

Cleaner Air for Scotland – Air Quality Public Attitudes & Behaviour Review – Summary Document

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Introduction

The scope of this project was to provide a review and assessment of the existing evidence on public attitudes and behaviour related to air pollution to inform the draft of the new Cleaner Air for Scotland (CAFS) strategy. The objectives of the literature review were to:

- **Identify, review and synthesise up-to-date evidence on Scottish public attitudes, perceptions and behaviours towards air quality, to understand the key findings, robustness of evidence base and any outstanding gaps in the evidence,**
- **Identify and review recent approaches to engaging the public on air quality, to understand effectiveness, limitations and applicability in different contexts, and**
- **Make recommendations for a public engagement strategy for air quality as part of the planned public consultation on the new CAFS strategy.**

In addition, the Scottish Government explicitly requested the review consider behaviour change methodologies.

The objectives were addressed by conducting a review of available scientific and grey literature, including policy documents, research project reports.

Overview of findings

Factors affecting behaviour change

Understanding behaviour and how it may be changed, requires an understanding of the factors that influence behaviours. Given many of the behaviour change studies that this literature review identified used the Theory of Planned Behaviour (TPB), the report used the component factors of this model (attitude, perceived behavioural control and subjective norms) to discuss the findings.

Although TPB studies recommend policies focus on attending to the dominant factors identified in relation to their particular study, it is clear that these internal factors act in combination and vary across studies and societies. Rather than focus on the applicability of any one study in Scotland, we have therefore tried to draw out the key messages from all of the studies reviewed as a whole.

As a caveat, many of the behaviour change studies we have reviewed here focus on self-reported intentions, however, it is widely recognised that intention and self-assessments are not necessarily good predictors of actual behaviour.

Attitude was the dominant factor identified in the studies reviewed here, which could be significantly strengthened with the inclusion of environmental awareness or concern. Hence, many of the studies recommended increasing public awareness of air pollution to ensure policies seeking to achieve behaviour change were more

positively received. However, provision of information and awareness raising can be flawed if used in isolation. Furthermore, a number of studies reported that knowledge of air pollution can actually cause negative affective responses leading to stress and paralysis of action if risk perception and behavioural responses are not properly managed.

Subjective norms were also widely identified as dominant factors reflecting the normative drivers of our behaviours and acknowledging how shifting those norms can be a powerful mechanism to achieve desired behaviour change. Not only is this significant for individual behaviour change, but, by changing what is considered socially-acceptable, whole societies can be influenced with the potential for creating significant impacts in improving air quality. Furthermore, by making use of social networks to disseminate messaging about the health effects of air pollution and the behaviours that can reduce them, this itself can start to engender the subjective norms.

Perceived behavioural control appears to be less significant as a dominant factor than attitude or subjective norms across the studies reviewed. This is not to say that it is not important, as it can still be a significant moderating factor where positive attitudes or subjective norms are high, reducing individuals' ability to enact the behaviours that they would like to, or that they feel society would like them to. As some studies have identified, it has also been considered dominant in its own right, particularly in commuting and home heating, where alternatives may be unavailable, or at least unobtainable given limited resources. The lessons from consideration of perceived behavioural control are therefore the need to consider all socioeconomic strata and to ensure that policies intended to change behaviours are simpler, more convenient and less expensive than the current behaviours. However, where this means making the existing behaviour comparatively less appealing, this must not penalise those that may have little ability to change.

Public engagement approaches

Based on the studies and projects reviewed, a wide range of examples of public engagement approaches from communication tools, traditional questionnaires and focus groups, to more participatory 'citizen panels', 'citizen science', 'living labs' and co-creation, and novel techniques using social media and gamification. Each approach has its strengths and weaknesses, and therefore a complementary suite of approaches presents the best means of ensuring widespread engagement.

As we have seen from the review of behaviour change theory, communication can help raise awareness and lead to positive attitudes, as well as influencing subjective norms. However, to tackle negative risk perceptions and a lack of perceived behavioural control, it is important to engage in more participatory approaches. By actively engaging citizens in the development of policies, it is possible to co-create solutions that have public support and will be easier to implement and therefore more effective. Ensuring all sectors of society have an equal voice in this public discourse is therefore vital to avoid disaffecting communities and creating or exacerbating social inequalities.

In terms of awareness-raising, lessons from the 2019 Clean Air Day in Scotland events, Dundee City Council's social marketing campaign and Glasgow City Council's Future City Glasgow project Active Travel Demonstrator indicate that a suite of coordinated initiatives supported by national and local government, public health agencies, public transport providers, businesses and schools are likely to be most impactful. Messaging was key, with Dundee City Council focusing on fuel cost saving as a motivational tool. A range of different media was also used to maximise transmission of the message, using billboards, local press, TV and radio, websites, mobile applications, social media and peer-to-peer networks. The ability of Environmental Protection Scotland to coordinate its Clean Air Day organisation with the support of the national campaign organisers, Global Action Plan, enabled a stronger branding of the materials and the chance to build on the momentum and wider campaign, as well as the growing public awareness at the time over the climate change crisis.

Targeting of messaging was also key with different approaches used by Dundee City Council for local residents and those travelling from outside, including public transport promotion, eco-driving and vehicle maintenance advice for drivers, and an air quality awareness-raising campaign aimed at parents through engagement with schoolchildren. Appropriate use of media for specific user groups, however, was highlighted by the Future City Glasgow project where technical competences and financial limitations led to barriers in engaging certain sectors of society on energy efficiency behaviours.

As well as communication strategies and awareness raising, the examples presented in Scotland also demonstrate the use of co-creation and co-design through the Future City Glasgow project and the Community Engagement for Carbon Emission Reduction (CECER) Strategy for Fife Council. This inclusionary approach allows citizens to actively contribute to local decision-making and influence local policy and services, and can create a much stronger public buy-in than more top-down consultation approaches, resulting in more successful policies.

Citizens' juries are another inclusionary approach as presented in the examples from Aberdeen and Edinburgh on climate policy, renewable energy, and low-carbon technologies (Ostfeld and Reiner, 2020) and from Coldstream, Helensburgh and Aberfeldy regarding on-shore wind farm developments (Roberts et al., 2020), which similarly empower citizens to engage in and inform the decision-making process. As the examples demonstrate, this is an increasingly popular mechanism but which requires careful planning and coordination to ensure successful implementation and valuable outputs that do not disenfranchise either the jurors or the expert witnesses.

The final example presented an alternative, participatory arts method drawing on a climate change example on the Isle of Mull. Although limited in its reach, this novel approach demonstrates that unconventional methods can be useful ways in which to engage with the public 'unawares', thereby capturing the views of normally disengaged or harder to reach sectors of society.

As with all of these public engagement approaches, the longer-term effectiveness of the initiatives in terms of engendering changes in perceptions and ultimately

behaviour, is difficult to directly determine. Longitudinal monitoring and evaluation plans need to be designed into public engagement strategies to record their successes and to establish transferable practices that can be adapted to locally-specific circumstances.

Public perceptions in Scotland

Based on the, albeit relatively small number of, responses to the Global Action Plan survey there is an increasingly high level of awareness of air pollution and understanding of the measures that could be taken to reduce it. However, there appeared to be a stronger support for national (UK Government) action than for individual travel behaviour change. It is unclear whether this is a lack of ambition on respondents' behalf, a detachment from ownership of the problem and responsibility for the solutions or a result of real or perceived barriers to enable them to act in more sustainable ways, an area that clearly warrants further investigation.

The strong support for the LEZs to reduce air pollution and protect public health, amongst respondents to the Scottish Government's consultation also indicates there is appetite for imposition of relatively stringent 24/7 vehicle restriction measures, in preference to charging zones. Furthermore, these should be supported with measures to facilitate alternative modes, e.g. improvements to public transport and walking and cycle routes. Respondents appeared to accept that such a scheme would affect all sectors of society, but that motorists should be paying for traffic pollution, notwithstanding the need to consider mobility and social justice issues for those that may be adversely impacted. It is worth reflecting, however, that these were self-selecting respondents and hence not necessarily reflective of the wider Scottish public. As learnt from the experience of the proposed Edinburgh Congestion Charge Zone, it is necessary to ensure much wider engagement with all communities affected by the scheme and, crucially, that the positive impacts of the scheme are well-publicised to counter any negative media bias.

Exploring Scottish behaviours and perceptions of travel more widely, much of the literature dwelt on aspects of deprivation, largely focused in Glasgow. A culture of 'forced' car ownership was noted in one study, particularly amongst families with children. The paper also highlighted that sustainable travel options were not reaching deprived communities, and furthermore, that regeneration strategies are failing to promote mobility and accessibility. This is also discussed in other papers that suggest that despite regeneration apparently improving walkability, this did not necessarily equate to increases in active travel. In some areas this was due to inherent fear of crime and lack of safety creating 'no go' areas, although for others, improvements to cycle and walking infrastructure did help. Another study, which analysed walking behaviour by deprivation index, also found that households in deprived areas were less likely to walk than those in wealthier areas.

Propensity to walk was also determined by urbanicity with rural communities less likely to walk. This may be due to travel distances and higher levels of car ownership, but the authors also linked this to seasonal differences with weather being a driving factor. Health inequalities was also found to be a factor in mobility

decisions leading to perceived car dependence. However use of public transport, active or multiple modes were found to increase journey satisfaction more than just cars, indicating that more support to shift behaviours in these communities could have multiple health and wellbeing benefits. For rural communities and those with mobility issues, there appears to be a good network of community transport provision in Scotland, which is highly valued by users.

Analysis of children's travel to school behaviours found that walkable neighbourhoods were conducive to walking to school over all distances, but ~0.5 miles was widely considered to be popular. Active travel and public transport was also popular amongst Scottish university students, whereas for staff at one Scottish university, ambitions to walk more were thwarted by work and family commitments as well as the weather and personal motivation. Increasing cycle infrastructure around cities was recommended to encourage more leisure cycling, but in order to increase year-round commuter cycling for new or less proficient cyclists, providing weather shelters on existing cycle networks was recommended.

In exploring domestic energy use, two key studies were reviewed reflecting opposite ends of the economic spectrum. In the first study on 'zero emission' homes, it was found that although householders were keen to install insulation, new windows and efficient heating systems, the demand for space and desire for bigger houses created an increase in energy demand. The second study examined the renovation of the heating system in a social housing situation and found that a lack of consideration of users' needs and limitations, together with an econometric approach, appears to have resulted in a greater economic burden for many, and a lack of (perceived) control over their energy usage. It is clear that at both ends of the economic spectrum, there is a need to consider the lived experiences of individuals when seeking to influence their energy usage to reduce emissions. Whilst neither of these studies particularly looked at solid fuel burning – indeed no Scottish papers or studies were identified in this review that did – there is an additional need to consider the negative effects of installation of wood-burners on local air quality despite their popularity as a 'low-carbon' heat source.

Decentralised, community-led energy systems appear to be very popular in Scotland, in part due to the availability of grants to facilitate their implementation, but also scepticism over national energy providers. In addition, there is also support for renewable energy including local schemes, even in areas historically linked to oil and gas, such as Aberdeen. These areas are also supportive of carbon capture and storage, due to employment opportunities, but only as part of a managed transition to low-carbon economy.

Overall summary and recommendations

Based on the wide range of studies identified in this review, there appears to be a strong awareness of, and engagement with, air quality and climate change issues, at least in certain sectors of society in Scotland. There are however, significant barriers to engagement and importantly behaviour change, amongst particularly deprived communities. This is well-documented and requires a detailed level of understanding

of the complex factors at play in order to ensure that future engagement is meaningful and effective.

A range of public engagement approaches have been identified in this review, from communication tools, traditional questionnaires and focus groups, to more participatory 'citizen panels', 'citizen science', 'living labs' and co-creation, and novel techniques using social media and gamification. Whilst traditional communications approaches, such as questionnaires and marketing campaigns, can help to raise awareness across a wider number of people, they can be relatively shallow in their impact. More participatory approaches can create deeper, more meaningful engagement, generating greater public support, which can help to address issues of perceived behavioural control and shift subjective norms, making policies easier to implement and therefore more effective.

Good public engagement should therefore draw upon an assortment of different approaches, using materials from other successful strategies to build a coordinated suite of multi-media initiatives, with support from communications experts and commitment from a range of actors, e.g. national and local government, public health agencies, public transport providers, businesses and schools. Planned longitudinal monitoring and evaluation should be designed into the campaign to identify the effectiveness of strategies, and to allow organisers to learn from the successes and follow up on areas of weakness. Coupling evaluation with evidence on how public engagement has contributed can create a feedback exchange, and also enable citizens to reflect on their experiences in a more informed way. Furthermore, the engagement strategy, materials and evaluation reports should be transparent and publicly available to allow others to benefit.

Recommendations for public engagement

The following highlights key recommendations for a public engagement strategy for air quality in Scotland to inform the new CAFS strategy and future public engagement approaches.

- 1. Consider a holistic approach that reflects citizens' lived experiences rather than focusing exclusively on air quality.**
- 2. Use a range of pre-piloted engagement approaches, informed by communications and subject experts.**
- 3. Ensure engagement approaches are inclusive of all sectors of society and appropriately communicated.**
- 4. Target specific groups separately, e.g. vulnerable groups, user groups.**
- 5. Gain support from and include a range of actors, e.g. national and local government, public health agencies, public transport providers, businesses and schools.**
- 6. Research the affected communities and actively engage with them to understand the socio-cultural contexts and complexities of their needs.**

7. **Co-create solutions that work for the affected communities, through citizens' panels, and 'living labs', ensuring participants are demographically representative.**
8. **Support citizen-led engagement events and activities, e.g. citizen science.**
9. **Ensure promoted behavioural changes are easier, more convenient and preferably cheaper than the status quo.**
10. **Raise awareness responsibly, ensuring that risk perceptions and data interpretation are managed and achievable behavioural responses are provided.**
11. **Focus communication on health impacts, rather than concentrations or emissions.**
12. **Use change agents, influencers and middle actors to help raise awareness and promote behaviour change to affect normative behaviours.**
13. **Use social media to spread awareness through wider social connections and families.**
14. **Plan longitudinal monitoring and evaluation, coupled with citizen feedback, into the public engagement design.**
15. **Ensure materials and evaluation are made available to benefit other public engagement strategies.**

Recommendations for further research

The following gaps in the evidence base have been identified, requiring further research.

In raising awareness of air quality, the literature suggests that this should focus on health effects. To inform this, a baseline study is recommended to identify:

- **Current awareness amongst the Scottish public of the health effects of air pollution and contributory sources**

In terms of implementing behaviour change measures to improve air quality and carbon emissions, there is a need to develop a better understanding of the Scottish-specific real/perceived barriers and behavioural drivers around travel and domestic energy demand. Specifically, these should explore:

- **Barriers to uptake of low emission vehicles in Scotland**
- **Barriers to modal change from private vehicles in Scotland**
- **Behavioural drivers around travel and modal choice in Scotland**
- **Behavioural drivers around energy demand in Scotland**

The CAFS review also recommended improving understanding of solid fuel use in Scotland. Given none of the recent literature reviewed identified any evidence on this, there is a need for research that seeks to identify:

- **Solid fuel use in Scotland, including behavioural drivers and barriers to alternatives**

All of the recommended studies above would need to be demographically representative of the Scottish public, and consider the specific issues inherent in areas of different socioeconomic status and in urban/rural contexts.



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