

WM-AIR



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CLEAN AIR SCIENCE FOR
THE WEST MIDLANDS

WM-Air

16 Oct 2024

William Bloss - *Project Lead*



UNIVERSITY OF
BIRMINGHAM



Natural
Environment
Research Council

Agenda Today

9:30	<i>Arrival / Tea & Coffee</i>	
10:00	Welcome & Introduction	William Bloss
10:10	Strand 1: Observations Developing best practice on the use of low-cost sensors networks for air quality and identifying the sources of fine particulate matter (PM _{2.5}) in the West Midlands	Lee Chapman, Zongbo Shi, Deepchandra Srivastava
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11:05	Strand 4: Health AQ-LAT: Providing air quality health impact evidence for the West Midlands	Suzanne Bartington, James Hall, Sue Jowett, Neil Thomas,
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11:35	Strand 6: Urban Design and Green Infrastructure Climate Risk and Vulnerability Assessment (CRVA) tools for local and regional authorities	Emma Ferranti, Sarah Greenham, Nick Cork, Rob Mackenzie
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WM-Air design (to date)...

- RISE funding call focus: to apply **existing NERC environmental science expertise** to deliver transformative regional impact
- Built on our track-record of regional engagement :
 - Funded work (NERC, EPSRC, DoT); informal collaborations, links
 - “*Air Pollution and Health in Birmingham*” meeting
 - Focussed WM-Air proposal development workshops, discussions / visits

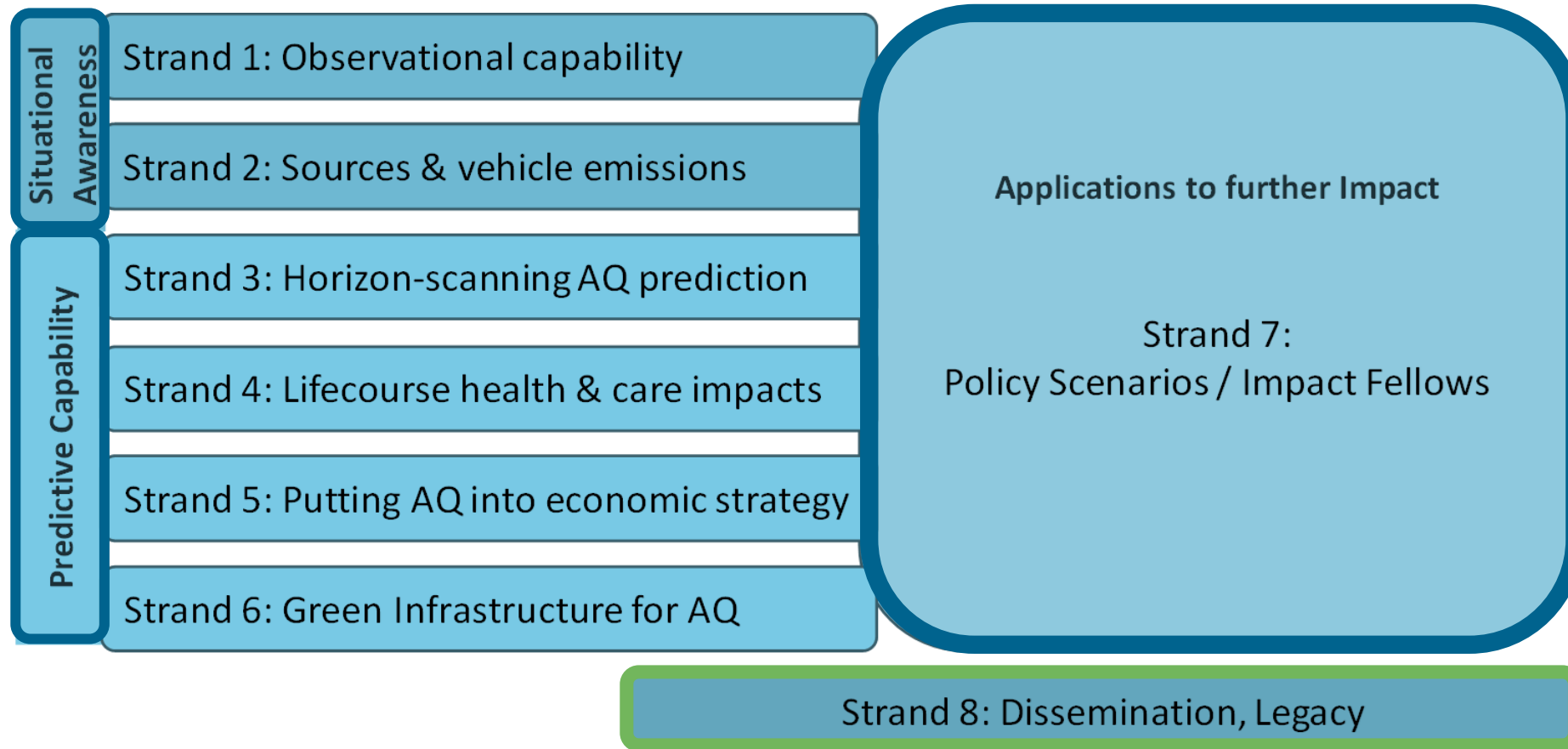


Arup Environmental @ArupEnviro · Jan 25

Two members of our #Environmental #Consulting team from our #Midlands office along with a member of our Advanced Technology and Research team recently visited the @unibirmingham to discuss potential #Arup involvement in @NERCscience #research #NERC #Collaboration @ArupUKMEA



Recap: WM-Air



WM-Air activities

- ...measurements; sensors, hotspots, PM sources
- ...real-world emissions, driving behaviour & traffic activity
- ...rail emissions and impacts
- ...detailed AQ modelling and future scenario development
- ...environmental inequality, net zero, fleet change...
- ...health and healthcare impacts and costs
- ...planning, green infrastructure and climate vulnerability
- ...sporting events and grassroots football
- ...engagement, schools, training, upskilling

Partnerships

- *Not exhaustive !*



Engagement & Education

OUTPUTS:

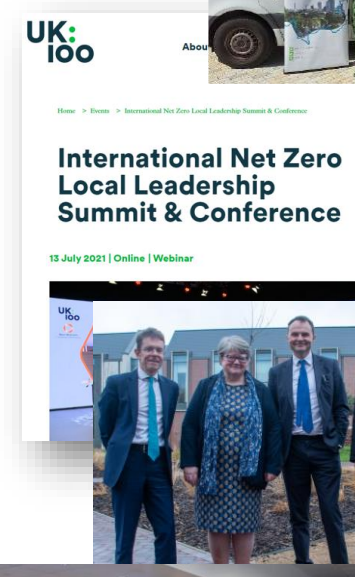
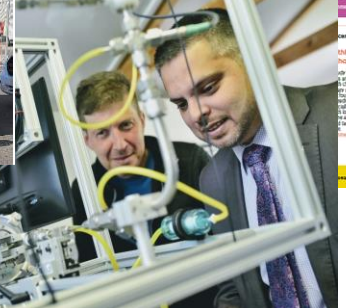
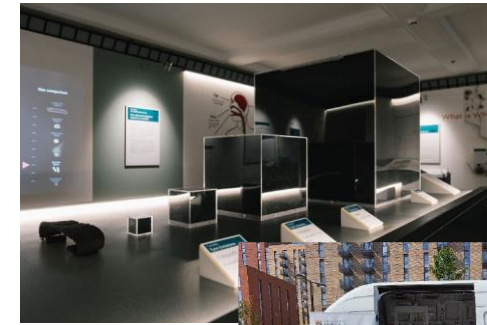
- University of Birmingham *The Air We Breathe* city centre exhibition + UKRI-funded *Sounding Out Pollution* exhibition
- AQ resources for Schools KS3/4; Infographics and media activities

OUTCOMES AND IMPACT:

- *The Air We Breathe* exhibition
- Sounding Out Pollution featured in MixMag + Science Futures at Glastonbury
- Educational resources and activities for KS3/4 x 300, from 40+ institutions; support for BCC's school AQ programme in all 500 schools
- Awareness of Clean Air raised via public engagement at sporting events
- >120 media activities generating >87m views
- COP26; UK-100 NZ Conference; CMO report; Royal Society report...

ONGOING / FOLLOW-ON WORK:

- "Community of Practice" events will continue through WMCA
- UKRI SPF Clean Air Conference – U. Birmingham, 2/3 Oct 24,



7am...

Site Data

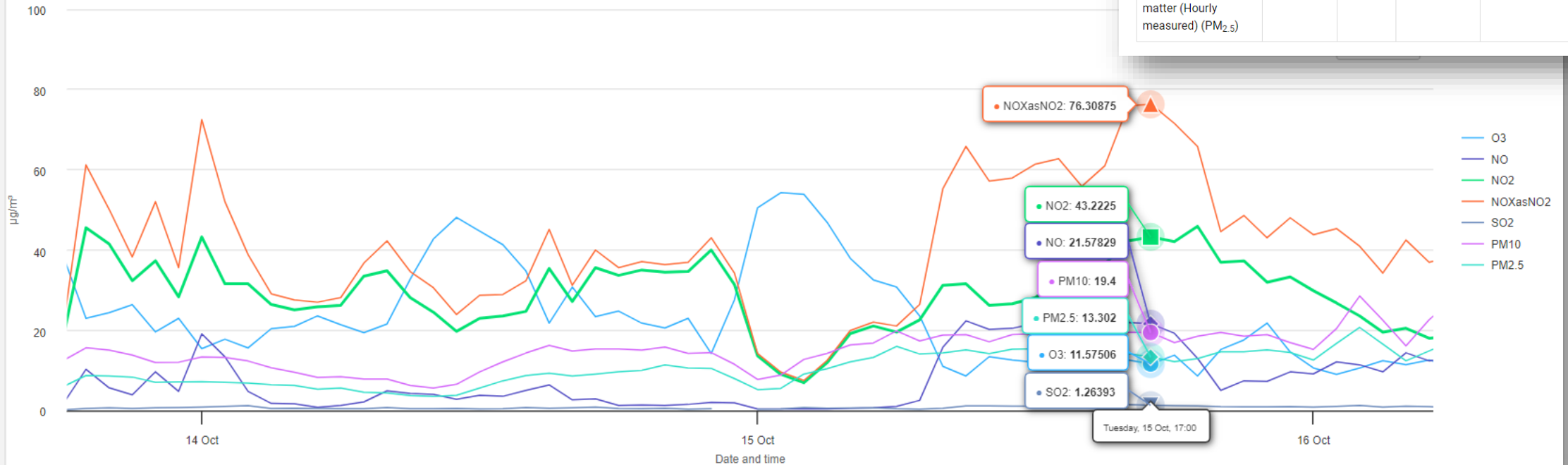
Latest data for Birmingham Ladywood

The table below shows the latest data for this monitoring site. Use the links below the table to view the data for this site or perform further site searches.

Pollutant	Date	Time	Measurement	Unit	Period
Ozone (O ₃)	16/10/2024	06:00	10.777	µg/m ³	Hourly
Nitric oxide (NO)	16/10/2024	06:00	13.221	µg/m ³	Hourly
Nitrogen dioxide (NO ₂)	16/10/2024	06:00	18.360	µg/m ³	Hourly
Nitrogen oxides as nitrogen dioxide (NO _x asNO ₂)	16/10/2024	06:00	38.633	µg/m ³	Hourly
Sulphur dioxide (SO ₂)	16/10/2024	06:00	0.532	µg/m ³	Hourly
PM ₁₀ particulate matter (Hourly measured) (PM ₁₀)	16/10/2024	06:00	27.600	µg/m ³ (FIDAS)	Hourly
PM _{2.5} particulate matter (Hourly measured) (PM _{2.5})	16/10/2024	06:00	17.264	µg/m ³ (Ref.eq)	Hourly

Birmingham Ladywood

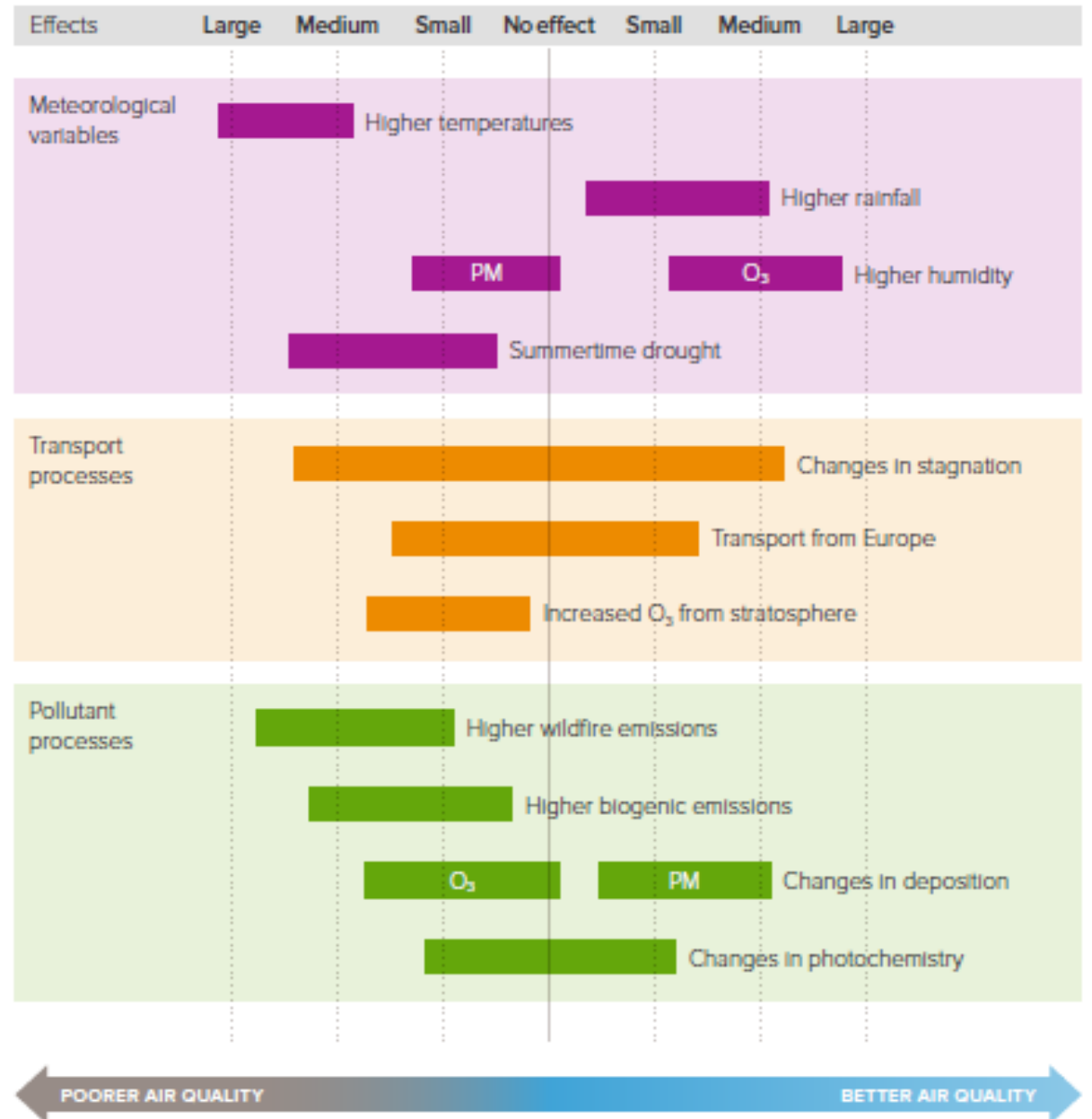
Measured data from 09/10/2024 to 16/10/2024



Reflections

- Our air is much cleaner than it used to be – and improving rapidly in many respects (e.g. NO₂ from road traffic)
- The challenges are changing – industry to transport exhaust to combustion, non-exhaust transport, domestic, indoor
- Understanding of health effects: no safe level of exposure – but zero not feasible
- Impacts on childhood development and cognitive function
- WHO guidelines vs UK Targets (NO₂, PM_{2.5})
- Black carbon, ozone, ultrafine particles
- Not just road transport ! Importance of different vehicle types (super-emitters)
- Electric vehicles, non-exhaust emissions and transport equity
- Clean Air Zones: Compliance, vs maximising health or economic benefit
- PM_{2.5} sources – including domestic combustion, exposure in the home, in vehicles
- Using green infrastructure well, good urban design, vulnerability assessment, best practice
- Getting better data on air pollution to the people and communities affected – individual choices and behaviour

Effects of Climate Change on Air Quality

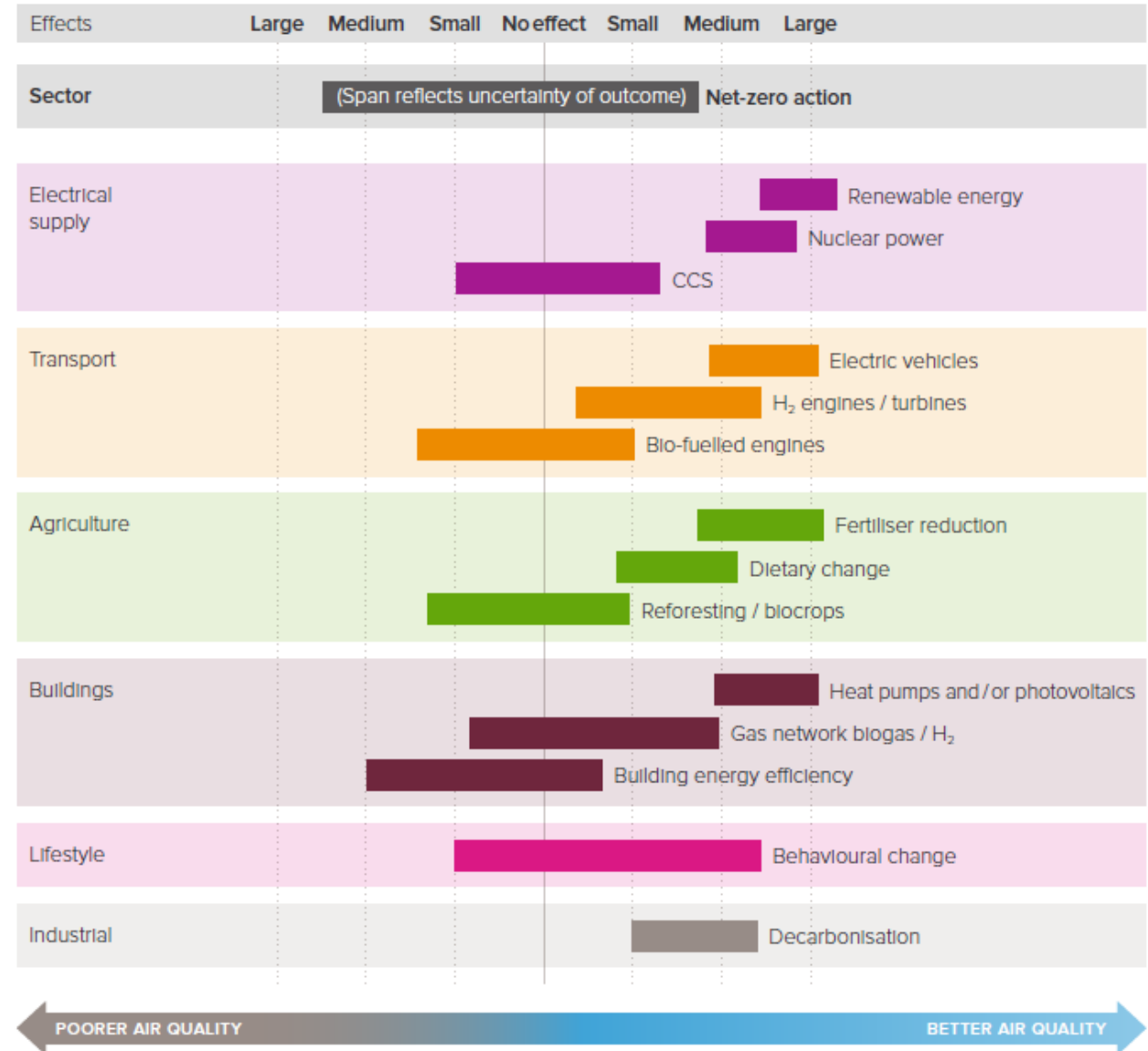


Effects of Net Zero Policies on Air Quality



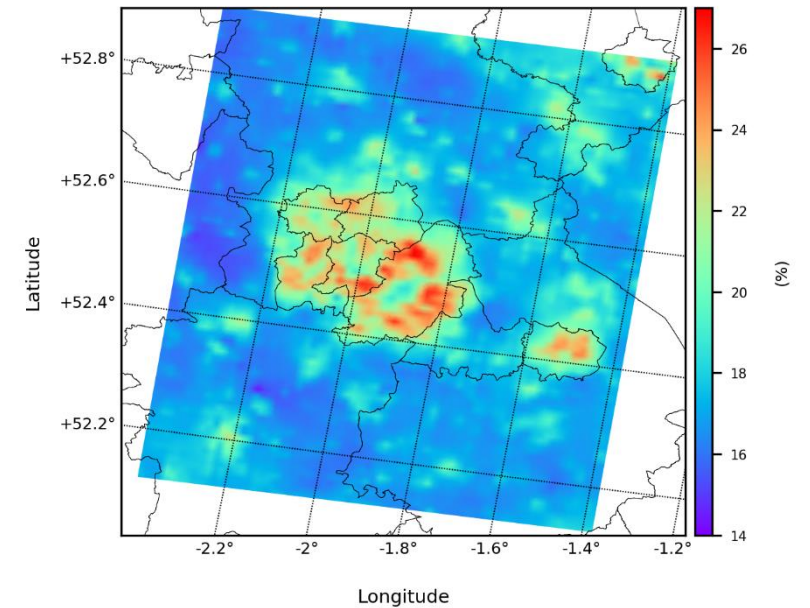
Qualitative summary of possible effects of net-zero measures on air quality

Qualitative summary of possible effects on air quality of interventions and strategies in various sectors associated with delivering a net-zero greenhouse gas budget compared to business as usual. Table 1 provides an accompanying expert commentary on possible scale of effect, sources of uncertainty and impact of the effect on reducing air quality inequalities.



The regional role

- The air moves around – but local and regional action can have immediate impact
- Clean air as a *societal good*, there is a role for a collective (including government, at all levels) response
- City-regions making the running
- Importance of working across the region – and beyond
- Environment Act: Air Quality Partners – ambition ?
- Climate change and carbon – a global challenge
- Air quality and health – a local and regional story



Reduce wood combustion by 85%

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