and road surface breakdown.

Since 2009, EU legislation has set mandatory emission reduction targets for new cars. Targets for vans were introduced from 2011 and CO₂ emission standards for heavy-duty vehicles entered into force in August 2019.

From 2021, phased in from 2020, the EU fleet-wide average emission target for new cars will be 95 g CO₂/km. EU legislation, passed in April 2019, mandates that, by 2030, there will be a 37.5% cut in corporate average CO₂ emissions which effectively means an average CO₂ figure of about 60g/km.

The UK Government has pledged to pursue a future approach which is at least as ambitious as the current arrangements for vehicle emissions regulation following an exit from the EU.

This has driven vehicle manufacturers to launch new battery electric models and hybrid vehicles in order to meet the CO₂ regulations.

In 2018, the UK Government's Department for Transport (DfT) published Road to Zero: next steps to cleaner road transport. This sets out UK plans to end the sale of new conventional petrol and diesel cars and vans by 2040.

Action:

We are working with UK Government, Local Authorities, the energy sector and business to plan for and implement the roll out of electric vehicle (EV) charging infrastructure. By investing £2M by 2020 we will help create a network of rapid charging points to enable longer distance travel by electric vehicles throughout Wales. We will consult on an Electric Vehicle Charging Strategy to inform wider investment in Autumn 2020.

We are working on a proposal for all new cars and light goods vehicles in the Public Sector fleet to be ultra-low emission by 2025 and where practicably possible, all heavy goods to be ultra-low emission by 2030.

We will further examine the evidence base for strengthening anti-idling measures and will set out our proposals during 2020, in our Clean Air Act White Paper.

Tackling roadside nitrogen dioxide concentrations in Wales

Reducing concentrations of NO₂ around roads where levels are above legal limits in Wales continues to be our most immediate air quality challenge. NO₂ is another pollutant of concern for human health.

This has put emphasis on a relatively small number of hot-spot areas, almost entirely coinciding with roadside locations in heavy traffic.

However, there is also clear evidence of health effects from exposure to NO₂ at lower concentrations, although there are difficulties in distinguishing these effects from simultaneous exposure to other pollutants including particulate matter⁴⁶.

NO₂ is much more dominated by local emissions than PM_{2.5}, and higher concentrations are correlated with the more populated urban areas and lower in remote rural areas.

We estimate the population weighted mean concentration of NO₂ for 2016 is 10 (range 7 to 12) ug/m³. Road traffic emissions in Wales contribute the largest proportion of Welsh emissions to NO_x population weighted mean exposure, and a relatively small contribution is imported from sources outside Wales.

In November 2018⁴⁷ we published a plan focussing on actions necessary to reduce concentrations of NO₂ around roads where levels are above legal limits⁴⁸.

These actions will achieve this within the shortest possible time, in a way which reduces exposure as quickly as possible and by taking steps which mean meeting the limit values is not just possible but likely.

46. COMEAP (2018), Association of long-term average concentrations of nitrogen dioxide with mortality www.gov.uk/government/publications/nitrogen-dioxide-effects-on-mortality/associations-of-long-term-average-concentrations-of-nitrogen-dioxide-with-mortality-2018-comeap-summary

47. Tackling roadside nitrogen dioxide concentrations in Wales: Welsh Government supplemental plan to the UK plan for tackling roadside nitrogen dioxide concentrations November 2018 gov.wales/sites/default/files/publications/2019-04/tackling-roadside-nitrogen-dioxide-concentrations-in-wales.pdf

48. Ambient Air Quality Directive and the Air Quality Standards (Wales) Regulations 2010

The plan focuses on action being taken by us at five sites on the Welsh Government Managed Road Network and in two Welsh local authority areas (Cardiff and Caerphilly).

The five locations are:

- A494 Deeside
- A483 Wrexham
- A470 Upper Boat to Pontypridd
- M4 J41 – J42, Port Talbot
- M4 J25 – J26, Newport

We have imposed speed limits on these sections of motorway and trunk roads in order to reduce concentrations of NO₂.

Monitoring data published in October 2019 and March 2020⁴⁹ indicates NO₂ levels have reduced following implementation of the 50mph speed limits on an initial trial basis in June 2018.

They have continued to reduce following the decision to retain them for as long as required to maintain air quality standards in summer 2019.

We are developing further Precautionary Retained Measures included in the plan, as NO₂ concentrations recorded at the roadside remain higher than those modelled nationally.

In May 2020, Defra published updated 2018 projections arising from the latest Pollution Climate Mapping (PCM) model.

The updated outputs identify exceedances at four new locations on the motorway and trunk road network in South Wales:

- Site ID Link 30548 – A470 Coryton Interchange to Cardiff Council/Rhondda Cynon Taf Council boundary at Taffs Well Interchange – Model suggests compliance in 2022 without intervention.
- Site ID Link 40548 – A470 Taffs Well Interchange to Nantgarw Interchange – Model suggests compliance in 2021 without intervention.

- Site ID Link 50523 – M4 Junction 43, Llandarcy to Neath Port Talbot Council/Swansea Council boundary – Model suggests compliance in 2021 without intervention, but location is considered to be at the legal limit in 2020.
- Site ID Link 74085 – M4 Neath Port Talbot Council/Swansea Council boundary to Junction 44, Lon Las - Model suggests compliance in 2021 without intervention.

Urgent action is being taken to address these newly identified areas of exceedance and further information on our approach will be set out in an updated NO₂ Plan.

Ministerial Directions were placed on Caerphilly and Cardiff Council to undertake feasibility studies to identify the options which will deliver compliance in the shortest possible time.

Both Local Authorities have submitted final plans. Funding in excess of £25M has been awarded to date to support necessary measures to achieve compliance with legal limits for NO₂.

We will continue to ensure remedial measures to achieve compliance with EU limit values for NO₂ are based on sound evidence and are likely to ensure continued emissions reductions to achieve compliance in the soonest time possible. To support this, we have expanded the remit of our independent expert review panel to advise on activities to achieve and maintain compliance, including our work to develop further measures on our strategic road network.

Action:

We will publish an updated NO₂ Plan (Welsh Government supplemental plan to the UK plan for tackling roadside nitrogen dioxide concentrations 2017) by November 2020.

We will publish annual data, each March, on levels of emissions concentrations at the locations of exceedance on the Welsh Government Managed Road Network

49. See: gov.wales/interim-data-no2-concentrations-motorway-and-trunk-road and gov.wales/annual-data-no2-concentrations-motorway-and-trunk-road-2018-2019

Aviation

We support international efforts and will be working to assess and develop measures to reduce emissions from aviation and shipping.

Cardiff Airport introduced measures in 2016 which ensure operating aircraft use the shortest route to and along their final approach to the runway. This significantly reduces track miles covered by the aircraft.

Cardiff Airport also encourages airlines to operate continuous descent approaches, which significantly reduce fuel usage, and require aircraft taxiing from stand to runway operate at minimum power to reduce noise and fuel use. In September 2019, Cardiff Airport launched its 'Environmental Flight Path'⁵⁰, which provides a timeline of immediate and short-term environmental goals. These milestones will be delivered in line with the organisation's vision to become a 'Carbon Neutral Airport' and are key considerations for the Airport's Masterplan development over the next two decades.

Welsh National Marine Plan

We commitment to supporting the sustainable development of our seas and to supporting our coastal communities is presented in the Welsh National Marine Plan (WNMP) published in 2019⁵¹. The plan includes policy on the crosscutting issues of climate change, air and water quality.

The vision of the WNMP is for clean, safe, productive and biologically diverse seas, with the Welsh marine area making a strong contribution to energy security and climate change emissions targets through the responsible deployment of low carbon technologies.

We recognise our ports and shipping sector is critical to the effective movement of cargo and people, both as part of networks and supply chains within the UK and as part of the global economy. The activities of the sector support a wide range of other sectors and depend upon and support a diverse range of associated activities.

Many ports have become the location for industrial clusters of private companies which may compete with one another or complement each other as customers and suppliers in specialised areas of production and distribution.

We believe the sector has significant potential for sustainable growth, and it has therefore been identified as a strategic priority within our WNMP. However, we must recognise the impacts of shipping and related activities on both greenhouse gas emissions and air quality affecting people and ecosystems.

We have identified a number of measures which would significantly reduce the impact of shipping on GHG and air quality. We will be engaging with the sector, including the Welsh Ports Group, to better understand the implications of these measures, how to incentivise the transition towards low-emission shipping, and to explore the role of alternative technological solutions in enabling more efficient and effective interventions.

The WNMP contains policies to help guide marine management. Some policies are related to crosscutting issues such as nature conservation, minimising emission of greenhouse gases, air and water quality. Other policies are specifically related to the different sectors which operate in our seas, including shipping, renewable energy and fisheries.

These policies combine to form an enabling framework for sustainable development, supporting those who wish to use the marine environment and providing confidence to do so in terms of what activity is likely to be appropriate, thereby ensuring the resilience of our marine ecosystems is protected and enhanced for future generations. We must also recognise shipping operates within local, regional and international regulatory frameworks, and therefore a consistent approach is needed to ensure movements towards zero-emissions shipping are financially sustainable. We will work closely with the UK Government to ensure policy interventions are complementary and mutually supportive.

50. Cardiff Airport Environmental Flight Path. www.cardiff-airport.com/news/2019/09/20/cardiff-airport-unveils-its-environmental-flight-path/

51. gov.wales/welsh-national-marine-plan-document

The WNMP policies apply in addition to (and do not supersede or replace) legislative and regulatory provisions such as the merchant Shipping (Prevention of Air Pollution from Ships) regulations 2008, International Maritime Organisation (IMO) regulations on low carbon shipping and air pollution controls.

The WNMP includes policy relating to ports and shipping.

These sectors are identified as an essential part of the UK economy, providing a major conduit for the country's imports and exports and key transportation infrastructure between land and sea, with the sector being critical to the effective movement of cargo and people as part of networks or supply chains within the UK and as part of the global economy.

They are also identified as playing a crucial role in supporting other sectors, such as tourism and recreation and offshore marine renewable energy.

To minimise climate change, all proposals should demonstrate how they (in order of preference) avoid, minimise or mitigate emission of greenhouse gases.

Where significant emission of greenhouse gases cannot be avoided, minimised or mitigated, proposals for regulating activities must present a clear and convincing case for proceeding.

We aim to ensure proposals consider all emissions directly related to the proposed development or activity (including greenhouse gases associated with construction and operation) as well as emissions indirectly related to the development or activity (such as increased journey lengths for vessels, arising from a development).

All proposals should demonstrate how they have considered their potential air and water quality impacts and should (in order of preference) avoid, minimise or mitigate impacts.

Where significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.

The WNMP recognises sources of air pollution include emissions from shipping and fishing vessels and dust from construction activities, and that air pollution can have an adverse effect on people's well-being, on biodiversity and also contribute to climate change.

Annex A

Actions



A

People

Protecting the health and well-being of current and future generations

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>Monitoring and Assessing Air Quality in Wales</p> <p>We will enhance our monitoring and assessment capabilities to support targeted action on air pollution. We intend to implement a national air pollution monitoring and assessment service by December 2022. The service will support annual reporting on the state of air quality in Wales. In addition, it will make recommendations on interventions required to reduce air pollution and the harm it causes to public health and the environment. We are working in partnership with Natural Resources Wales, Local Authorities, Public Health Wales and other partners to design the framework for air quality monitoring, modelling, assessment and evaluation by autumn 2021.</p>	●	●	
<p>New targets to reduce exposure to air pollution</p> <p>We are working closely with the Clean Air Advisory Panel to receive independent and expert advice on the development of evidence-based and effective air quality targets for the benefit of current and future generations.</p>	●	●	
<p>We will develop and enact a new target for fine particulate matter, taking account of the WHO guidelines on air quality. This will to drive reductions in public exposure to air pollution as part of the development of a Clean Air Act for Wales and its regulations.</p>	●	●	

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
Managing air quality in the event of a pollution incident			
Working with NRW, during 2020/2021, we will update air quality incident monitoring equipment and build on the existing services provided by the Air Quality Cell to ensure arrangements are in place to respond to air quality incidents 24/7, 365 days of the year, anywhere in Wales.	●	●	
Local Air Quality Management (LAQM)			
We will introduce LAQM policy changes by 2023 to ensure the regime is public health focused and proactively finding and tackling areas of pollution.	●	●	
We will consult on LAQM legislative intent in a White Paper by the end of this Senedd term.	●		
Designation of Clean Air Zones/ Low Emission Zones			
We will publish our Clean Air Zone Framework in spring 2021, taking into account the findings of our review of road user charging which will report by autumn 2020.		●	
Smoke Control Areas (SCAs)			
We will amend existing Smoke Control regulations, through a Clean Air Act for Wales in the next Senedd term. This will ensure Local Authorities have the tools required to undertake effective enforcement against offenders.	●	●	
In 2021, we will investigate the contribution domestic bonfires and fireworks make to levels of PM _{2.5} emissions. We will work with other UK administrations to develop further regulatory and/or non-regulatory action, where it is needed in this, taking an approach which is sensitive to the cultural significance of these practices.		●	

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>We will shortly be consulting on domestic burning, and this will include consideration of whether outdoor solid fuel burning appliances and the fuels they use should be subject to regulation. We will develop necessary regulations during 2021.</p>	●	●	
<p>Domestic Combustion</p>			
<p>We will prohibit the sale of wet wood and traditional/bituminous house coal, subject to consultation. We aim to introduce the necessary legislation in 2021, with bans commencing during 2023.</p>	●	●	
<p>We will regulate to ensure only the most efficient appliances are available for purchase and installation by 2022. The regulation will include installation of second-hand appliances.</p>		●	
<p>We will publish our Clean Air Zone Framework in spring We will regulate to require annual maintenance of domestic burning appliances by a certified professional, subject to review. This review will be undertaken by 2023.</p>		●	
<p>We will work with industry and other governments to establish test standards for new manufactured solid fuels entering the market by 2024 to ensure they are compliant with appropriate regulations on smoke and sulphur emissions.</p>		●	
<p>Improving domestic energy efficiency</p>			
<p>We will investigate options to support households to ensure no-one slips into or remains in fuel poverty as a result of any prohibition on fuels or appliances, or an extension to the use of SCAs. We aim to have a scheme in place by 2022, before any transition period for use of prohibited solid fuels expires.</p>		●	

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
Indoor air pollution			
We will continue to work with academia, public health organisations and other partners to develop and respond to new evidence on indoor air pollution as it emerges.	●	●	●
We will raise people’s awareness of indoor air pollution through communication interventions, including ways to reduce exposure risks.	●	●	●
A Clean Air Act for Wales			
We will publish and consult on a White Paper on a Clean Air Act for Wales before the end of this Senedd Term.	●		
Communications and behaviour change			
We will enhance the existing Air Quality in Wales website to develop a communications and information hub. The initial redesign will be complete by the end of 2021 and we will add and develop new features over the next five years.	●	●	
Over the next five years, we will deliver national air quality communications and campaigns such as Clean Air Day.	●	●	
Over the next five years, we will work with local organisations to support delivery of local air quality initiatives.	●	●	

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>Education and the new Curriculum for Wales</p>	●	●	
<p>We are working with education partners to promote and develop educational resources in support of the new curriculum in advance of its introduction from 2022.</p> <p>This includes developing opportunities which lead to greater understanding of air quality, pollutants, evidence and interpretation, and developing personal awareness and responsibility.</p>			
<p>Empowering workforces to improve air quality</p>	●	●	
<p>By 2022, we will produce new statutory guidance for the public, private and voluntary sectors to empower workforces to tackle air pollution, subject to consultation.</p>			

Environment

Taking action to support our natural environment, ecosystems and biodiversity

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>Evaluating evidence to support policy</p> <p>A suite of indicators is under development to monitor the state of biodiversity in Wales.</p> <p>This includes the National Indicators under the Well-being of Future Generations Act, and an indicator for air quality. It is expected the majority of these indicators will be in place by the end of 2021.</p>	●	●	
<p>Improve biodiversity and ecosystem health to enhance resilience to air pollution and climate change impacts</p> <p>We will develop actions to reduce the impact of air pollution in the context of wider proposals highlighted in the Nature Recovery Action Plan.</p>	●	●	●
<p>Supporting a Greener Wales</p> <p>Through our Local Places for Nature Programme, we will support communities to create 'nature on your doorstep', with a particular focus on urban and peri-urban areas.</p>	●	●	
<p>Intelligent tree and hedge planting supporting air quality improvements</p> <p>We will increase the amount of woodland by at least 2,000 hectares per year, rising to 4,000 hectares. This will deliver a range of ecosystem benefits, including the interception of air pollutants.</p>	●	●	●

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>We will deliver a National Forest for Wales, which includes new areas of community woodlands in urban and rural areas. These will help to reduce people’s exposure to air pollution.</p>	●	●	●
<p>We will promote guidance and best practice to Local Authorities and urban planners to better design urban tree planting and plant species which maximise benefits by reducing people’s exposure to air pollution.</p>	●	●	
<p>Agriculture and Land Use</p>			
<p>Information and advice</p>			
<p>We will make sure Farming Connect continues to give farmers advice and support to ensure best available practices are adapted to lower ammonia emissions.</p> <p>This will include improving uptake of current and future support schemes, such as Sustainable Production Grant and Farm Business Grant, which support farmers to invest in infrastructure and technologies to achieve these reductions.</p>	●	●	●
<p>Sustainable farming scheme</p>			
<p>In December 2020, we will consult further on proposals for a reformed regulatory framework and financial support scheme to support delivery of SLM outcomes through the Agriculture in Wales White Paper.</p> <p>SLM outcomes include air quality, which will be supported through actions on the land to improve soil and animal husbandry, habitat and nutrient management and tree planting.</p>	●	●	

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
Regulation			
<p>We intend to consult on a new Technical Advice Note, by the end of 2020. This will make sure planners know how to access the right advice to help prepare LDP policies and robustly determine planning applications.</p>	●		
<p>We will introduce regulations to tackle agricultural pollution, which will contribute to achieving air quality targets including Wales' contribution to a 16% reduction of UK ammonia emissions by 2030.</p>	●	●	●
<p>In co-ordination with other UK administrations, a consultation on reducing emissions from manufactured fertilisers will take place before the end of 2020 to ensure Wales' contribution to a 16% reduction of UK ammonia emissions by 2030 is achieved.</p>	●	●	●

Prosperity

Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>Industrial Air Pollution</p>			
<p>We will review process guidance for Small Waste Incineration Plant (SWIPs) and crematoria. This will bring them up to date to support more effective emissions controls at these sites.</p>		●	
<p>We will consider the evidence on emissions from small-scale combustion plant, including small-scale commercial biomass combustion plant.</p> <p>This includes combustion plants in the 500kW to 1MW thermal input range, where initial evidence suggests there is a regulatory gap. We will introduce new regulatory controls where evidence supports this.</p>		●	
<p>We will consider the evidence on emissions from Specified Generators used for research, development and testing, introducing measures excluding them from the provisions of the environmental permitting regime if the evidence supports this.</p> <p>This would align them with the provisions which apply to Medium Combustion Plant used for research, development and testing purposes.</p>	●	●	
<p>Best Available Techniques</p>			
<p>We will implement a new, domestic, process for developing and adopting BAT Conclusions.</p> <p>This will ensure pollution control techniques applied by industry in Wales, including those used to reduce emissions to air, continue to develop and improve according to best evidence from the EU and elsewhere.</p>	●	●	

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>Pollution in Port Talbot and the Swansea Valley</p>			
<p>We will review process guidance for Small Waste Working with partners including Defra, the Environment Agency’s Local Authority Unit, Local Authority regulators and NRW we will undertake a review of our Short Term Action Plan (STAP) for Port Talbot in 2021 to ensure it remains effective and fit for purpose in its aim of minimising short term air pollution (PM₁₀) episodes in the area.</p>		●	
<p>Resource Efficiency</p>			
<p>We are determined to accelerate the transition from diesel powered waste and recycling vehicles to ultra-low emission powered vehicles (ULEVs).</p>			
<p>We recognise the contribution it can make to air quality alongside the fact Welsh Government and many Local Authorities have declared a Climate Emergency and resolved to be a net zero carbon user within ten years (2030)</p>	●	●	●
<p>We are working on a proposal for all new cars and light goods vehicles in the Public Sector fleet to be ultra-low emission by 2025 and where practicably possible, all heavy goods to be ultra-low emission by 2030.</p>	●	●	●

Place

Creating sustainable places through better planning, infrastructure and transport

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>Planning policy supporting air quality, noise and soundscape improvements</p> <p>We will produce further planning guidance specifically on air quality, noise and soundscape for local planning authorities and developers in Wales, within this Senedd term.</p>	●		
<p>The National Infrastructure Commission for Wales</p> <p>We will amend NICW’s remit so the commission looks for opportunities to safeguard and improve air quality.</p>		●	
<p>Transport Emissions</p> <p>Wales Transport Strategy</p> <p>We will develop a new Wales Transport Strategy in 2020/21, which will set out our policy framework to achieve our decarbonisation targets and required air pollution reduction.</p>	●	●	
<p>Promoting the shift from the private motor vehicle to active travel and public transport</p> <p>We will continue to work with partners to achieve improved provision of public transport</p>	●	●	●

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
We will be issuing updated Delivery and Design Guidance, setting out planning and consultation approaches and requirements and the design specifications for walking and cycling infrastructure by autumn 2020.	●		
We will provide tools and training to support Local Authorities in effective planning and design of active travel infrastructure, as well as community engagement, by end of 2020.	●		
As part of the work to introduce default 20mph speed limits in built up areas, we will develop a monitoring and evaluation framework to track and assess impacts, including on air pollution.	●	●	
<p>Our Active Journeys Programme, which promotes walking and cycling to school, was refreshed in 2020 and is running until 2023.</p> <p>This is in close collaboration with over 400 schools over the next three years and provides curriculum resources and support available for all schools in Wales.</p>	●	●	
We are funding cycle training for children and adults and child pedestrian training. In 2021, we will review how this training can be optimised to go beyond acquisition of skills to include behaviour change elements.	●	●	

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
Public Transport			
Bus and Taxi			
<p>We are developing a vision document, delivery plan and governance structures to progress the work of reforming the provision of Taxi and Private Hire Vehicles.</p> <p>This will include the key themes of how we achieve air quality improvements as well as the decarbonisation of the fleet to meet our bold aim for a zero exhaust emission taxi fleet by 2028.</p>	●	●	
Rail			
<p>We will increase capacity through the delivery of new and innovative Metro systems. The South Wales Metro will bring about a step change in the integration and frequency of public transport services to offer a compelling alternative to car journeys by 2023.</p>	●	●	●
Ultra-low emission vehicles			
<p>We are working with UK Government, Local Authorities, the energy sector and business to plan for and implement the roll out of electric vehicle (EV) charging infrastructure.</p> <p>By investing £2M by 2020 we will help create a network of rapid charging points to enable longer distance travel by electric vehicles throughout Wales. We will consult on an Electric Vehicle Charging Strategy to inform wider investment in autumn 2020.</p>	●	●	●
<p>We are working on a proposal for all new cars and light goods vehicles in the Public Sector fleet to be ultra-low emission by 2025 and where practicably possible, all heavy goods to be ultra-low emission by 2030.</p>	●	●	●

Actions	Short Term to 2021	Medium Term 2021 to 2026	Longer Term 2026 to 2031
<p>We will further examine the evidence base for strengthening anti-idling measures and will set out our proposals during 2020, in our Clean Air Act White Paper.</p>	●	●	
<p>Tackling roadside nitrogen dioxide concentrations in Wales</p>			
<p>We will publish an updated NO₂ Plan (Welsh Government supplemental plan to the UK plan for tackling roadside nitrogen dioxide concentrations 2017) by November 2020.</p>	●	●	
<p>We will publish annual data, each March, on levels of emissions concentrations at the locations of exceedance on the Welsh Government Managed Road Network.</p>	●	●	●

Annex B

The national air quality monitoring networks
operating in Wales



B

There are several national air quality monitoring networks operating across Wales. These report air pollution levels in Wales that can be assessed against regulatory requirements and to provide information for air quality researchers, the medical community and members of the public⁵².

Automatic Urban and Rural Network

There are 11 air quality monitoring sites in Wales that are part of the UK Automatic Urban and Rural Network (AURN).

The techniques used for monitoring the gaseous pollutants in the AURN are the reference methods of measurement defined in the relevant EU directives. For particulate matter, the AURN uses methods that have demonstrated equivalence to the reference method, but which (unlike the reference method) allow continuous monitoring and provision of this information in 'real time'.

Heavy Metals Network

There are six monitoring sites in Wales for heavy metals and they belong to the UK Heavy Metals Network. Airborne particulate matter is sampled and analysed for metals concentrations in PM₁₀. The metal concentration data are then combined with the local meteorological data (such as rainfall) to calculate values for wet deposition (from precipitation), dry deposition (such as dust settling) and cloud deposition (condensation of cloud droplets).

PAH Network

Wales has four polycyclic aromatic hydrocarbon (PAH) network sites. These monitor compliance with Directive 2005/107/EC (the 4th daughter directive), which includes a target value of 1ng m³ for the annual mean concentration of benzo[a]pyrene (C₂₀H₁₂) as a representative PAH, not to be exceeded after 31 December 2012.

This network uses the PM₁₀ 'DigitelTM' sampler.

Ambient air is sampled through glass fibre filters and polyurethane foam pads, which capture the PAH compounds for later analysis in a laboratory.

Black Carbon Network

Black carbon is fine, dark carbonaceous particulate matter produced from the incomplete combustion of materials containing carbon (for example coal, oil and biomass (such as wood)). It is of concern due to possible health impacts and as a suspected contributor to climate change. There is one monitoring site in Wales that measures this parameter.

The site, in Cardiff, is part of the Black Carbon Network. This uses an automatic instrument called an aethalometer that measures black carbon directly using a real-time optical transmission technique.

UK Eutrophying and Acidifying Pollutants Network

The UK Eutrophying and Acidifying Atmospheric Pollutants (UKEAP) network⁵³ provides information on the deposition of eutrophying and acidifying compounds in the UK and assesses their potential impacts on ecosystems.

There are 14 network sites across Wales. Other measurements – including acid gases and particulate composition – have also been made within the programme, to provide a more complete understanding of atmospheric chemistry in the UK.

52. Air Pollution in Wales 2018; Ricardo Energy & Environment on behalf of the Welsh Government and WAQF.

53. www.ceh.ac.uk/our-science/projects/uk-eutrophying-acidifying-atmospheric-pollutants-ukeap

Annex C

Legislation, Policies and Guidance



Existing legislation, policies, strategies and guidance create the context in which to identify opportunities for increasing the scope and pace of beneficial intervention, to prioritise the problems to address and determine our personal, family, community and collective roles in responding to them.

This plan integrates with and complements other Welsh Government policies including plans for planning, de-carbonisation, noise and soundscape management, environment, infrastructure, land use, transport and marine and fisheries.

A number of these policies have been referenced throughout this document.

This plan also sets out additional measures and actions to improve air quality and where possible achieve multiple beneficial results. We have ensured our approach is consistent with existing policy positions or those under development.

Primary legislation

Active Travel (Wales) Act 2013

Clean Air Act 1993

Environment Act 1995

Environment (Wales) Act 2016

Planning (Wales) Act 2015

Pollution Prevention and Control Act 1999

Well-being of Future Generations (Wales) Act 2015

Secondary legislation

Air Quality Standards (Wales) Regulations 2010

European Legislation

4th Air Quality Daughter Directive 2005/107/EC

Ambient Air Quality Directive 2008/50/EC

Habitats Directive 922/43/EEC

Industrial Emissions Directive 2010/75/EU

The Nitrates Directive (91/676/EEC)

Landfill Directive 2018/850/EU

National Emissions Ceiling Directive 2016/2284/EU

Waste Framework Directive 2008/98/EC

Policies and Strategies

Welsh supplemental plan to the 'UK plan for tackling roadside nitrogen dioxide concentrations 2017': Tackling roadside nitrogen dioxide concentrations in Wales

Sustainable Farming Scheme

Children's Rights in Wales

Clean Air for Port Talbot: Short Term Action Plan 2012

Creating an Active Wales

Curriculum for Wales 2022

Economic Growth Plan

Energy Efficiency Strategy

Energy Wales: A Low Carbon Transition

Food Strategy for Wales 2010 to 2020

Healthy Weight, Healthy Wales

Climate Change Adaptation Plan for Wales

Natural Resources Policy	Nature Recovery Action Plan (NRAP)
Noise and Soundscape Action Plan	North East Wales Metro: Moving North Wales Forward
Physical Activity Action Plan: Creating an active Wales	Planning Policy Wales
Prosperity for All - Low Carbon Wales	Resource Efficient Wales
South Wales Metro	Sport and physical activity strategy (Climbing Higher)
Strategic Action Plan for the Welsh Dairy Industry	Tourism Strategy (Partnership for Growth)
UK National Air Pollution Control Programme (NAPCP)	Wales Transport Strategy
Cymraeg 2050: Welsh language strategy	The Air Quality Strategy for England, Scotland, Wales and Northern Ireland
Guidance	
Clean Air Zone Framework for Wales	Code of Good Agricultural Practice
Environment (Wales) Act 2016 Part 1 Section 6 – The Biodiversity and Resilience of Ecosystems Duty: Reporting Guidance for public authorities	Environmental Permitting Guidance: Waste Incineration
Local Air Quality Management in Wales	Natural Resources Wales Guidance https://naturalresources.wales/guidance-and-advice/?lang=en
Technical Advice Notes https://gov.wales/technical-advice-notes	Transforming bus investment in Wales: Interventions toolkit
Welsh Transport Appraisal Guidance	
Other	
United Nations Convention on the Rights of the Child (1989)	

Annex D

Glossary



D

AAQD	Ambient Air Quality Directive
AQAP	Air Quality Action Plan
AQP	Air Quality Plan
AQMA	Air Quality Management Area
APR	Annual Progress Report
AURN	Automatic Urban and Rural Network
BAT	Best Available Techniques
BHF	British Heart Foundation
CAA	Clean Air Act
CAP	Common Agricultural Policy
CAZ	Clean Air Zone
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COGAP	Code of Good Agricultural Practice
COMEAP	Committee on the Medical Effects of Air Pollution
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EC	European Commission
ECA	Emissions Control Area
EEA	European Environment Agency
ERAMMP	Environment and Rural Affairs Monitoring and Modelling Programme
EU	European Union
EV	Electric Vehicle
GHG	Greenhouse Gas

HGV	Heavy Goods Vehicle
HIA	Health Impacts Assessment
HSE	Health and Safety Executive
IED	Industrial Emissions Directive
IMO	International Maritime Organisation
kt	Kilotonne
LAQM	Local Air Quality Management
LCVP	Low Carbon Vehicle Partnership
LEZ	Low Emission Zone
LGV	Light Goods Vehicle
MPMD	Multi-Pollutant Measures Database
NAEI	National Atmospheric Emissions Inventory
NDF	National Development Framework
NECD	National Emissions Ceilings Directive
NH ₃	Ammonia
NHS	National Health Service
NICW	National Infrastructure Commission for Wales
NMVOCs	Non-methane Volatile Organic Compounds
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NRAP	Nature Recovery Action Plan
NRW	Natural Resources Wales
NVZ	Nitrate Vulnerable Zones

O ₃	Ozone
Pb	Lead
PHW	Public Health Wales
PM	Particulate Matter
PPW	Planning Policy Wales
PWMC	Population weighted mean concentration
SIA	Secondary inorganic aerosols
SMNR	Sustainable management of natural resources
SO ₂	Sulphur Dioxide
SoNaRR	State of Natural Resources Report
STAP	Short Term Action Plan
TAN	Technical Advice Note
TfW	Transport for Wales
UK	United Kingdom
ULEV	Ultra-Low Emissions Vehicle
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNECE	United Nations Economic Commission for Europe
WFGA	Well-being of Future Generations (Wales) Act 2015
WHO	World Health Organisation
WNMP	Welsh National Marine Plan