

Theme 4: Involvement and Engagement

TRANSITION Clean Air Network

Briefing Notes

Clean Air Networks' Conference - 5th July 2023

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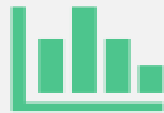
Briefing notes



Inspiration



Process



Results



Communicate



Lessons learned

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Policy Briefing Note No. 1 (May 2020)

Air Quality in Transport Hubs



Overview

- People using transport hubs can experience high levels of air pollution. These are largely unregulated as indoor environments.
- There is more existing knowledge of air quality in transport hubs compared to bus station environments.
- The transition to low-emission public transport alternatives is an important opportunity to deliver long-term air quality benefits.
- There is a need to generate urgent solutions to reduce air pollution exposure in public transport settings.

Background

Air pollution is a prominent public health concern in the UK, responsible for between 28,000 – 35,000 early deaths each year¹ and strongly linked to a range of harmful health effects². Transport remains a significant source of air pollution, accounting for 34% of nitrogen dioxide (NO₂) emissions and 13% of fine particulate matter (PM_{2.5}) emissions in 2018³. Exposure to traffic-related air pollution is known to be associated with harm to human health⁴, including increased risk of childhood asthma⁵, cardiovascular and respiratory disease⁶, and daily mortality⁷. To identify how air pollution exposure can be reduced, it is necessary to understand how, where and when an individual is exposed⁸. Transport microenvironments are commonly associated with elevated pollutant concentrations⁹ and consequently individuals can receive a significant portion of their daily exposure while travelling¹⁰. Spending just 6-35% of a day in transport environments can account for up to 30% of an individual's daily pollutant exposure¹¹. Previous research has predominantly

Air Quality in Transport Hubs

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Policy Briefing Note No. 2 (June 2020)

Non-Exhaust Emissions from Road Transport



Overview

- Vehicle exhaust emissions have decreased significantly in recent years, due to stringent regulation and policy.
- Non-exhaust emissions are now considered a more prominent source of particulate matter, due to tyre, brake and road wear.
- Electric vehicles will continue to produce non-exhaust emissions.
- There is a need for regulatory action to address this source that is contributing to poor air quality and health burdens.

Background

Particulate matter (PM) is recognised as a leading risk factor for premature death worldwide¹. Exposure to PM has been linked to a range of detrimental health outcomes, including well-established links with heart and lung diseases, lung cancer, and all-cause mortality². There is also a growing body of evidence which suggests adverse effects on cognitive performance³. However, on-road transportation is also a source of non-exhaust emissions, through processes such as brake, tyre and road wear, and dust resuspension^{4,5}. Whilst exhaust emissions of PM₁₀ have reduced substantially, non-exhaust emissions have continually increased and are estimated to represent over 60% of PM₁₀ by mass from road vehicles⁶. Road transport (including trams and rapid transit systems) also produces non-exhaust emissions through rail-wheel-brake interfaces, and overhead line contact⁷. Clean air policy has almost exclusively focused on the reduction of exhaust emissions⁸. Conversely, non-exhaust emissions have gone largely unregulated and remain a growing environmental and health policy challenge^{9,10}.

Non-Exhaust Emissions from Road Transport

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Policy Briefing Note No. 2 (June 2020)

Low Emission (Clean Air) Zones



Overview

- Clean Air Zones and Low Emission Zones aim to discourage the use of the most polluting vehicles, typically urban areas.
- They are being increasingly introduced by local authorities to achieve
- Many questions remain regarding their effectiveness to improve air quality, and impacts on wider society.
- Scientific evidence can be used to inform future place-based air quality solutions.

Background

Air pollution represents the largest environmental risk to health in the UK, responsible for between 28,000 – 35,000 premature deaths each year¹. Research has linked poor air quality with a wide range of adverse health outcomes, including the development of childhood asthma², heart and lung disease³ and cancer⁴, poor mental health⁵ and cognitive performance⁶, and the onset of neurodegenerative diseases (eg, Alzheimer's)⁷ and poor birth outcomes⁸. This places significant financial burden on the NHS and national economy, in 2017 the total NHS and social care cost due to air pollution exposure is estimated to be up to £37 billion⁹ and the wider economic costs to society are estimated to be £10 billion per year¹⁰. The health effects of air pollution are disproportionately borne by those of lower socio-economic status and minority ethnic groups, who are exposed to higher levels of air pollution¹¹, and are more likely to experience

Low Emission (Clean Air) Zones

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Policy Briefing Note No. 4

Environmental and Health Impacts of E-cycling



Overview

- E-bike use has the potential to reduce transport related emissions and fully, compared to a greater extent from electric cars.
- Engaging in e-cycling can positively impact individuals physical and mental health.
- The true potential of promoting e-bike use in the UK is not fully understood due to a lack of data collection and monitoring of e-bike riders.

Background

The movement of goods and people is fundamental for the economic and social development of an area. However, the transport sector is responsible for 24% of total carbon dioxide (CO₂) emissions in the UK and significantly contributes to toxic air pollution (eg, particulate matter and nitrogen dioxide)¹. Road transport related CO₂ emissions and air pollutants are harmful to human physical and mental health². To reduce CO₂ emissions, the UK has focused on the electrification of passenger cars and light good vehicles³. However, to meet the UK Climate Change Committee goal of transport decarbonisation to net-zero by 2050⁴, car use must also be reduced⁵. E-bikes have been identified as a means through which to reduce land-based transport emissions

Environmental and health impacts of E-cycling

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Policy Briefing Note No. 5

UK Rail Freight and Emissions



Overview

- The rail sector has a critical role in decarbonising freight transport because it is low carbon relative to other modes.
- Expansion of rail coverage and freight sidings are necessary to meet freight industry needs.
- Rail electrification is necessary to reduce air pollutant emissions and improve network capacity and performance.
- High-speed freight trains can capture new markets for decarbonising time-critical and low-volume high-value goods.

Background

Freight transport movement of goods and bulk cargo plays a fundamental role in supporting supply chains both domestically and internationally. This strategic importance of the UK freight sector was signified by the inclusion of logistics within the 'key sectors' during the COVID-19 pandemic¹. International freight is also vital for the UK economy which is highly reliant on international trade; the trade-to-GDP ratio stood at 95% during the year 2019/20². To achieve the UK's net-zero target, the inland freight sector will need to rapidly decarbonise, including modal shift from road to rail and harnessing advances in new technology. This policy briefing note outlines the scope of rail freight in the UK, considering benefits of a modal shift from road to rail, it also identifies future interventions that could decarbonise the UK's freight sector by 2050, with benefits for health and wider society.

UK Rail Freight and Emissions

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Policy Briefing Note No. 5

Air Pollution Exposure in Different Transport Modes



Overview

- Individuals are exposed to high concentrations of air pollutants when travelling in or close to motorised vehicles.
- Many factors influence the duration and intensity of air pollution exposure, including route choice, ventilation settings, in-vehicle passenger position, proximity to vehicles and time of day.
- The benefits of physical activity from walking and cycling typically outweigh any adverse effects due to increased air pollution exposure.

Background

Air pollution is the greatest environmental risk to human health¹ in the UK, air pollution exposure is responsible for 28,000 – 35,000 premature deaths annually². The transport sector remains a large source of air pollution globally³, emitting harmful air pollutants such as nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}) from both exhaust⁴ and non-exhaust⁵ sources. The sector also contributes substantially to greenhouse gas emissions⁶, and other health burdens such as noise pollution and road accidents⁷. In the UK, road traffic is associated with the highest concentrations of air pollutants (notably NO₂) and is a focus of policy action⁸. People working, living or travelling to/from roads are thereby exposed to harmful air pollutant concentrations, often exceeding WHO 2021 Global Air Quality Guidelines⁹ – Short and long-term exposure to traffic-related air pollutants (TRAPs) is associated with adverse health effects including risk of asthma, low birth weight, lung cancer and all-cause mortality¹⁰. Those most affected by TRAP

Air Pollution Exposure in Different Transport Modes

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Speed limits, air quality and health



Overview

- Lowering vehicle speeds on the strategic road network has the potential to reduce vehicle fuel consumption and air pollutant emissions.
- Real-world air quality impacts of lowering speed limits are dependent upon vehicle fleet mobility, driving behaviour and emissions.
- Air quality modelling and use of on-board vehicle GPS monitoring (telematics data) can inform speed limit lowering schemes and help understand how drivers respond to speed limit changes.
- The true air quality impacts of speed limit lowering will not be fully understood due to a lack of high quality real-world evaluations.

Background

Floor air quality is the largest environmental risk to public health and is a major cause of premature death¹ in England, with approximately 28,000 – 35,000 deaths per year are attributed to air pollution². Long-term exposure to air pollution is not only a risk factor for cardiovascular and respiratory diseases including lung cancer, but also exacerbates these conditions leading to increased risk of hospital admissions and premature death³. Air pollution is expensive, costing the UK economy an estimated £10 billion each year⁴. Air pollution impacts are not fully distributed with related deaths and disease disproportionately affecting the poor and vulnerable⁵. Tackling air quality in the UK

Speed limits, air quality and health