Department for Environment Food & Rural Affairs

Air Quality Information System Review Theory of Change

Supplementary Report

August 2024

We are the Department for Environment, Food and Rural Affairs. We are responsible for improving and protecting the environment, growing the green economy, sustaining thriving rural communities and supporting our world-class food, farming and fishing industries.

We work closely with our 33 agencies and arm's length bodies on our ambition to make our air purer, our water cleaner, our land greener and our food more sustainable. Our mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state than we found it.

This publication is available at www.gov.uk/defra

Any enquiries regarding this publication should be sent to us at aqisreview@defra.gov.uk.

This is a report from the Air Quality Information System review (AQIS) to the Department for Environment, Food and Rural Affairs and UK Health Security Agency. The information contained within this report provides a summary of the development of the AQIS review theory of change and theory of change recommendations. The report represents the views of the theory of change contributors and is independent of government policy.

Contents

Executive summary

The Air Quality Information System (AQIS) review steering group was established to review the provision of information and related communication systems that are used to engage with the public on issues related to air pollution and health in the United Kingdom. The AQIS Theory of Change (ToC) development process was intended to provide a structured way for steering group members to reach a consensus on the AQIS review recommendations.

This ToC has been developed collaboratively with input from the AQIS steering group and external experts over five workshopping sessions. Sessions were facilitated by the Department for Environment, Food and Rural Affairs (Defra) and the UK Health Security Agency (UKHSA) and focused on: defining the problem and developing a shared vision statement; determining tangible objectives and the desired short and long-term outcomes from an improved AQIS; identifying barriers that need overcoming and capabilities that need to be built to achieve the objectives; making recommendations for a series of communication principles, activities and inputs that would improve the provision of air quality information and overcome the identified barriers.

This ToC makes 32 recommendations across the following eight themes:

- Overarching principles
- Health
- Communication strategy
- Education
- Empowerment and normalisation
- Business and Industry
- New technology
- Operational guidance

This narrative report accompanies the AQIS ToC map, which is available as an annex to this report.

Background

This report documents the development of the Air Quality Information System (AQIS) review theory of change (Toc). It should be read alongside the AQIS ToC map (see appendix 1).

Background to the AQIS review

As part of the Government's response to the coroner's recommendations following the tragic death of Ella Adoo-Kissi-Debrah, the Department for Environment, Food and Rural Affairs (Defra) and the UK Health Security Agency (UKHSA) initiated a project to review the provision of information and related communication systems that are used to engage with the public on issues related to air pollution and health in the United Kingdom. The review was agreed as a priority for Defra, the UKHSA and the chairs of the Air Quality Expert Group (AQEG)[1] and the Committee on the Medical Effects of Air Pollution (COMEAP)[2].

The AQIS review launched in 2021 with the formation of the AQIS steering group. The steering group is made up of air quality experts, medical professionals, representatives of vulnerable groups, a lay member and government representatives and as such represents a diverse range of interests and expertise. They were given the challenging task of reviewing the current provision of air quality information and making a series of actionable recommendations for improvements.

Why have we created a theory of change?

Ambitions for an improved AQIS must meet the need of varied stakeholders with differing needs operating in a complex environment.

A ToC is a model for systematically mapping how and why a measure, policy or programme is expected to achieve its desired outcomes. Developing a ToC is a participatory process involving multiple stakeholders. Working through the process can allow diverse groups to developing a shared vision. The AQIS ToC was proposed as a structured way for steering group members to reach a consensus on the AQIS review recommendations. It has the additional benefit of providing assurance on *how* and *why* the delivery of the AQIS recommendations are expected to achieve any anticipated outcomes

[1] AQEG is an external expert committee to Defra that provides independent scientific advice on air quality.
[2] COMEAP is an external expert committee formed at the request of Department of Health and Social Care to advise the UK health departments on the health effects of both outdoor and indoor air pollutants on the basis of data currently available; assess the needs for further research and liaise with government bodies to access the effects of exposure and associated risks to human health.

- whilst acknowledging barriers to achievement - by illustrating the clear causal chain from recommendations to intended outcomes.

Theory of change terminology

For the purpose of developing this ToC each element has the below technical definition[3].

Table 1: Theory of change terminology

Term	Definition
Barriers:	Barriers are the blockers that must be overcome for the policy, programme or measure to be capable of achieving its main objective
Inputs:	Inputs are the resources, stimulus, or things required to make the programme activities possible. These may include funding, data inputs, implementation plans etc
Activities:	Activities may comprise actions and/or resources required to achieve the necessary capabilities for the programme to achieve its objectives
Outputs:	Outputs quantify what your activities have/will achieve
Capabilities:	Capabilities are the inverse of barriers and denote how the barrier will be overcome in order for the intervention to achieve its objectives
Objectives:	The main objectives of a policy, programme or intervention are the key tangible goals that you expect it to achieve in its lifetime. This may be achieved through the delivery of key outputs (which are the product of the activities in the map), or a significant behaviour change or a shift in how a 'system' operates
Short-Term Outcomes:	Short-term outcomes are the things that happen as a direct result of the intervention achieving its objectives

[3] Department for Environment, Food and Rural Affairs (2021) *Defra Theory of Change Toolkit - SD1421.* Defra Theory of Change Toolkit - SD1421

Longer-Term Outcomes	Longer-term outcomes – or “impacts” are the longer-term results you would expect to see as a result of achieving your objectives and short-term outcomes, there may be other policies or contextual factors that need to contribute to the achievement of longer-term outcomes

Approach

The AQIS ToC has been developed through a series of workshops facilitated by the AQIS review secretariate with participation from the following stakeholders:

- AQIS review steering group
- Scientific advisor to the chair of AQIS Sir Stephen Holgate
- Members of the COMEAP-AQIS sub-group
- Representation from AQEG
- Representation from the Met Office

The ToC was developed and refined over 5 sessions:

- **Session 1 (Summer 2023):** Defining the problem, developing a vision statement and clarifying the intended objectives and outcomes of an improved AQIS
- **Session 2 (Autumn 2023):** Understanding the role of different actors in the system and what barriers must be overcome (capabilities that must be built) in order to achieve objectives
- **Session 3 (Winter 2023/24):** Mapping the activities and possible inputs/outputs required to achieve the necessary capabilities that had been identified in session 2
- **Session 4 (Winter 2023/24):** Testing, challenging and strengthening the proposed ToC
- **Session 5 (Spring 2024):** Finalising the proposed recommendations

A ToC should remain a live document. The AQIS ToC will be revisited and updated as additional evidence becomes available and as Defra and UKHSA develop a plan to implement the steering group recommendations.

Theory of change for an improved AQIS

Summary of the problem

Participants considered the nature, drivers and dynamics of the problem with existing air quality information provision to draft the below problem statement.

Problem statement

Air pollution is a threat to both individual health and the environment.

Adverse health effects are more prominent in vulnerable populations; however everyone is exposed to air pollution, and it damages human health over both the short and long term – driving poor health outcomes, diminishing quality of life and increasing pressure on (and costs to) the health service.

Reducing the threat from air pollution requires widescale and multi-level behaviour change with buy in from the general public, government, local decision makes, businesses and industry, however currently many people including the public, at risk groups and decision makers have a poor understanding of the cause and effects of air pollution. People are unsure what actions they can take to avoid exposure to harmful level of pollutants, what they can do to improve air quality, or why air pollution is relevant to them.

Conversely individuals are unaware of the benefits that cleaner air can afford individuals and society. If air pollution is of low relevance to even those it directly and acutely affects, then communication and interventions will fall on deaf ears. Addressing the problem requires a shift in the narrative to break the feedback loop of poor understandings, insufficient support of air quality policies and a lack of political appetite for change.

Ambition for an improved AQIS

Workshopping a vision statement helped participants to visualise what an improved AQIS might look like and should strive towards. The process also encouraged them to consider what change might be required and what role different stakeholders might have in the improved system.

Vision statement

In an improved future, air quality information is made easy.

It is simply explained, readily accessible and presented as a coherent story – with clear links to the issues that people already care about and the benefits of cleaner air.

The information provided is seen as credible and trustworthy and supports a population-wide understanding of air quality harms. Members of the public, influencers and messengers (such as health professionals and educators), decision makers, and businesses and industry feel informed about the practical actions people can take over the short and long term to reduce their exposure to air pollution and are empowered to take and promote action to reduce pollution.

As awareness and engagement increase across communities, social attitudes and behaviours begin to shift – driving air quality up the political agenda and ultimately driving towards a vision of cleaner air for all.

Objectives

The vision statement captures two main behavioural outcomes that improvements to the air quality information system need to support.

- Individuals and stakeholder groups are able to take action to reduce exposure to air pollution.
- Individual and stakeholder groups are able to take action to reduce polluting activities.

In developing objectives for the AQIS ToC participants acknowledged the importance of not only building knowledge and understanding to facilitate behaviour change, but the need to also increase motivation and of empowering individuals to overcome the knowledge-action gap.

Improvements to the air quality information system therefore will strive towards three high-level objectives. Each of these three objectives is supported by multiple sub-objectives.

Objective 1: Increase knowledge and understanding about the impacts of air pollution amongst the public and other stakeholders

1.1 The general public understands why air pollution is a problem
1.2 Decision makers understand why air pollution is a problem
1.3 Influencers and messengers understand why air pollution is a problem
1.4 Businesses and industry understand why air pollution is a problem

Objective 1 of increasing knowledge and understanding refers to building a base understanding of air pollution, its causes and its impacts. This is about generalised education to make people aware of the problem.

Objective 2: Increased motivation to take action on air pollution amongst the public and other stakeholders

2.1. The general public are motivated to take action on air pollution
2.2. Decision makers are motivated to take action on air pollution
2.3. Influencers and messengers are motivated to take action on air pollution
2.4. Businesses and industry are motivated to take action on air pollution

Objective 2 refers to increasing motivation. In the context of information provision this may incorporate building trust, believability, social norms, and drawing out the benefits/co-benefits of action.

Objective 3: Greater empowerment of the public and other stakeholders to take action on air pollution

3.1. The general public are empowered to take action on air pollution

3.2. Decision makers are empowered to take action on air pollution
3.3. Influencers and messengers are empowered to take action on air pollution
3.4. Businesses and industry are empowered to take action on air pollution

In order to empower stakeholders to take action, barriers to behaviour change must be overcome – these barriers may be material (e.g. costs associated with the action) or may relate to a context specific information gap (e.g. not knowing what, how, or when to take effective action).

Stakeholder roles

The objectives are framed around building population wide understanding of, and engagement with, air pollution to support positive change at every level.

Participants identified four main stakeholder groups with different roles to play in an improved air quality information system.

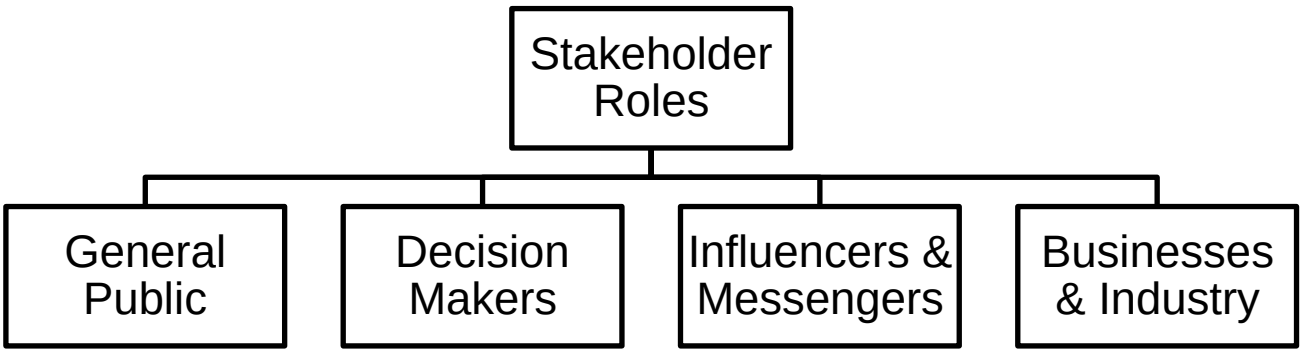

Figure 1. Figure displaying the four stakeholder groups identified.

Stakeholder group 1: General public

This group has the broadest definition. Participants stressed that air pollution impacts everybody, and everybody can play a role in reducing polluting activities. However, specific sub-sections of the population may have different needs and information needs.

- Air pollution impacts everyone – individuals may take action to reduce their own exposure to air pollution over the short and/or long-term.
- Public engagement/interest in air quality may increase political will to act on air pollution.

Vulnerable individuals and carers of vulnerable individuals

This group is a sub-population of the general public. It includes people at increased risk from air pollution due to individual health characteristics or life stage. It also includes people, groups and communities that may be more likely to experience disproportionately higher exposures to poor air quality.

- Vulnerable individuals may benefit from taking additional protective and reactive action based on changes in local air quality conditions and may consider further actions to limit longer-term exposure.

Polluters

This group is a sub-population of the general public. It includes drivers (emissions from vehicles), burners (emissions from domestic combustion) and homeowners (emissions from home heating/energy generation), but may extend to anyone (emissions from everyday decisions for example deliveries).

- Individual action can support a reduction in overall emissions.

Stakeholder group 2: Decision makers

This group incorporates decision makers at every level whose decisions may impact on emissions of air pollutants and who may be influenced through improved information provision to take action to reduce polluting activities - or to take action to support others to reduce polluting activity (e.g. through introduction of new policies or regulations).

This group ranges from very centralised decision makers e.g. those in government departments who may have very wide-reaching influence on polluting activity, through to hyper-local decision makers who may be making operational decisions that impact emissions within a local government administration or resulting from a business activity.

Central decision makers and regulators

- Individuals responsible for new policy, plans and regulations may take action to support a reduction in overall emissions centrally (through policy and practise) and/or provide support or incentives to help the public and businesses reduce polluting activity.
- This group included ministers, government departments and members of parliament.

Local decision makers

- Individuals responsible for local policy, plans and regulations may take action to support a reduction in overall emissions (through local policy and practises) and/or provide support to help the public and businesses reduce polluting activity.
- This group includes councillors, local authorities and planners amongst others.

Hyper-local decision makers

- Individuals with responsibility for the welfare of other individuals may benefit from understanding local air quality conditions and supporting those in their care to limit exposure. This group includes decision makers in pastoral setting e.g. in schools, nurseries and care homes, or in commercial settings e.g. sports and community event organisers.
- Individuals with responsibility for operational decisions may have opportunity to reduce polluting activity in their area (for example reviewing emissions from business vehicles.)

Stakeholder group 3: Influencers and messengers

Influencers and messengers are individuals, groups or organisations who may have a role in delivering an improved air quality information system by being trusted conduits of information. However, in order to do this, they must also be informed, motivated and empowered to disseminate messages - giving this group a role as both audience and messenger.

Participant discussion pointed to two types of influencers/messengers: “Social Influencers” – the opinion leaders who may help to define/drive social norms, and “Trusted Messengers” authoritative or expert voices who’s opinions/information the public values and trusts.

Social influencers

Influencers and messengers may include community figures, peers, public figures/celebrities and social media influencers. This group may:

- Educate the public about impacts of air pollution
- Inform and influence the public to pollute less
- Build trust/acceptance of air pollution narrative
- Cascade real time information
- Counter mis- and disinformation

Trusted authorities

Trusted authorities may include health care professionals; educators; charities and NGOs; academic institutions; mainstream media; local authorities; central government and the Met Office. This group may:

- Educate the public about impacts of air pollution
- Inform and influence the public on how and when to reduce exposure and/or pollute less
- Help individuals understand own risk/personal action plan,
- Cascade real-time information

- Counter mis- and disinformation

Stakeholder group 4: Businesses and industry

Businesses and industry, also have a role as both audience and messenger. Participants identified an information need to support businesses in understanding what actions may be effective to reduce business emissions, and in understanding how workplace emissions may affect employee health.

- Business and industry action can support a reduction in overall emissions. This includes businesses that pollute through operational activity and those that produce polluting goods.
- Participants also noted an important role for businesses/industry in show-casing emission reducing behaviours in order to overcome a sense amongst the general public that they are the only ones being asked to change behaviour (a key barrier to increasing motivation to act).
- Employers, in industries where employees are exposed to air pollution in the workplace, may take action to help workers limit exposure to air pollution in the workplace.

Desired outcomes from improvements to the AQIS

Achieving the objectives of an improved air quality information system should support the following outcomes over the short to medium term:

1. Influencers and messengers take action to influence and inform the public on air quality
2. Public attitudes regarding air pollution begin to change
3. The public, decision makers and businesses/industry take action to limit public exposure to air pollution
4. The public, decision makers and businesses/industry take action to reduce polluting activities

Discussion of what achieving these ToC outcomes may look like in practise helped to identify a number of information needs for different stakeholders – which in turn informed suggestions about recommended activities that would be needed in order to fulfil these information needs.

Short-term outcome (StO1): Action taken to inform and influence

StO1.1 Influencers and messengers educate the public on air pollution

- Air pollution has a place in school education.
- Trusted messengers have access to government endorsed educational resources and are able to counter mis- and disinformation.

StO1.2 Influencers and messengers support the public to take action to limit exposure through education and information provision

- Trusted authorities provide information to educate the public about ***who*** is at increased risk from short-term air pollution episodes.
- Trusted authorities provide information to vulnerable individuals about ***what*** they can do during episodes to limit their own exposure/protect own health.
- Trusted authorities provide information to the public about ***what*** action can be taken over the longer-term to limit exposure.
- Trusted authorities and messengers cascade air quality alerts ***when*** air pollution is high to allow vulnerable individuals to take action.

StO1.3 Influencers and messengers support the public to take action to pollute less through education and information provision

- Trusted authorities and messengers provide information to educate the public about ***why*** reducing air pollution benefits individuals and society.
- Trusted authorities and messengers provide information to the public about ***what*** action they can take to reduce their personal contribution to air pollution.
- Trusted authorities and messengers cascade air quality alerts ***when*** air pollution is high and pollution reducing action may be most beneficial.

Short-term outcome 2 (StO2): Public attitudes change

StO2.1 Public trust in air quality information grows

- The general public trust and act on air quality advice.
- The public are aware of the contributors to air pollution.

StO2.2 Social norms shift – public support for interventions to improve air quality grows

- The public are happy to trust and act on air quality advice.
- The public demand more from central and local government on air quality.
- Citizens and other stakeholders have confidence their right to environmental data is respected.

StO2.3 Public perceptions shift as air quality is more readily associated with health

- The general public believe in and understand the health risks posed by air pollution.
- The public trust and act on air quality advice.

Short-term outcome 3 (StO3): Behaviour change/action to reduce exposure

StO3.1 General public takes short-term action to limit exposure and health harms on high pollution days

Based on localised air quality conditions vulnerable/carers of vulnerable individuals:

- Plan activities to avoid exposure at most polluted time of day, for example changing time of commute or planning exercise around peaks in concentrations.
- Plan activities to avoid exposure in most polluted areas, for example choosing a less polluted walking route or choosing to exercise in a park or green space.
- Take relevant protective action such as use of preventative inhaler and carry reliever inhaler.

StO3.2 General public takes longer-term action to limit exposure/health harms

- General public and vulnerable individuals take action to reduce exposure in general, e.g. taking steps to walk, run, cycle etc on quieter roads or away from pavement edge.
- General public and vulnerable individuals take action to reduce exposure to indoor air pollutants, for example considering the type of cooking and heating appliances installed in the home; ventilating appropriately when cooking; seeking low emission cleaning products, paints, furnishings and fragrances and ensuring appropriate ventilation when used.
- Where possible, the most vulnerable individuals consider local pollution concentrations when making long-term decisions, for example where to live, choice of school/care setting.
- General public, including the most vulnerable individuals, avoid burning on an open fire or stove in the home and garden.

StO3.3 Decision makers take action to protect public health

- Hyper-local decision makers (for example schools, care homes, sports and community event organisers) take action to reduce exposure of people in their care when local air pollution elevated.

StO3.4 Businesses and industry take action to protect employee health

- Employers identify business related air quality risk to employees and cascade advice for reducing exposure to employees.

StO3.5 Businesses and industry take action to protect public health

- Businesses and industry plan and consider ways to support the public in reducing exposure – for example provision of pollution information at transport hubs.

Short term outcome 4 (StO4): Behaviour change and action to reduce polluting activities

StO4.1 General public takes short-term action to pollute less on high pollution days

When local air pollution is elevated, general public take action to reduce everyday polluting activity:

- Plan travel to minimise private vehicle use where possible.
- If using private vehicle avoid congested areas and busy times.
- If using private vehicle take care to drive more efficiently, avoid unnecessary breaking and acceleration.
- Avoid unnecessary burning at home or in garden.

StO4.2 General public takes longer-term action to pollute less

General public take action to reduce everyday personal polluting activities, including:

- Consider switching to active or public transport for local journeys.
- Drivers drive more efficiently and avoid idling, unnecessary breaking and acceleration. Drivers also avoid driving in congested areas and at peak times.
- Drivers carshare when possible.
- Shop locally, where possible, to reduce vehicle miles.
- Switch any online deliveries to a local collection point, rather than to the door delivery, and use low emission transport to pick up.
- Burners: limit/avoid burning on a stove/open fire if other heat sources are available; only burn “smokeless” fuel if necessary for heating; don’t burn home or garden waste and avoid lighting bonfires.

General public take action to make changes that have longer-term impact on personal polluting activities, including:

- Consider switching to an electric vehicle.
- Remove/avoid installing stove or open fire.
- Switch from gas to an electric boiler or heat pump.
- Improve/install home insulation.

StO4.3 Decision makers embed air quality considerations in planning and policy decisions

Central decision makers and regulators:

- Review and improve linkages between net zero policies and air quality.
- Incorporate air quality/emission standards into building regulations.
- Require population exposure and exposure reduction to be considered as part of development approvals for example, the approval of new schools and healthcare settings.

- Improve air quality monitoring around sensitive sites for example, care homes and hospitals.
- Put air quality at heart of infrastructure planning – e.g. active/public transport design and energy infrastructure.
- Provide public support/incentives for pollution reducing activities, for example boiler upgrade schemes.

Local decision makers:

- Consider population exposure and exposure reduction as part of development approvals.
- Put air quality at heart of infrastructure planning – e.g. local development plans, active/public transport design, and energy infrastructure.
- Publicise public support and incentives for pollution reducing activities – e.g. scrappage schemes.

Hyper-local decision makers:

- Review air quality impact of activities and consider ways to reduce emissions

StO4.4 Businesses and industry take action to reduce emissions

Business/industry polluters:

- Choose low emissions vehicles for deliveries.
- Heat offices and other industry buildings using heat pumps.
- Seek membership to a business eco/air quality scheme.

Longer-term outcomes/impacts

Over the longer-term the cumulation of achieving these outcomes should contribute to:

1. **A reduction in adverse effects from exposure to air pollution**
2. **A reduction in emissions of pollutants**

Which in turn have knock on benefits of:

- Reduction in air quality related illness, hospital admissions and deaths.
- Reduced strain on health service.
- Reduced economic burden of air pollution.
- Cleaner air.
- Biodiversity improvements.
- Improved quality of life.

Mechanism for achieving objectives

Barriers

Barriers are defined as the blockers that must be overcome for the intervention/programme to be capable of achieving its main objectives. Capabilities are the inverse of barriers and are what needs to occur in order for the programme to achieve its objectives (result of activities).

Barriers relevant to objective 1: Increase knowledge/understanding about the impacts of air pollution amongst the public and other stakeholders

Barrier: Across stakeholder groups there is a widespread lack of understanding about air quality

This barrier includes a lack of understanding about:

- Causes of air pollution.
- The health and environmental impacts of air pollution.
- The extent of the harm from air pollution in the UK.
- Who is at risk from air pollution (including impact on vulnerable individuals, health risks to everybody, and risks caused by inequality of exposure).
- Short and long-term health impacts from of air pollution.

This barrier is exacerbated by:

- Competing demands for peoples' attention.
- Low level of awareness of the existence of air quality information and low inclination of the public and other stakeholder groups to actively seek this information.
- Information that is available being too technical or inappropriate for a general audience.
- Air pollution being infrequently mentioned in mainstream media and lack of sign posting to information from trusted sources.
- Lack of formal education about air quality.
- Lack of a consistent government message about air pollution.

Barriers relevant to objective 2: Increased motivation to take action on air pollution amongst the public and other stakeholders

Barrier: The general public, including polluters, aren't aware or convinced of the individual and societal benefits and co-benefits of taking action on air pollution

This barrier is exacerbated by:

- Current advice is focused on action to reduce exposure to air pollution rather than benefits of actions that can be taken to reduce emissions.
- Current advice focuses on what individuals shouldn't do, rather than the benefits of alternative actions.
- A lack of focus on the tangible impacts of taking action - longer-term and historic interventions are often not evaluated and when they are findings are not often communicated in a relatable way.
- Health harms are often experienced over the very long term, making it difficult to prioritise improving air quality against other competing concerns.
- Uncertainty and complexity about best course of action, for example how do different actions compare such as burning waste or driving to waste disposal site.

Barrier: The general public may distrust air pollution science and air quality interventions

This barrier includes:

- A distrust of air pollution science.
- A lack of belief in air pollution harms.
- A distrust the motives of decision makers for introducing air quality measures.

This barrier is exacerbated by:

- The nature of air pollution as an invisible threat which makes it difficult to engage with.
- The daily air quality index often shows green/low, which suggests to the public that there is no need for action.
- Distinction between long- and short-term risk can be difficult to communicate.
- The prevalence of misinformation and disinformation.
- Lack of a consistent cross-party approach can make air pollution seem like a "political football."
- A lack of communication of the reason for intervention roll out, which can lead to the sense that interventions are motivated by money rather than benefit driven.

Barrier: The general public feel the expectation of change fall on them

This barrier includes:

- The public may feel like the demand for change is all on them.
- A sense that individual action won't make a difference.
- Feeling like the ask is new and/or burdensome.

This barrier is exacerbated by:

- A perceived lack of transparency around what action businesses, industry and government (local and national) are taking to tackle emissions.

- A lack of historical information - little or no communication about the actions that individuals took historically and the resultant benefits.

Barrier: The general public may feel a lack of social imperative to act

This is exacerbated by:

- A lack of a trusted figure head for air pollution.
- Perceived social status of some polluting activities, for example wood burning is often considered ‘green’, natural or fashionable

Barrier: The general public, including vulnerable groups, don’t associate air pollution with their personal experience of their own health and don’t consider themselves as ‘at risk’ from air pollution

This is exacerbated by:

- Air pollution not being routinely mentioned in health care appointments.
- A lack of NHS advice and signposting to health information.
- Air pollution is an invisible threat, and sources of air pollution are not well understood meaning people may not realise they are exposed.
- Individuals are unaware of localised air quality conditions, so they are unable to identify trends and patterns between air pollution and their experience of health.

Barrier: The general public, including vulnerable groups, are not aware of or convinced that they would experience a benefit from taking action to reduce exposure to air pollution or that benefit would outweigh any costs

This barrier is exacerbated by:

- Current health advice does not feel relevant or achievable to some.
- The benefits and reasoning of following health advice is not clearly articulated.

Barrier: Health care professionals maybe unaware that air pollution is relevant to their patients

This barrier is exacerbated by a lack of formal training on air pollution.

Barrier: Health Care Professionals are time poor – air pollution may be one of many exacerbating factors relevant to their patients, health care professionals need to make a decision on what is relevant

This barrier is exacerbated by:

- Local air quality conditions and likely exposure is not routinely linked to patient health notes.
- Health care professionals are not trained on how to embed air quality into conversations.

- A lack of standalone leaflets, literature and digital comms that can be quickly distributed.

Barrier: Decision makers, including central government and local authorities, are not incentivised to do more than the minimum to remain compliant with emissions standards

This is exacerbated by:

- Legal requirements to inform public about air pollution very limited.
- The legal limit values implicitly endorse a lack of action if the local authority is compliant.
- Local authorities can't prioritise air quality if they aren't facing penalties, due to lack of resource.

Barrier: Regulators often face no imperative to incorporate air quality into regulations for example building regulations

This barrier is exacerbated by:

- A lack of joined up thinking across guidance and policy areas.

Barrier: Hyper-local decision makers may not be aware that their area may be impacted by air quality or that the people in their care may be affected by poor air quality

This barrier is exacerbated by:

- A lack of clear national guidance for a range of settings including schools, care homes, event organisers and administrators.

Barrier: Members of parliament do not think the electorate would support further action on air pollution and/or are not aware/convinced of the benefits of further action on air pollution

This barrier is exacerbated by:

- Current recommendations and evidence not being presented in a sufficiently motivating manner.
- Prevalence of 'post expert' attitudes in modern discourse.
- Lack of survey data on public attitudes to air quality.

Barrier: There is no mandatory requirement, target or incentive for businesses to incorporate air quality into sustainability goals/reduce emissions

This barrier is exacerbated by:

- A focus on climate change at expense of other environmental concerns.

Barrier: There is no legal requirement for organisations with outdoor workers to monitor or take action on employee exposure

This is exacerbated by:

- A lack of easy access to data to monitor exposure.
- Lack of clear guidance on workplace exposure.

Barrier: Businesses and industry are not convinced that action to reduce business emissions, or to reduce employee exposure to air pollution would have a tangible benefit

This is exacerbated by:

- A lack of information on the economic and commercial benefits of polluting less and protecting employee health.
- A lack of insight into any public interest reason to take action.
- A lack of environmental accounting tools.

Barriers relevant to objective 3: Greater empowerment of the public and other stakeholders to take action on air pollution

Barrier: Stakeholders may lack understanding about *what* action to take, *when* to take action, and *how or where* to carry it out effectively in order to reduce pollution and reduce exposure to pollution.

This barrier is caused or exacerbated by:

- The current advice accompanying existing real-time and forecast air quality measures:
    - Does not extend to actions people can take to reduce polluting activity.
    - Does not feel relevant to all members of the general public.
- Health advice may not contribute to all round health, for example current advice around exercise may cause people to reduce physical activity.
- The language and presentation of advice can be difficult to follow.
- It can be unclear who the advice is aimed at.
- There is lack of information provided about what factor(s) are responsible for the elevated air pollution.
- Very few people are aware of real-time/forecast air quality information, so people don’t know when air pollution is high and that action may be required.
- There is a lack of widespread automated dissemination of air quality alerts, or of publicly displayed real-time/forecast information meaning information has to be pro-actively searched for.
- There is a lack of temporal context to forecast air pollution (for example when air pollution will peak) to empower people to make decisions about when to carry out actions.

- There is a lack of street level real-time and forecast air quality data to empower individuals to make decisions about route/exposure.
- The current health advice is very general, rather than being tailored to how individuals can incorporate into daily lives.

Barrier: The public, including polluters, face material/physical/cognitive barriers to changing behaviour

This barrier includes:

- The costs associated with changing vehicles/installing new appliances/upgrading home insulation or ventilation/energy sources.
- The lack of access to safe, reliable, and convenient public/active travel infrastructure.
- The lack of air quality information/conversation at point of decision making, for example when purchasing a new vehicle.

This is exacerbated by:

- A lack of grants, incentives and support as well as a lack of sign posting to any support that is available.

Barrier: The public, including vulnerable groups are unaware of the air quality health harms that they may be exposed to inside the home

Barrier: For the public to adapt their homes it may require money, permission, or government or council intervention

Both of these barriers are exacerbated by:

- A lack of clear and recognisable labels on household products for example, cleaning products and home furnishings.
- A lack of clear national messaging on indoor impacts of domestic burning.
- A lack of signposting, guidance and leaflets or literature from NHS and health care providers.
- The lack of national strategy on indoor air pollution.

Barrier: The public, including the vulnerable, are unaware of the accumulated exposure they may be subject to based on where they live, work or go to school

This barrier is exacerbated by:

- A limited range of easy to access and understand, long-term air quality information sources for specific areas, postcodes or addresses.
- The current decision to show DAQI as green and “low” for any air quality measurement that doesn’t reach the threshold for an acute health risk may undermine understanding of risks from longer-term exposure.

Barrier: Messengers do not have an easy way of knowing when air pollution is elevated and that the public might benefit from alerts being cascaded

This is exacerbated by:

- The government and decision makers having a limited number of existing relationships and dissemination channels in place with trusted messengers (for example the mainstream media, charities, health settings) to cascade messages.

Barrier: There is a lack of political support for action to reduce air pollution

This is exacerbated or caused by:

- The current political divisiveness of air pollution as a topic.

Barrier: Local authorities lack resource to invest in community awareness raising and access to up-to-date data to support decision making

This is exacerbated or caused by:

- Lack of a centrally driven national communications campaign that can be used by local authorities.
- Competing pressures on limited resources.

Barrier: Hyper-local decision makers do not have an easy way of knowing when air pollution is elevated and the role they can play in reducing exposure

This is exacerbated by:

- Lack of nationally produced or co-ordinated guidance for schools, hospitals, care settings and event organiser.

Barrier: Businesses and industry may require (and lack) detailed technical guidance to support action to pollute less

This is exacerbated by:

- The complexity in developing and disseminating guidance for businesses with a wide range of needs and circumstances.

Barrier: Businesses and industry may require (and lack) access to information about potential employee and workplace risk relating to air pollution.

This is exacerbated by:

- The lack of health and safety and occupational health guidance on working in polluted areas.

Recommendations

By considering the barriers that need overcoming in order to achieve the objectives and outcomes of an improved AQIS; participants developed a list of 32 recommendations for new actions and/or improvements to air quality information provision.

Combined these recommendations should respond to the 3 objectives identified as part of the ToC process: (1) to increase knowledge of air pollution, (2) to increase motivation to take action on air pollution and (3) to empower stakeholders to take action on air pollution.

Each recommendation will be relevant to one or more of the different stakeholder groups identified.

Themes

The recommendations have been sorted into the following 8 themes:

Overarching principles/approach suggestions

- These recommendations provide the guiding principles for how the other recommendations should be carried out. These principles should be referred to when developing the recommendations into policy. Not all the principles will apply to all recommendations.

Health

- Recommendations in this section relate specifically to the health sphere including training for health care professionals and changes to patient records.

Communication strategy

- The general public's engagement with and understanding of air quality is low. These recommendations set out specific steps to be included in a communications strategy to increase engagement and understanding of air quality.

Education

- Education is a vital tool for raising the public's awareness of air quality.

Normalisation and empowerment

- Low public awareness of air quality means that it is rarely discussed and when it is people feel little agency to do anything about it. These recommendations focus on normalising air quality, so that it is part of everyday conversations, with the intention of thus raising awareness both of the health impacts of poor air, and the actions people can take to improve air quality.

- Empowering individuals so that they can spread air quality messages and feel able to take action is also fundamental. Recommendations in this section intend to normalise air quality and empower people to take action.

Business and industry

- These recommendations pertain to actions businesses and industry may take in order to reduce employee exposure to air pollution and to reduce their own air pollutant emissions.

New technology

- Recommendations in this section relate to new technologies that can be leveraged to communicate and inform the public, businesses, industry, influencers and messengers and decision makers about air quality.

Operational guidance

- A range of opportunities to develop operational systems and guidance have been identified to aid the protection of public health.

A thorough and developed evaluation plan should be implemented for any recommendation taken forwards.

Overarching principles/approach suggestions

1) **Air quality information providers should take an outcome-based approach to communicating air quality information, risk and potential action.**

   When communicating air quality information and risk to the public, providers should use an outcome-based approach. When designing communications, providers should start by consider what intended outcomes are expected from the audience. An intended outcome could include behaviour change, action or raising awareness. Any call to action that is communicated should be realistic and achievable for the target audience.

   The public are currently provided with a wide range of air quality information through websites such as UK-AIR. Using an outcome-based approach means information that can lead to behaviour changes and increase knowledge should be prioritised.

   The outcome-based approach should be balanced with the need to be transparent and provide data for any statutory duty.

2) **Air quality information should be developed with a consistent tone, message and advice. This information should be disseminated through multiple channels.**

   Air quality information will be communicated through a range of channels. Information across these channels should have a consistent tone, message, and contain consistent

advice. This is not to say that messages should not be adapted to particular audiences, as different individuals will have different needs. It is important, however, to make sure that these messages are consistent and delivering the same information. Whether a member of the public seeks information from their GP, school or a local news bulletin all the advice on reducing pollution, risks of exposure and/or benefits to reducing exposure should be consistent.

This will be an action that will have to run across years of messaging, so it is important that not only is the tone consistent across mediums but also that it is consistent across time.

3) **Air quality information should be layered with optional levels of detail available and should be useable.**

Members of the public will have different existing level of understanding about, and interest in, air quality information. When disseminating air quality information, information providers should offer a basic level of simple and accessible information, whilst also providing the public with opportunities to access information in a higher-level of detail.

Where possible air quality information should be relatable, and therefore more likely to chime with people's everyday experiences and sense of agency. Air quality information providers should learn from expert science communicators on how to simplify complex data and messages. Providers should also consider the use of infographics, narratives, human stories or equivalents/comparisons to make messages more relevant to non-scientific audiences.

Although the starting point will be simple, detailed information will need to be readily available as well as understood by decision makers. This is important for transparency and for the credibility of the improved AQIS.

4) **Links between short-term policies and real-time air quality conditions should be developed.**

Government should review the opportunity to develop flexible short-term policy options that encourage the public to adapt their approach towards limiting their exposure as well as their emissions. For example, when air pollution is high, it may be that free public transport could be offered for the period to reduce the number of cars on the road or short-term banning of burning activity.

It will be important to understand the practical implications of this and to evaluate any potential benefits.

5) **Any co-benefits or consequences of behaviour change should be communicated alongside the possible health benefits.**

   Actions to reduce air pollution benefit not only the health of the public but are accompanied by a range of co-benefits. Citizens have different interests and different motivations, while some may act out of health or environmental concerns, knowing and demonstrating the whole spectrum of co-benefits (social justice, climate, economic, etc) can make action on air quality feel relevant to a more diverse audience.

6) **Air quality related health advice should consider and, where appropriate, incorporate indoor exposure.**

   The public have a low awareness of what causes pollution within the home and are likely to feel they have more agency in controlling indoor air pollution than outdoor pollution. This recommendation could include better labelling of products to further educate the public about health hazards and eco labelling for indoor pollutants.

   Information on indoor exposure can include the health harms associated with domestic burning as this extends beyond the known risks of smoke that leaves the chimney, to the pollution that remains within the home. This information may be particularly relevant for vulnerable groups. This would also be relevant for public indoor settings as well as private.

   This needs to be balanced with the outcome-based approach and providing actionable advice. It could be useful to caveat this information under a sub question of 'What else can I do to reduce harmful exposures?'.

7) **Air quality information should provide a broader context and narrative, so individuals feel part of something bigger.**

   Air quality information should contextualise any 'ask' on individuals to pollute less by making visible actions by government and industry to tackle air pollution. It is important to ensure that air quality becomes part of ordinary conversations and not seen as a sporadic 'moment'. Where appropriate, good news stories should be shared to demonstrate progress. Sharing positive stories will likely help motivate the public to continue to take action.

Health

8) **Consider the benefits of including air quality data on patient records.**

   Providing healthcare professionals with patients' local air quality information enables them to be aware of the risk a patient may be facing from air pollution. This information may also be key to health care professionals understanding how a patient's condition may be exacerbated as a result of air pollution exposure. This is an opportunity to

follow the lead of work by Great Ormond Street, linking air quality levels for patient postcodes to health records.[4]

It must be ensured that health care professionals are trained to use this information effectively to make this change meaningful. Current programmes should be evaluated to understand the effectiveness of this intervention.

9) **Consider whether a separate alert system for specific settings (e.g. hospitals, schools, nurseries, care homes) during a high air pollution event would be useful in protecting public health.**

Government should consider developing an alert system to cascade air pollution alerts to specific settings (e.g. hospitals, schools, nurseries, care homes). Alerting people in these settings to high pollution events could allow for measures to be taken to reduce individuals' exposure. Any alerting system should be accompanied by clear guidance about how the health of individuals in the settings can be protected during a high air pollution event.

Care should be taken to ensure that alerts don't lead to fear. Alerts should include clear actions that can be taken.

10) **Examine language around vulnerability and risk, as people often don't self-identify as vulnerable.**

The current DAQI uses the phrase 'at-risk' to describe those who may experience greater risk from air pollution exposure. Individuals often do not self-identify as 'at-risk' and may therefore not use/receive the appropriate health advice. The terms used should be examined to ensure that they are accurate and enable people to self-identify the health advice that is relevant to them.

11) **Engage with the Health and Safety Executive to consider whether there is a need to review and update guidance for occupational exposure.**

Defra and the UKHSA should work with the Health and Safety Executive and should consider whether guidance on occupational exposure to poor air quality should be reviewed and updated. There should be a clear system of escalation if employers are found to be in breach.

Different organisation/business types will often have vastly different needs, so a pragmatic approach to guidance may well be needed depending on the workplace environment (e.g. advice around outdoor exposure from Non-Road Mobile Machinery, ventilation in office buildings, exposure for professional drivers, use of PPE, etc).

[4] https://www.gosh.nhs.uk/news/air-pollution-levels-added-to-patients-postcodes/

12) Work with the relevant professional health bodies to upskill health care professionals on the health impacts of air pollution.

Government should engage with Royal Colleges and professional bodies to embed air quality information into the training curriculum for health care professionals including into continued professional development.

The medical curriculum is set by multiple bodies, so will need appropriate and consistent engagement to deliver progress.

13) Air pollution information should be added to annual medical reviews, where appropriate.

Air pollution is linked to multiple conditions including a range of respiratory and cardio-vascular conditions, many of which have annual medical reviews. Where appropriate air pollution information should be added to patient records to allow health care professionals to provide relevant advice.

Consideration should be given to what information is most useful for health care professionals and how this information should be presented on records.

Communications strategy

14) Develop and implement a national air quality communications strategy.

Government should develop a national air quality communications strategy to co-ordinate air quality communication at all scales nationally. This strategy should communicate with the public through multiple channels including social media.

As stated in previous recommendations, communications about air quality should align with guiding principles including:

- Information should be layer-able.
- Messaging should be consistent.
- Co-benefits of taking action on air pollution should be communicated.

Government departments should work together to communicate air quality advice to the public effectively. The strategy should also promote cross-government work that relates to air quality for example heat pump grants and energy transition.

Health elements of a national campaign should make use of trust that exists with the NHS and use these existing lines of communication to disseminate information. The communications strategy should consider who messengers for air quality information are and consider having a figurehead for air quality. Having a trusted figurehead with a large platform will likely increase the credibility of the message.

15) **Create air quality toolkits to include 'bite-size science' packs that can be utilised by other bodies to communicate air quality information.**

There is a wealth of academic evidence about causes and impacts of air pollution and interventions, but many potential messengers may not be able to access or understand this evidence. Included in any communications strategy should be the development of resources for messengers to use when communicating with others. These resources should be accessible, shareable, provide impartial/technical information, include infographics/pictographs and address common misconceptions. Resources should be developed for a number of different groups which could include, but are not limited to: teachers, local authorities, members of parliament, community groups, youth groups, religious groups and journalists.

There are many misconceptions about air quality, these packs would specifically need to address these misconceptions.

16) **Provide timely short-term air quality information that is specific enough to empower the public to take action to protect their health and pollute less.**

Air quality information should be provided to the public in a timely manner. This information should be specific e.g. street/neighbourhood level and explain why emissions/concentrations are high.
The public should be provided with timebound calls to action. Calls to action should include actions individuals can take to protect their health and actions they can take to reduce polluting behaviours.

In order to provide this information effectively it will require a high level of data granularity.

17) **Any communications strategy should raise awareness about the link between air pollution and health, both generally and for specific conditions.**

Leaflets/literature should be available in hard and digital formats from a variety of health and social settings, e.g. GPs, pharmacies, community centres. Literature should be developed for a general health message, but also tailored for specific health conditions, age groups and life stages.

18) **Provide easily consumable air quality information for those that may be part of lesser reached communities or who are disconnected on the topic.**

There should be air quality information which is easily consumable for those that may feel disengaged. Information should recognise people's personal priorities and articulate "what I can do, how I do it, how it fits into my existing daily routine, and what's in it for me." Social media provides opportunity to reach a wide audience with short, sharp, snippets of information, these should not try to do too much at once but can be more specific to different audience needs (e.g. rural communities).

Evidence should be considered to understand how this can lead to behaviour change. There will be a need to clarify both the audiences and providers to better understand the impact of this recommendation.

Education

19) Air quality information should be specifically incorporated into the national curriculum as well as medical curriculums.

Air quality, the associated risk of low air quality, and co-benefits of actions that reduce air pollution should be incorporated into the national curriculum (early years to A-level). This should be accompanied by the provision of high-quality resources to support and upskill teachers and practitioners. Bite-size information packs may be useful for educational settings.

Air quality needs to be specified on the curriculum, rather than simply implied through suggestion of content and provision of resources.

Empowerment and normalisation

20) Air quality information should be normalised by using channels people are already familiar with.

Air quality information should be available to the public without individuals having to seek it out. Air quality information should be made available through channels individuals already interact with, such as weather forecasts, weather applications and route planning applications. By including this where people already seek other information the burden on individuals is reduced. This needs to build on existing dissemination routes as to not further burden the public with additional requirements and platforms to receive information.

It will also be important that health professionals (amongst other messengers) know how to communicate with both their patients and the media to bridge any gap in understanding.

21) Government and other relevant stakeholders should take a collaborative approach to engage and empower communities to develop their own delivery solutions to air quality.

Communities and members of the public need to be involved in setting the direction of changes/improvements and feel part of the solution. It will be important to co-develop messages (as part of the national communication strategy) and solutions with the communities that will use them. This is not to shift the burden of responsibility to these communities but instead ensures that messages truly resonate with communities. Further to this, working with communities ensures that actions address what matter to the communities involved. This should include work to collaborate with seldom reached groups. This work should form an integral part of the national campaign.

This will require genuine two-way dialogue with people who understand local contexts. Priorities will be an issue; cost of living, heating, eating, etc. will often be more important to people than air pollution. Due to these other priorities, disadvantaged communities may need additional support to engage with this work. It will also be important to engage minority groups in developing local solutions.

22) When raising awareness around air pollution, information about any support available to help individuals to take action should be actively sign-posted.

Individuals face material and personal barriers to behaviour change, these may relate to costs, lack of infrastructure, time-limitations, sense of personal safety etc. Information about what individuals can do to reduce polluting activity needs to be accompanied with both interventions that make taking action easier (e.g. new infrastructure, incentive schemes) and clear signposting to the support available. Government and early adopters need to take actions as early as possible to demonstrate to the public that this is achievable. For example, grants for the installation of heat pumps can be signposted to individuals.

People face competing priorities. The cost of living, heating and eating may feel more pressing for many people. Financial incentives would be beneficial to combat these conflicting priorities.

23) Government and other relevant stakeholders should facilitate and support air quality citizen science projects.

Citizen science projects can build engagement and create community-based influencers, helping to disseminate air quality messages further. These projects should be supported by organisations with existing knowledge and local expertise. These projects may become more relevant once a base level of understanding is established within the community. We understand that not everyone has the time to participate in projects so it will be important to engage with a wide range of groups, ensuring those from lesser heard communities are included. These projects can be monitored and reviewed by local organisations with a deeper understanding of air quality to ensure accurate and effective projects are delivered that will have lasting impact.

Business and industry

24) The benefits and co-benefits of reducing pollution (and reducing employee exposure) should be communicated clearly to industry.

Addressing air pollution has a number of economic and commercial benefits to businesses and industry. These benefits should be clearly communicated. The benefits may include improved health and productivity of staff, positive impacts towards brand image/reputation and increased efficiency.

When implementing this, it will be important to understand who the target audience is (e.g. large corporations, SME's, people that work or those traveling to work) as needs and opportunities will vary.

25) Develop/support a social responsibility accreditation/voluntary pledge relating to air quality.

An air quality related accreditation/voluntary pledge should be developed for businesses. This pledge should come with a range of commitments to upholding high air quality, addressing indoor air quality and taking action to improve air quality. This should provide the opportunity for businesses and industry to showcase action that they are taking on air pollution. A co-design method should be considered when developing this accreditation/voluntary pledge. This should be accompanied by raising the public's awareness of the accreditation/voluntary pledge. Early forms of these schemes have started to be developed e.g. air pollution footprint[5] and Stockholm Environment Institute's blueprint for corporate air pollution reduction.[6]

An accreditation will take time to develop and implement, a voluntary pledge may be a more pragmatic approach.

26) Consider whether technical guidance to businesses needs to be reviewed in order to support businesses to pollute less.

The Environmental Agency's technical guidance should be reviewed in order to support businesses/industry to pollute less. Guidance should include better signposting of the support available to industry to reduce polluting activity.

Different organisation/business types will have vastly different needs (e.g. agricultural practices, industrial burning, deliveries/fleets) so this may be a long-term action. Reviewers should avoid adding complexity to existing guidance/permitting regimes but amplify any associated air quality benefits.

27) Ensure that air quality information provided by businesses and industry is accurate and up to date.

Business and industry groups do not routinely give or receive air quality information. Groups with a voice in relevant industries should be identified and supported to disseminate up to date information relevant to their stakeholders.

If businesses are aware of their air quality impact they may be more readily able to take action to pollute less. Although this recommendation focuses on business as a

[5] https://www.air-pollution-footprint.net/

[6] SEI's Blueprint for Corporate Air Pollution Reduction

receiver of information it could also extend to groups like industry trade bodies and unions.

28) Work with stakeholders to increase awareness of tools that allow businesses to easily calculate air quality aspects of environmental impact.

Government should work with stakeholders to promote environmental calculator tools for businesses and industry. Tools that allow businesses to easily calculate their environmental impact and, more specifically, which parts of the environment they are impacting, allow businesses to understand their contributions to e.g. air pollution, and to consider the actions they can take to reduce negative impacts.

New technology

29) Make information more easily available so stakeholders do not have to proactively seek it, for example making use of existing apps/push notifications/public displays.

Few stakeholders independently seek air quality advice. By using location services, potentially in existing apps, information providers could provide opportunities to inform people about air quality without creating an additional burden. Apps also offer opportunities to provide more personalised health advice. This recommendation could also be adapted to different accessibility needs for example delivering message via SMS or text-to-phone. Opportunities extend wider than just communicating with the public and include making reporting of air quality information simpler for industry.

It will be important to make this information available in places that people are already looking, rather than creating new apps that will need to be downloaded.

Operational guidance

30) Consider whether specific guidance is needed for events requiring physical activity.

Government should consider developing specific guidance and resources for organisers of events that require physical activity. This guidance could include how to use air quality forecasts to inform risk assessments. Additional training or information packs could be provided for first aiders at sports events to be aware of local air quality conditions and of the impact air pollution can have on ‘at-risk’ individuals.

31) Review the existing operational strategy used for a high pollution events

Government should review the operational procedure it follows during high air pollution episodes. Government should review: whether alerts are issued at an appropriate frequency; who alerts and advice need cascading to; what action needs taking at each air pollution level; how long an alert is in place for; how media responds to an event; how to address inconsistencies in different forecasts/between forecasts and measured

air quality. Going forwards government should ensure that the operational procedure remains updated. This may be linked to other alerting systems such as the UKHSA Adverse Weather and Health Plan.

In order to make this effective, coordination across multiple departments will be essential.

32) Future policy development should consider environmental and health impact

Alongside the current commitment to consider environmental principles in policy development, public health should also be considered. Policies should be justified against the public health impact. The environmental principles provide policy makers with key questions they must ask of a policy before implementation, a similar process can be developed for health impacts. This does not need to be limited to air quality.

Next steps

The AQIS ToC process has resulted in 32 recommendations over eight themes, these recommendations will feed into the AQIS steering group's final report and recommendations.

This narrative represents a snapshot in time of the AQIS ToC. The ToC is a living document and will continue to evolve in light of new evidence.