

# How ‘nexus’ issues are dealt with in parliament

Supporting parliamentary engagement with environmental and social interdependencies

Report on the Nexus Network collaboration between Green Alliance, King’s College London and the Grantham Institute at Imperial College

## Introduction

The 'nexus' is a way of thinking about the interdependencies of human and environmental systems, such as food, water and energy security. Nexus issues are characterised by complex linkages, tensions and trade-offs, which cross policy and disciplinary silos. Because of this, they pose considerable difficulties for parliamentary scrutiny, debate and decision making. This project, a collaboration between Green Alliance, King's College London and the Grantham Institute at Imperial College, brought natural and social scientists together with parliamentarians to explore parliamentary capacity to deliberate on nexus issues.

Initial scoping discussions between the project team and MPs identified air quality as a high profile nexus issue through which to explore the complex interdependencies between the environment, society, human health, and the economy. A workshop held in the House of Commons, with the support of two select committee chairs, discussed integrated solutions to air quality issues, and considered how parliamentarians could work with the academic community and other stakeholders to improve nexus decision making. Ideas were developed for further collaboration in this area.

This short briefing describes the process of collaboration, offers some insights into future approaches to addressing air quality using a nexus approach and suggests ideas for future collaboration.

## Developing the network

The project brought together academics from King's College London and the Grantham Institute at Imperial College, with the think tank Green Alliance and a cross party group of MPs. Academics involved were from both natural science and social science backgrounds, with expertise in governance and environmental science. The project aimed to:

- establish a network to foster future collaborations between parliamentarians and UK natural and social scientists with expertise in nexus issues;
- improve understanding of nexus issues and, in particular, of the role and opportunities for parliamentary engagement with them;
- develop a shared research agenda and a specific co-designed research proposal for improving parliamentary scrutiny and governance of nexus issues.

Initial discussions were held between project partners and MPs, to gain insights into MPs' understanding of the issues, and the challenges, both institutional and political, in trying to tackle nexus issues. Through these discussions, it was clear that the best approach would be to work through one particular issue, as a case study of nexus decision making. Air quality was chosen, because it is a pressing issue for MPs, given the VW emissions scandal and a government consultation on the issue prior to the release of its final air quality plans; both the universities involved had expertise to offer in this area.

The project team prepared a short briefing paper for MPs and, in October 2015, Green Alliance convened a workshop in parliament bringing together MPs, including the chairs of the Environment, Food and Rural Affairs Select Committee (EFRA) and the Environmental Audit Committee (EAC), with academics, other air pollution experts and representatives from local

councils. Participants discussed how to develop a strategic response to air quality; and the wider lessons it offers for other similarly complex issues.

Following the seminar, findings were submitted to a Defra (Department for Environment, Food and Rural Affairs) consultation on air quality. These findings are summarised below. Follow up discussions were also held with the MPs involved, to consider options for better decision making processes in the future and to identify how the project team could continue work in this area.

## **Air quality as a nexus issue**

Air pollution is a clear example of a nexus issue, whereby efforts to improve sustainability in one policy domain can prove counterproductive if they do not consider their effects on other policy domains with which they are interconnected. Indeed, in the 1990s, in an effort to reduce CO<sub>2</sub> emissions and achieve greater fuel efficiency, the government encouraged a shift from petrol to diesel vehicles through associated tax and transport policies. However, although diesel vehicles reduce CO<sub>2</sub> emissions, they emit higher quantities of NO<sub>x</sub> (nitrogen oxides) and PM (particulate matter) than petrol vehicles. Thus, the policy developed as part of national climate strategies has far reaching consequences for local air quality and for environmental and public health, which are themselves rather fragmentary policy domains with governance responsibilities distributed across different sectors and policymaking institutions in a multilevel governance system.

Although the UK no longer suffers from the acrid fogs that characterised the Great Smogs of the 1950s, air pollution remains a major environmental and health hazard. There is now substantial scientific evidence of adverse health and environmental impacts from acute exposure to high concentrations of various airborne pollutants, as well as growing evidence of negative health impacts from chronic exposure to lower, legally permissible pollutant concentrations.<sup>1,2</sup> The government's consultation on air quality accepted that 29,000 deaths are caused every year by particulate matter pollution (PM<sub>2.5</sub>) and an estimated 23,500 deaths are caused by effects of nitrogen dioxide (NO<sub>2</sub>), a harmful gas whose major source in the UK is from diesel vehicles.<sup>3</sup>

## **Air quality policy in the EU and UK**

The historical development of recent air quality standards is set out in the table on page four. European legislation now sets legal limits for concentrations of air pollutants such as NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for all member states. Currently, 38 out of the UK's 43 zones do not comply with binding limits on NO<sub>2</sub>, set out in the EU's Ambient Air Quality Directive.<sup>4,5</sup> This directive sets limit targets that should have been met by member states in 2010 with the possibility of applying for an extension of the deadline for compliance up to January 2015; however for these 38 zones the UK either did not meet the targets, despite asking for an extension, or did not ask for an extension in the first place, as it knew that it would not be able to comply. In 2014, the Supreme Court of Justice ruled that Defra should produce a new national air quality plan that would allow it to meet European legal limits for NO<sub>2</sub> levels in "as short a time as possible".<sup>6</sup> Following another court case brought by Client Earth against Defra, the UK Supreme Court ordered the government to redraft the UK's national air quality plans. The final plans were published by Defra in December 2015.

The government's plans for improving air quality rest on a network of local authority managed air quality zones to target local hotspots exceeding legal NO<sub>2</sub> limits. Since 80 per cent of NO<sub>2</sub> legal breaches are road transport related, most of the 'zone specific' air quality strategies focus on transport as the key area for intervention.<sup>7</sup> To support those local plans Defra has also developed a national framework for establishing more stringent Clean Air Zones in which high polluting commercial vehicles can be charged for, or even excluded entirely, from entering designated urban areas.

The government has been heavily criticised for exempting new vehicles and private cars from Clean Air Zone regulations and for only legislating to introduce such zones in five cities (Birmingham, Leeds, Southampton, Nottingham and Derby), thus ignoring cities worst affected by poor air quality, such as Bristol, Manchester and Liverpool. The power to establish such zones in Scotland, Wales, and Northern Ireland rests with the devolved administrations.

Government initiatives have also been announced for reducing freight related emissions and road traffic, promoting public transport, incentivising low emission vehicles and encouraging behaviour change through better communication and information sharing. These measures are expected to allow all zones to meet NO<sub>2</sub> targets by 2020, except London which will not be compliant until 2025. The UK is not alone in failing to meet air quality standards, with more than half of the EU member states currently under infringement procedures for at least one pollutant.<sup>8</sup>

Parliamentary interest in air pollution has increased substantially in recent years. New research has highlighted its negative impacts on human health, helping to raise public awareness. The political saliency of air pollution has been further amplified by successful court challenges to Defra's air quality plans, the controversy over Heathrow airport expansion and the Volkswagen emissions scandal, in which the German car manufacturer admitted to using software to cheat emissions tests of their diesel vehicles. This has raised questions over the effectiveness of the existing European emission standards and testing regime, and prompted the Environmental Audit Select Committee to launch another parliamentary enquiry on air pollution.<sup>9</sup> This is focused on diesel emissions standards and testing, after three previous reports in the last parliament on the health impacts of air pollution and on the government's strategy for complying with EU air quality targets. Meanwhile, the Environment Food and Rural Affairs select committee is also launching its own enquiry into how the UK can meet EU limits for NO<sub>2</sub>.

## Historical development of air quality regulation and standards

<b>EU thematic strategy on air pollution (2005)</b>	Sets out the strategic policy objectives, which have now been updated.
<b>National Emission Ceilings Directive (NECD) (2001)</b>	Sets national emission ceilings for 2010 for all member states covering four main pollutants (SO <sub>2</sub> , NO <sub>x</sub> , non-methane VOCs and NH <sub>3</sub> ). In 2012, under the Gothenburg protocol, new ceilings for 2020 and 2030 were set. <sup>10</sup>
<b>The Ambient Air Quality Directive (2008)</b>	Sets local air quality limits which may not be exceeded anywhere in the EU.
<b>Source specific legislation</b>	Designed to limit emissions from specific economic sectors, such as the Industrial Emissions Directive, the Euro standards for vehicles, energy efficiency standards, fuel standards for ships, and so on
<b>Clean Air package (adopted December 2013)</b>	Includes: <ul style="list-style-type: none"> <li>• A proposal for a directive of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC, COM(2013) 920 final (“new NECD”);</li> <li>• A proposal for a directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants, COM(2013) 919 final;</li> <li>• A proposal for a council decision on the acceptance of the amendment to the 1999 protocol to the 1979 Convention on Long-Range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone, (COM(2013) 917 final).</li> </ul>

## The four workshop findings

The parliamentary workshop, held as part of this project, identified four steps that could be taken to improve the management of air quality in the UK.

### 1. Produce a new air quality strategy

First, there is a clear need for a more strategic look at air quality. The last comprehensive air quality strategy was published back in 2007 and, in the interim, the scientific evidence for the health impacts from PM<sub>2.5</sub> and from chronic exposure to legally allowable concentrations of these and other airborne pollutants has grown. While Defra’s latest air quality plans are welcome, they focus on NO<sub>2</sub>, which is just one aspect of a much bigger issue. There was support among many participants for a recommendation that Defra should produce a new, comprehensive strategy on air quality.

### 2. Clarify the allocation of resources and responsibilities

Second, such an overarching and long term air quality strategy would also need to address the allocation of resources and responsibilities between different levels of government: ie EU, UK, devolved administrations and local authorities. In particular there were concerns that the

current focus on addressing air quality through local air quality zones may lead to inconsistencies across the UK that will raise the cost and lower the overall rate of compliance.

The current strategy allows local authorities to implement Clean Air Zones with one of four levels of stringency. As a result, it will be difficult for fleet owners to know which of their vehicles are banned from entering which local authorities. There is also a risk that the current focus on legislating Clean Air Zones in a few major cities will simply move the problem around, shifting 'dirty' buses and other commercial vehicles to less stringently controlled emission zones rather than phasing them out altogether. Some participants also expressed concern about whether local authorities have either sufficient resources or regulatory inspection and enforcement powers to achieve the goals of the new air quality plans. For example, they are not allowed to levy a fine higher than £20 for engine idling, even though at this level it does not work as a deterrent.

Within the context of a clear national framework, local authorities would like the flexibility to test new approaches, such as charging for parking according to a vehicle's impacts on air quality rather than just its carbon emissions, and restricting diesel engines in certain areas. At the same time the draft air quality plans place additional responsibilities on local authorities and it is not clear how, at a time of considerable financial austerity, implementation of the proposed measures will be financed.

### 3. Ensure cross departmental action

Third, there was also strong endorsement for a cross government response to air pollution, whose causes and effects span right across the mandates for Defra, the Departments for Transport, Communities and Local Government, Health, and Energy and Climate Change, as well as their associated non-departmental public bodies like the Environment Agency, Highways Agency, Driver and Vehicle Licensing Agency, and Public Health England. Any long term national air quality strategy will need to consider the interdependencies with transport, energy and climate policy so as to address the opportunities and trade-offs involved in improving air quality while also reducing greenhouse gas emissions and ensuring resiliency to future climate change and energy shocks. For example, participants noted that longer term solutions to air pollution depend upon reducing car use and developing better infrastructure for public transport, cycling and walking. Although these solutions are highlighted in the government response, there is a need to ensure that transport and planning policy at a national level allows and encourages such solutions to emerge at the local level. An example of this is the introduction of electric vehicles, which would benefit from a co-ordinated national strategy to help with the provision of infrastructure at the local level to achieve the dual aims of improving air quality and reducing greenhouse gas emissions. Better cross-departmental co-ordination would allow for a more integrated and effective policy responses to air pollution.

This should include:

- the agricultural sector, given its role in emissions of NH<sub>3</sub> in particular;
- construction, including non-road mobile machinery which is often diesel powered but not subject to the same MOT emission standards and testing regime as motor vehicles;
- renewables policy, and the implications for air quality compliance of current policies for promoting small scale biomass burners;

- Spatial planning, to encourage walkable settlements, mitigate air quality hotspots, and ensure schools, care homes and other facilities sensitive to air quality are appropriately located;
- wider transport policy, to reduce transport related emissions by promoting shifts to less polluting modes such as walking, cycling, and public transport, incentivising the phase out of older polluting vehicles, supporting the uptake of electric and other no and low emission vehicles,
- health policy and particularly efforts to reduce the effects on vulnerable populations such as children and the elderly.

#### 4. Improve the data

Finally, a particular need was identified to increase the supply of local air quality data and improve its quality and accessibility so as to support the development and implementation of a new strategy. Better information, for example, would make it possible to develop ultra-local mitigation strategies around schools and residential areas, for example. The need for improved communication with businesses was also voiced, to ensure that they understand and act on air pollution.

### Implications for parliamentary decision making

The discussions on air quality shed light on the more general challenges and opportunities for MPs and parliament as a whole in addressing nexus issues:

#### Overcoming structural barriers

The complexities of nexus issues, and the interlinkages between them, are well understood at a conceptual level. However, there are structural barriers to integrated policy solutions, which cut across the boundaries of government departments and the parliamentary committee structure that mirrors it. There are mechanisms for bridging these divides, including, for example, the Environmental Audit Committee, whose remit is to consider how all government departments and agencies contribute to environmental protection and sustainable development. However, cross cutting approaches are still the exception, not the rule.

#### Recognising the crucial role of MPs

A further aspect of interlinkage is that between national and local government. As can be seen with air quality, a national strategy requires action at the local level; conversely, local action may be restricted by rules or funding set by national government. MPs, as representatives of a local area and members of the national legislature, can play a crucial role as intermediaries between the national and local level.

#### Select committee power

Select committee investigations are often responsive, triggered by events or by policy proposals from government. As such, they sometimes struggle to influence, let alone set, the policy agenda to the degree that MPs would like.

#### Using academic expertise better

In conducting their scrutiny work parliamentary committees and MPs publish the terms of an inquiry and invite submissions of evidence, but may lack the resources or networks to seek out and solicit stakeholder views or uncover useful evidence if it is not provided to them. More

could be done to link academic expertise with parliamentary committees and MPs, as this would benefit both sides.

### Improving public engagement

Similarly, there is a need for committees to improve public engagement in their work, particularly on issues which have important local dimensions, like air quality. This was also a finding of a recent report by the Parliamentary Liaison Committee.<sup>11</sup>

Given these challenges, those sectors represented at the workshop, including MPs, committee staff, local councillors, academics and other stakeholders, were keen to continue work to improve decision making on nexus issues. Follow up discussions are being held to draw up proposals.

## Endnotes

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<sup>1</sup> Particulate matter (PM10; PM2.5), nitrogen oxides (NO, NO<sub>2</sub>), ground level ozone (O<sub>3</sub>) and volatile organic compounds (VOCs) are the major concerns in the UK today. Accessible summaries of the evidence base are available from: J Wentworth, 2014, '[Ambient air quality](#)', POSTnote 458, Parliamentary Office of Science & Technology, London; Natural Hazards Partnership, 2015, '[Air pollution](#)', NHP Science Note.

<sup>2</sup> World Health Organization, 2013, *Review of evidence on health aspects of air pollution*, Copenhagen

<sup>3</sup> In a 2010 study a COMEAP had found that long term exposure to particulate matter pollution (PM2.5) caused the equivalent of 29,000 early deaths across the UK in 2008, [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304641/COMEAP\\_mortality\\_effects\\_of\\_long\\_term\\_exposure.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304641/COMEAP_mortality_effects_of_long_term_exposure.pdf). COMEAP is now looking into the health impacts of NO<sub>2</sub> but preliminary estimates, released as part of the government's air quality plans consultation, are that it is causing the equivalent of 23,500 early deaths each year across the UK. The final study, expected in December 2015, will update figures for PM2.5 and take into account for any overlap with NO<sub>2</sub> but the fact remains that tens of thousands of early deaths are being caused each year from the air that we breathe.

<sup>4</sup> For a complete list of the zones and their projected dates of compliance see Department for Environment, Food and Rural Affairs (Defra), September 2015, *Draft plans to improve air quality in the UK*, [consult.defra.gov.uk/airquality/draft-aq-plans/supporting\\_documents/Draft%20plans%20to%20improve%20air%20quality%20in%20the%20UK%20%20Overview%20document%20September%202015%20final%20version%20folder.pdf](http://consult.defra.gov.uk/airquality/draft-aq-plans/supporting_documents/Draft%20plans%20to%20improve%20air%20quality%20in%20the%20UK%20%20Overview%20document%20September%202015%20final%20version%20folder.pdf)

<sup>5</sup> 2008 Ambient Air Quality Directive (2008/50/EC) sets 'limit values' for the maximum allowable concentrations of these and other pollutants, which enter the atmosphere through a variety of processes both anthropogenic (especially road traffic and fossil fuel combustion for power generation, transport, domestic heating and industry) and natural (in the UK Saharan dust and sea spray can be significant PM10 sources). Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0050>

<sup>6</sup> This came after a legal challenge by Client Earth against the government for not fulfilling such obligations. See: [www.clientearth.org/news/latest-news/uk-supreme-court-orders-government-to-take-immediate-action-on-air-pollution-2844](http://www.clientearth.org/news/latest-news/uk-supreme-court-orders-government-to-take-immediate-action-on-air-pollution-2844); also see: Client Earth, *UK Supreme Court judgement: consequences and next steps*, September 2015, p1, [documents.clientearth.org/wp-content/uploads/library/2015-09-17-the-uk-supreme-court-ruling-in-the-clientearth-case-consequences-and-next-steps-ce-en.pdf](http://documents.clientearth.org/wp-content/uploads/library/2015-09-17-the-uk-supreme-court-ruling-in-the-clientearth-case-consequences-and-next-steps-ce-en.pdf)

<sup>7</sup> Department for Environment, Food and Rural Affairs (Defra), September 2015, *Draft plans to improve air quality in the UK*, p12

<sup>8</sup> Transport & Environment, 2015, *Don't breathe here*

<sup>9</sup> [www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/inquiries/parliament-2015/diesel-emissions-and-air-quality-inquiry/](http://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/inquiries/parliament-2015/diesel-emissions-and-air-quality-inquiry/)

<sup>10</sup> R M Harrison, B Brunekreef, M Keuken, H Denier Van Der Gon, and X Querol, 2014, 'New directions : cleaning the air: will the European Commission's clean air policy package of December 2013 deliver?', *Atmospheric Environment*, vol 91, pp 172-174, 10.1016/j.atmosenv.2014.04.027

<sup>11</sup> Parliamentary Liaison Committee, October 2015, *First special report: building public engagement: options for developing select committee outreach*