People Science & Policy

Articulating public values in environmental policy development

Report on the Citizens' Jury on Air Quality

Prepared for the

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(Bound separately)

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Summary

Introduction

Aims and objectives

This project had two distinct aims. Firstly, to explore public views on air quality in order to inform the development of future policies and strategies to achieve specific policy outcomes. Secondly, the project was intended to trial the use of a Citizens' Jury approach to supporting policy development.

The project

People Science & Policy Ltd (PSP) designed, managed and delivered a process based on the Citizens' Jury approach. The project was run in collaboration with Professor John Murlis, as specialist science advisor, Dr Rosemary Day, as specialist advisor on the social aspects of air quality and Midlands-on-View, a market research recruitment and venue service. It comprised a Citizens' Jury and a literature review.

The jury

Citizens' Juries® are a trade marked development from the Jefferson Center in the USA. Our Citizens' Jury was based on this model and took place in Sutton Coldfield. Twenty-two members of the public were recruited from within a 12 mile radius of Sutton Coldfield. They were recruited by telephone as a cross-section of the public but we ensured that individuals with asthma, coronary and pulmonary obstructive diseases were included, as previous research had found these groups to have specific concerns with regard to air quality, which were important to include.

The jury process involved three hearings. The first lasted 2½ hours and took place on the evening of 15 December 2005. This was an introductory hearing at which the science advisor to the project provided an overview of the topic and jurors identified further information they felt they needed. The second hearing took place over the two days of 21/22 January 2006. The bulk of the time was given over to the expert witness presentations and time for the jurors to question these witnesses. The final hearing, held on 28 January, was devoted to enabling the jurors to reach conclusions, draw out their recommendations and present these to Defra.

Literature review

The project included a literature review to provide a wider context for the outcomes from the jurors' deliberations and to inform the recruitment strategy.

Jurors' Perspectives and Recommendations

Scoping the issue

An initial brainstorming session revealed that air pollution is not a 'top of mind' environmental issue. With respect to air quality there was an awareness that quality (measured by smell) varies and that this variation was most likely to be caused by traffic. However, there was no understanding of how air quality is measured scientifically or that action can be taken by individuals to improve it. Neither was there a sense of what 'good'

quality air is. Most participants admitted that they had not thought about air quality explicitly.

Information requirements

To support their deliberations the jurors wanted information on:
- the causes of poor air quality;
- the composition of air pollution;
- the role of the weather in air quality;
- the relationship, if any, of air quality to global warming; and
- the impact of poor air quality on health.

Themes

Towards the end of the project, having heard from, and questioned, the witnesses and discussed the topic with each other, the jurors highlighted a number of issues that they felt to be critical.

Education

Schools

The jurors felt that it was important to raise awareness among school students about air quality and actions they can take to improve it in their locality.

Public awareness

The jurors, aware of their own ignorance before they got involved in the project, recommended a public awareness campaign that provided:

- information to enable individuals to better understand the cause and implications of poor air quality; and
- information on what individuals could do to make a difference and how they personally would benefit as a result.

International and local comparisons

There was considerable interest in how the UK compares with other countries and in how UK cities compare with each other. The jurors thought that there would be interest in an EU-wide 'league table' of air quality.

Technology

Motor vehicles

The jurors recognised that it would take time for the UK fleet to be renewed and that newer cars are less polluting. There was therefore, enthusiasm for retro-fitting existing technology to older vehicles. Annual emissions checks on all cars after the first year, and cars displaying emission certificates were suggested. There was also discussion about promoting the use of alternatively powered vehicles.

More interestingly, it was suggested that an in-car meter should be developed to show motorists their impact on air quality.

Domestic energy use

Ways of supporting reduced energy use in homes were put forward. This included small things like switching-off TVs at night and using energy saving light bulbs but also larger things, such as cavity wall insulation. Longer-term, the jury recommended switching to renewable energy sources and investing in 'real time' meters that allowed households to see their energy use in real time, so that usage could be reduced immediately. Retrospective information on bills was said to be too late and did not stimulate energy saving behaviour because the information was too late.

Individual awareness

There was some interest in developing an individual meter that people could wear to make them aware of the air quality in the vicinity and the impact they were having. It wsa suggested that this would empower people to make decisions and change their behaviour.

Recycling

There was considerable discussion of the need to recycle and reduce waste as a way of reducing air pollution from industry.

Transport

Domestic traffic

The jurors had been informed by the witnesses of the impact of transport on air quality. However, they advised that it will be very difficult to get people to give-up using their cars. They emphasised not only the convenience of cars but also the quality of travelling experience. Bus travel in particular was thought to be not only unreliable but expensive, noisey, threatening and occasionally dangerous. 'Bouncers' on buses to protect passengers was suggested that could reduce costs longer term by reducing vandalism.

Other alternatives to reduce pollution, such as increasing use of cycles, walk to school schemes, internet shopping were suggested.

Commercial traffic

The primary recommendations were to stop HGVs from using the roads at weekends, charging non-UK registered vehicles to enter the country and putting more freight on the railway.

Industry

The jurors were keen to stress that there are benefits from activities that cause air pollution, most notably a healthy economy and more comfortable lifestyle. Hence, as a group, the jurors appreciated the trade-off between jobs and consumer goods on the one hand and air pollution on the other.

Jurors were largely opposed to taxes as a mechanism for changing behaviour and recommended that incentives for good behaviour should be used rather than penalties for bad behaviour. It was finally agreed that financial incentives would be probably be more effective than education alone.

Regulation

Some jurors believed that only regulation would bring about some of the behavioural changes in individual behaviour they saw as desirable.

There was widespread awareness that regulating industry impacts on the economy and therefore a feeling that it should be minimised. It was suggested that corporate social responsibility should encourage good practice, rather than relying on regulation to curb bad practices. It was also felt that any regulation should be at the EU level and if local councils are to have responsibility for implementing policy and policing regulation, they must have the necessary tools for the task. There was a recommendation that the UK should look to Scandinavia for examples of good practice.

Waste

There was much discussion about packaging and the air pollution caused by its initial production and the subsequent need to dispose of it. This was an area where it was felt the Government should regulate if industry would not co-operate.

Recycling

The focus was on the need to reduce waste and improve domestic waste collection services. Germany was held up as an example of good practice.

Labelling

Part of making people more aware of the impact of their actions was thought to be changes in the way goods are labelled. Developing a system whereby the amount of energy used to produce a product is indicated on the packaging, for example using a traffic light system of three colours, was mentioned.

Vested interests

Some jurors suggested that an appropriate political framework is required to ensure that emerging technologies are supported and not sidelined because industry or the trade unions feel threatened.

Pollution police

There was a suggestion that local people could act as pollution police, in a system similar to community policing, to report offending individuals or households.

Lifestyle choices

The jurors agreed that individual citizens' decisions are the main drivers of air pollution. Choosing to buy a product and thereby causing it to be produced and transported, is a polluting process, as is deciding a make a journey. While the jurors appreciated that there are some technological solutions, the focus of discussion was on demand and use and whether this could, or should, be reduced and if so, how.

This line of thinking linked the issue of air quality to other environmental issues such as global climate change, recycling, waste disposal and energy generation and conservation. Broadly speaking, saving energy by reducing demand/usage was seen as an action that would have positive impacts across this range of issues. Some jurors believed that demand reduction was the most important issue to be addressed, others questioned the practicality of enforcing demand reduction.

Conclusions

By the end of the jury process it was agreed that the issue of air quality was more important than any juror had originally thought. The main reason they believed it to be important was because of the serious impact of poor air quality on health.

Defra response

Defra will circulate the report widely and consider the recommendations. Some members of the jury will be invited to meet with policy officials later in 2006.

Epilogue: Changed perceptions and behaviour

During the telephone conversations to finalise the jurors' report to Defra some jurors mentioned that they had changed their behaviour as well as their attitudes as a result of taking part in the jury.

Literature review

Overall the literature provides a consistent picture of public views in the UK. The findings from the literature review are generally consistent with those from the Citizens' Jury. However, after the process, the jurors had become empowered to take action and appreciated how their actions could make an impact.

Technical report

Citizens' Jury

The final project design included the following elements:

- An advisory committee
- A literature review of public perspectives on air quality
- Telephone recruitment of jury
- Three hearings over 3½ days
- A charge for the jury to address
- Witness presentations to the jury
- Opportunities for jurors to debate the issues
- Recommendations from the jurors to Defra
- Report drafted by PSP and agreed with the jurors
- Publicity for the event and the recommendations
- Evaluation

The advisory committee

The role of the advisory committee is to ensure that the process is free, fair and balanced and to provide technical expertise and access to expert witnesses. Recruitment can take time and many senior people who will be preferred for this role can find it difficult to be involved at short notice. In order to overcome this, the committee worked by email, meeting only twice, once at the start and once to discuss the final report and its implications.

Literature review

The literature review has concentrated on UK studies that have addressed, at least to some extent, public perceptions of air quality and air pollution, some also included public views on air quality information and possible solutions to air quality problems.

The jury

Recruitment

Twenty-two jurors from a 12 mile radius of Sutton Coldfield were randomly recruited by telephone to criteria set out in a recruitment questionnaire.

The first hearing

After an introductory warm-up session, the jurors were split into two groups for an initial discussion of environmental issues. This was followed by a presentation from Professor John Murlis on air quality.

The charge

The draft charge that Defra officials proposed for the jury to consider was:

> *'What improvements, if any, would people like to see in air quality and how should these be achieved?'*

However, the jurors were unwilling to take this charge on board for two main reasons. Firstly, they felt that they did not know enough about the options for improvement, which they thought might be dependent on the causes of air pollution. Secondly, they were uncomfortable in being asked to speak on behalf of the wider community. The jury felt that they could more readily address a series of questions:

1. Is there a continuing problem with air pollution?
2. If so what kind of problem is it?
3. What actions would be preferable?
4. At which level should decisions on actions be taken?
5. At what level should actions be taken?

These questions were taken forward to the second hearing. However, the jury never fully engaged with the concept of having a 'charge' to address.

The second hearing

The majority of this hearing was taken-up with the witness presentations and questioning. In order to maximise the opportunities for jurors to reflect on the information being provided and to exchange views with each other, the witnesses' presentations were interspersed with breakout sessions. A final feedback session enabled the breakout groups to present their thoughts to each other. This allowed a sharing of thoughts in order to stimulate ideas that might lead towards the development of recommendations in the final hearing.

The third hearing

For part of the time the jurors worked in three breakout groups. After lunch the three breakout groups presented their ideas to each other and worked together to compile a final

list of recommendations for Defra. At the end of the day the jury nominated a representative to present their recommendations and conclusions to the Defra project manager, who responded briefly.

The report

In the classic Citizens' Juries® method, the report is drafted by the jurors but in this case the report was drafted by PSP and circulated to the jurors for comment. Defra wanted to gain an understanding of public values, as well as to receive the jurors' final conclusions. In addition, Defra wanted to gain an understanding of how and why views change. Hence the report includes sections that discuss these issues using a qualitative research framework. Nevertheless, the final recommendations are clearly recognisable as the jurors' and not the interpretation of the facilitators.

Three written responses were received from the jurors, 15 fed back comments during the telephone follow-up. On the whole the jurors were satisfied that the report gave an accurate summary of the proceedings of the jury and that the quotes used represented the spectrum of opinions. In particular, all of the jurors thought that the descriptions of the hearings and the conversations that they contained were well summarised. There was some concern that the recommendations were somewhat isolated from the descriptions of the discussions and it was felt that this detracted from their impact. The report structure was revised to take account of this.

Evaluation

Of the 18 jurors who went through the whole jury process, none felt excluded or unable to understand the information presented. However, only 6 thought that Defra would take their views very seriously, while eight thought Defra would take their views fairly seriously and three felt that Defra would not take their views very seriously.

The subsequent follow-up telephone calls confirmed these views. The importance of dividing even such a small group into smaller groups for discussion was appreciated by the less confident jurors.

The jurors generally found the witnesses clear and helpful. The information they provided was highly valued.

Formal feedback was not sought from the witnesses but several sent positive feedback by email after their involvement.

Conclusions

Findings

This Citizens' Jury has shown that members of the general public are quite capable of understanding and questioning information regarding air quality. Given the time to engage with the key issues, easy access to information and perhaps most importantly the incentive to access it, members of the public are able to identify what is important to them regarding air quality and come to informed conclusions about appropriate actions.

Very few, if any, members of the jury would have pro-actively sought information about air quality prior to taking part in this project. So if the jurors are typical of the wider

public, and the literature review suggests that they are, simply making information available, however accessible in terms of either content or media, will not lead the average member of the public to find out about the topic.

The jurors' values could be summed up as:
- a desire to minimise adverse health effects;
- support for ensuring a competitive UK economy that provides jobs; and
- a belief in the fair treatment of less well-off members of UK society.

These values underpinned the jurors' expectations. They did not expect any organisation or individual to have the freedom to pollute in a way that would seriously affect the health of others. However, the jurors did not expect controls over pollutants to be so tight that the competitiveness of UK industry was adversely affected. There was a relatively consistent UK focus to the discussions and although air quality was seen as a global issue, concern about either pollutants, or steps taken to control them, were largely driven by local impacts.

There was a hope that society as a whole might be able to move towards a philosophy of lower consumption, which would provide knock-on benefits in terms of air quality. There was however, little expectation that this would happen to a degree that would have a profound effect on air quality. The jurors therefore recommended that Government should take the lead in improving UK air quality.

Government was expected to take a number of actions, in particular it should:
- continue to regulate the emission of air pollutants;
- reward good behaviour as well as punish failure to comply with regulations;
- raise the understanding of the impact of individual behaviour on air quality; and
- support investment in cleaner technologies and promote their uptake.

The jurors said that any Government expenditure should be seen as an investment, rather than a cost, largely due to the beneficial impact of better air quality on health. Information was seen as central to making different actions acceptable and the jurors thought that it was crucial that Government take a proactive role in campaigns to provoke action.

Method

This project has shown that there is a clear role for deliberative methods in developing air quality policy. Such approaches can be used to bring new ideas to the policy mix. The impact knowledge and deliberation had on jurors' perceptions made them atypical of the wider public by the end of the process. This must be borne in mind when interpreting the findings, as the literature review shows. The greater sense of personal responsibility and empowerment embodied in the jurors by the end is a function of their greater knowledge and confidence.

The method used was not a classic Citizens' Jury, although many of the principles were included. In terms of broader applicability, the project is best thought of as an example of a deliberative method rather than as a Citizens' Jury. It is not useful to think in terms of one model or another being particularly applicable to specific policy areas or issues.

Key lessons learned for future use of deliberative techniques in policy development are:

- Allow sufficient time to recruit and establish the Advisory Committee
- Consider inviting more junior people to join the Advisory Committee
- Allow sufficient time and budget to ensure the best witnesses can take part and are able to fully prepare
- Ensure resources are available to support witnesses so that they pitch their talk at the right level and cover the required material in the timescale available. Asking for draft presentations will help
- A fairly long gap between the first and second hearing is acceptable and provides time to finalise witnesses and their presentations in response to jurors' needs. It is possible to keep the jurors engaged by sending a report on the first session
- The final hearing should be quite soon after the second to maintain momentum
- A 'technical friend' gave the jurors confidence to ask questions and helped to articulate their questions for the witnesses
- Breaking the group into small groups for discussion helps less confident jurors to voice their opinions and ask questions
- Allow adequate time for jurors to deliberate and reach conclusions

Introduction

Aims and objectives

This project was trying to fulfil two distinct aims. Firstly, the project was to explore public views on air quality in order to inform the development of future policies and strategies to achieve desired policy outcomes. Secondly, the project was intended to shed light on the practicality of using this approach to inform decision-making.

The agreed objectives for the project were to:

1. enable members of the public to find out about air quality issues;
2. understand the values of the general public whose views are usually absent from policy consultations;
3. provide policy-makers with an understanding of the public's expectations in respect of air quality;
4. provide policy-makers with an understanding of the policy actions to improve air quality that are acceptable to the public; and
5. demonstrate how participatory methods can contribute to policy development in the field of air quality.

Of particular interest to Defra were issues such as:

- What information enables and encourages the public to engage with the issue of air quality?
- At what geographical/political level should action be taken (local, national or supra-national)?
- What policy instruments should be used to achieve reductions in air pollution?
- What financial and lifestyle changes would people make to improve air quality?
- What information might influence people's behaviour?
- How can the government encourage less polluting transport options?

The project

People Science & Policy Ltd (PSP) designed, managed and delivered a process based on the Citizens' Jury approach to enable members of the general public to contribute to the development of the Department for Environment, Food and Rural Affairs (Defra) policy on air quality. To provide a broader context for the findings a review of the UK literature on public perspectives on air quality was conducted.

The project was run in collaboration with Professor John Murlis, as specialist science advisor, Dr Rosemary Day, as specialist advisor on the social aspects of air quality and Midlands-on-View, a market research recruitment and venue service.

The jury

Citizens' Juries® are a trade marked development from the Jefferson Center in the USA. Our Citizens' Jury was based on this model. It took place in Sutton Coldfield. Twenty-two members of the public were recruited from a 12 mile radius of Sutton Coldfield to take part in the Citizens' Jury. They were recruited by telephone as a cross-section of the public but we ensured that individuals with asthma, coronary and pulmonary obstructive

diseases were included as previous research had found this group to have specific concerns with regard to air quality, which it was important to include.

While the recruitment process needed to provide some information about the purpose for which people were being invited to join the jury, we did not want to prejudice the process in any way, hence potential jurors were told:

"At the first session you will be briefed about a local environmental issue and have an opportunity to ask questions and to ask for more information."

The jury process involved three hearings. The first hearing lasted 2½ hours and was run on the evening of 15 December 2005. This was an introductory hearing at which the jurors were introduced to each other, the PSP team and the Defra project manager. The science advisor to the project provided an overview of the topic of air quality and jurors identified further information they felt they needed to understand the issues and which would enable them to make recommendations for action to Defra.

The second hearing took place over the weekend of 21/22 January 2006 and comprised two full days. The bulk of the time was given over to the expert witness presentations and time for the jurors to question these witnesses. The final hearing was held on 28 January and was devoted to enabling the jurors to reach conclusions, draw out their recommendations and present these to Defra.

Jurors were told that while this project fell under the environment aspect of Defra's portfolio, issues that related to other parts of Defra, and indeed other Departments' areas of responsibility, could be passed on. The facilitators encouraged the jurors not to be bound by Departmental boundaries in their recommendations. The jurors were also told that Defra was not expecting them to endorse existing policy and that they had *"a blank sheet of paper"*.

Literature review

The project included a literature review to provide a wider context for the outcomes from the jurors' deliberations and to inform the recruitment strategy. It reviews academic and 'grey' literature from the UK that has addressed public perceptions of and/or knowledge about air quality, air pollution and its effects or impacts. Studies addressing air quality information use are also included.

This report

The report is divided into four main parts.

Part A presents an analysis of the findings from the jury hearings to provide a deeper understanding of public perspectives and understanding of air quality, the jurors' recommendations and the rationales for those recommendations. This part of the report has been agreed with the jurors as conveying their recommendations and explaining their underlying concerns to Defra. The recommendations in boxes are drawn directly from the final feedback charts used by the jurors in the final session in their presentation to Defra.

Part B presents the literature review.

Part C is a technical section that details the methodology used.

Part D contains the conclusions drawn from the project. These draw together the jurors' deliberations with the literature review. This part of the report also highlights the lessons learned and makes recommendations for the use of deliberative tools in Defra's wider policy-making process.

In addition a **separate volume contains all the relevant appendices**.

Part A – Outcomes from the Citizens' Jury

A1. Jurors' Perspectives and Recommendations

A1.1 Introduction

This section explores in some detail the views of the jurors and sets their recommendations in the context of their wider discussions. It also includes ideas that the jurors discussed during the hearings but which they chose not to include in their final recommendations. How the jurors agreed their final recommendations and why some suggestions were discarded is discussed in Part D of the report, which looks at the lessons learned.

The jurors chose to deliver their recommendations in two parts:

- things the jurors thought that individuals should do; and
- things the jurors thought that Government should do.

A1.2 Scoping the issue

A1.2.1 Baseline concerns and knowledge

After an initial introduction to the Citizens' Jury process but before any information about the topic to be discussed had been given to the jurors, they were divided into two groups by gender. These two breakout groups began by brain storming around the subject of 'environmental issues'. The purpose of this process was partly to identify how much air quality was a 'top of mind' subject and partly to provide a context for later discussions by identifying which environmental issues were at the forefront of the jurors' initial thinking. A number of topics related to air quality came out, including air pollution.

Men	Women
- global warming - air pollution - vehicle pollution - efficiency of recycling - traffic - pollution of the sea - carbon dioxide gas	- the atmosphere - human effect on the world - pollution - exhaust from cars, aeroplanes, trains, even walking - spray canisters - global warming - oil storage disaster[1] - area you live in - rubbish, waste

Other environmental issues that were mentioned included diversity of species (and extinction), green space, noise and light pollution, mobile phone masts and nuclear waste.

Levels of knowledge about the causes and effects of poor air quality were very low, beyond the obvious that industry and traffic cause pollution. One woman said *"I don't know what quality is"* but once the topic had been stimulated the women realised that they assumed that the quality of the air was *"down to the weather"*. They also felt that the air quality was better in the morning than later in the day, which led them to conclude that *"There's something going on during the day"*.

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[1] The Bunsfield oil storage depot fire had occurred days before the first hearing.

There was a perception that air quality has improved over the last 50 years or so because the causes have been attacked. Jurors were aware that that the smogs of the 1950s no longer occurred but they were also aware of *'hazes'* over towns and *'increases'* in asthma but only a minority deduced that the nature of air pollution might have changed:

> *"Before it was carbon, now it's vehicles."*
> *"I think it's changed from particulates to invisible gases."*

Others acknowledged that because they could not see air pollution they tended to assume there was none.

> *"I just don't know how it's measured… you know…if you don't smell anything… and you don't see anything, you assume your quality is good…there are so many things that are invisible that you don't think about."*

But some were aware that this might not necessarily be the case.

> *"From that standard you could say that it's better 'cos you don't go out and you don't smell it…but does that mean it's good or does that mean there are other things that we don't see."*

Those with asthma, or children with asthma, were more aware than others:

> *"I'm asthmatic, so I notice it quite a lot."*

Some jurors commented that they noticed the difference between London and Birmingham, urban and rural environments and the seaside. Some were also aware that the same place could have different air quality on different days.

> *"It can be…you can be in the same place and different days have different qualities…. it's not just an area."*

It was clear that air quality was not a topic that the jurors had actively considered before in terms of thinking about improvements and solutions. Even those who claimed to be aware of the quality of the air locally had taken it as a given and not something they, or any other individual, could do much about. Regulating industry was the spontaneous suggestion for improvements.

A1.2.2   Geographic range

To ensure that the project drew on up-to-date information and to assist in identifying issues to raise with jurors and witnesses, an Advisory Committee was established (see section C2.2). This group had raised the possibility that the jurors may want to consider indoor air quality. However, there was never any discussion about indoor air quality during the jury hearings, although there was a question about the impact of smoking on air quality. Indeed, we found that jurors saw air quality as a global environmental issue, albeit with local and national ramifications.

Hence the jurors were interested in whether the quality of the air in the US affects air quality in the UK. While there appeared to be a general understanding of prevailing

westerly flows, one witness was asked whether there was always a west to east circulation[2]. There was also an issue about whether, or to what extent, industrialisation in China and India (in particular) would impact on air quality globally and how this would impact on air quality at the local level.

A1.2.3   Global warming

The jurors quickly identified a link between air quality and the role of economic development in causing air pollution through the use of energy (by industry, traffic and in homes). Hence there was considerable interest in whether the pollutants that affect air quality also act to cause global climate change. The question about the role of the weather in air quality arose independently from the climate change question and jurors were interested to learn that 'clear winter mornings' are worse for air quality than windy days. However, awareness that the wind would blow air pollution from one country to another reinforced the concept that air quality is a global issue and has to be considered on that scale.

A1.3 Information requirements

An awareness of the public's information needs is an important part of developing a strategy to encourage behaviour change at national and local level. At the first hearing jurors were given the opportunity to identify information they felt would be useful to enable them to gain a full understanding of air quality and the issues. A full list of the questions generated by the jury can be found at appendix 5. In summary, jurors wanted to find out more about:

- the causes of poor air quality;
- the composition of air pollution;
- the role of the weather;
- the relationship, if any, to global warming; and
- the impact of poor air quality on health.

Importantly, while they were interested in the causes of air pollution, their emphasis was on knowing more about what could be done to improve it.

There was some concern about the difficulty of getting information, especially unbiased information on a number of nationally important topics.

> *"You just get people with an axe to grind – there's no clear way of getting real information. You get very cynical."*
> *"My concern is lack of information really…I would like a good debate, say on nuclear energy."*

The jurors identified the following types of people as likely to have useful information:

- medical experts
- experts who could talk about the air quality effects of different types of transport
- a Local Authority representative – particularly someone who could talk about traffic

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[2] One witness highlighted the impact of the rotation of the earth on air movement.

- someone who could talk about alternative fuels and energy – perhaps from an oil company
- "blue sky" perspectives – someone who could offer long-term visions of where technology is moving
- someone who could provide a political perspective

As the proceedings developed, the jurors put more emphasis on understanding the causes of poor air quality in order to devise solutions. Inevitably, the jurors found some witnesses easier to follow than others. Jurors took on board key points from the witness presentations, in particular that:

- industry is tightly regulated;
- the nature (components) of air pollution has changed over time;
- traffic is a major contributor to air pollution today;
- there are technologies like particle traps that can be fitted on new cars but also on existing vehicles retrospectively;
- public transport is not always better for the environment;
- exhaust from diesel fuel is more harmful to health than that from petrol;
- industrial air pollution from other countries would impact on air quality locally and globally. Both developed nations such as the USA and the rapidly industrialising countries such as China and India were cited by jurors;
- air quality in rural areas is not necessarily unequivocally 'better' than the quality of air in urban and suburban areas;
- exercise, by forcing deeper breathing, could impact negatively on health because the small size of some particles means they would be more deeply inhaled than when breathing 'normally'/more shallowly;
- on average everyone loses seven months of their life as a result of poor air quality; and that
- any improvement in air quality has a noticeable impact on health (the Harvard six city study).

A1.4   Themes

The jurors' discussions and subsequent recommendations were based around six themes.

- Education and awareness
- Technology
- Transport
- Financial incentives and the market
- Regulation
- Lifestyle choices

A1.4.1   Education and awareness

There were two aspects to the education issue. Firstly, there was the issue of education for children in school. Secondly, there was the issue of educating adults.

Schools

The jurors believed that educating the younger generation, making them more aware of how their actions impact on air quality and the environment more generally would, over

time, raise awareness in the general public. In addition, those with children believed that this is a good way to educate parents. A number of jurors gave examples of how their children had taught them things and influenced household behaviour. This was particularly true in the areas of the environment and health.

> *"My daughters did a lot of environmental work at school… There was a play we all went to see where they were all fluorocarbons…and we parents learnt a lot."*

In some discussions there was a general feeling that environmental issues had a higher profile in schools now than had been the case for some jurors. Some of the younger jurors spoke about working on "*school projects*", re-affirming the suggestion that younger audiences might already be catered for to some extent. There was a feeling that *"schools are doing it well"*.

However, there was also some scepticism about the impact of this approach:

> *My daughter did environmental studies at school and she nags me …but I still can't get her to turn the lights off."*

Public awareness

In addition to schools-based education, the jurors were concerned that there should be education for adults, perhaps phrased as a 'public awareness' campaign.

> *"You can't just wait for all of us to die* [by focusing only on schools].*"*

The jurors thought that a public awareness campaign should have two strands:

- information that enables individuals to better understand the causes and implications of poor air quality; and
- information on what individuals could do to make a difference and how they personally would benefit as a result.

There was a strong emphasis on enabling people to make informed choices, whilst ensuring that the damaging impact of poor air quality on health was brought to the fore. Importantly, it was said that any information campaign must include the impact poor air quality has on individuals.

> *"We do need to link the fact that saving energy is linked to health. I'd never put the two together…it's for our health as much as about saving the planet"*

The starting point for any campaign would be to raise awareness that poor air quality is an issue and that it damages people's health. It was said to be *"hidden"* because *"you can't see it"*. All of the jurors admitted that they were not only ignorant on the issue of air quality but mostly they agreed that they had not even considered it. Even those who had given the topic some thought had generally assumed that as an individual they could not make an impact.

Everyone felt that they had learnt a great deal as a result of taking part in the jury. At a personal level some jurors believed that they now had some responsibility to rise to the challenge of distilling and disseminating it to others.

> *"As people that have been educated on this…we need to go out and spread the word and help to raise awareness."*

It was thought to be important to impart information in *"bite sized chunks"* and to continually remind the public of the messages because they are easily forgotten. One woman admitted that on the Monday following the second hearing she had been very conscious of her actions with regard to air quality but by Wednesday this had already faded from her mind. Frequent reference was made to a short advertisement that had told people to put only the amount of water in the kettle that they needed, to save energy. It was suggested that a similar format be used for air quality, giving short messages on what individuals could do to make a difference and how they personally would benefit as a result.

Air quality information as part of the weather broadcasts was suggested in this context, as was the development of a device that individuals could purchase to measure air quality at their location. (See section A1.4.2.)

A celebrity-led campaign was a popular idea with some jurors but it was pointed out that the celebrity had to have credibility with respect to the issue. Jamie Oliver's campaign for better school food was much quoted as a good example of a positive impact being made. He was cited because as a chef, he has credibility in knowing about food. He was also thought to be a good role model. It would therefore be important to find a celebrity who would not be seen as fronting an air quality campaign purely for the fee.

International and local comparisons

There was considerable interest in how the UK compares with other countries in terms of air quality and the idea of an international or EU-wide 'league table' (*"though I hesitate to use the term"*) was suggested. Such a league table could also be published at the UK level comparing cities and was seen as a way of raising the profile of, and thus interest in, air quality.

> *"I think people would want to know that one area has got better and it's a better place to live… then people ask questions and get more information."*

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Education

Recommendations – What we should do

- Spread the word
- Be willing to learn
- Change attitudes: we can influence others

Recommendations – What Government should do

- Educate everyone as we have been educated
- Devise indicators and measurements that are understandable to the general public

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A1.4.2   Technology

Some jurors wanted more information about existing technological solutions or those that are likely to be possible in the near future but they also had some ideas of their own. They recognised however, that encouraging people to take-up new technologies would be a challenge because of perceptions that they would be expensive.

Motor vehicles

The jurors appreciated that newer cars are less polluting that older cars and accepted that it would take time for the whole of the UK fleet to be renewed. There was therefore considerable enthusiasm for retro-fitting existing technology to older cars, for example particle traps. Jurors expressed concern that poorer members of society should not be unfairly disadvantaged by requirements to upgrade older, less expensive vehicles.

It was also suggested that annual checks on emissions might be instigated from the first year of a car's life rather than after three years when MOT tests are required. It was also suggested that an 'emissions passed' badge could be displayed on the windscreen with the road tax disk.

Mixed fuel vehicles were known about by a few jurors and the witnesses introduced the idea of alternatively powered vehicles, using hydrogen or biomass, of which a few jurors had heard.

> *"But petrol can come from biomass, it does in Brazil, I don't know why we don't do it."*
> *"Can it help?"*
> *"I don't know."*
> *"There is a lot going on technology-wise and I think a lot of it is going on in the States."*

There was enthusiasm for these new developments but also an awareness that many of these technologies merely displaced air pollution from one area to another. The jurors did not see this as necessarily offering a solution to air quality because they viewed air pollution as a global issue, with air moving easily from one locality to another. There was, however, a conversation with one witness about the relative merits of controlling one large producer of emissions, for example a power station, rather than many small producers, such as cars or homes.

As we have seen, a lack of awareness of the impact of individual behaviour on air quality was an important factor for the jurors. They therefore suggested that an in-car measurement of the impact your car is making on air quality would increase awareness and could impact on behaviour. For example, they had taken on board the impact of driving style on emissions from one of the witnesses and felt that instant feedback on levels of emissions would encourage good behaviour amongst some motorists.

Domestic energy use

The jurors became concerned about the amount of energy wasted in homes. They suggested that existing energy saving technology could be better employed domestically as well as the development of more energy efficient homes and domestic products. However, they believed that lack of awareness was a big barrier to action at the individual level and suggested in-home energy meters could alert households when they go above 'average' energy use or pollution factor or information could be included with utility bills. There was some discussion about the need for real-time information so that action could be taken, as against post-hoc information on utility bills that comes too late to act upon.

> *"You've already spent it. It's too late."*

A number of jurors were aware of claims for the number of power stations that could be closed if TV stand-by lights were switched off. They suggested that such stand-by modes might not be necessary or could be designed to go off automatically after a certain period without use.

Easy technological changes to reduce domestic energy use were said to be using energy saving light bulbs, more intelligent heating systems that only heat those areas of the house that are needed, cavity wall insulation and fitting motion sensors for domestic lighting.

Examples of incentives to encourage the introduction of energy saving technology at home included incentives to switch to renewable fuel sources and grants and tax relief for implementing energy savings or using renewable energy. It was felt that appropriate incentives are not in place to encourage any of these behaviours, or even to ensure the use of existing technology in newly built homes.

It was reported that some energy suppliers provide payment regimes that offer unlimited energy for a fixed charge. This was seen as potentially useful for those who might be vulnerable to the cold if they were worried about the cost of heating. However, the jurors were concerned that for many people who might not be in danger of fuel poverty, this sort of payment regime was likely to encourage wasteful behaviour.

Individual awareness

In addition to the development of in-home energy meters described above, there was interest in developing some form of individual air quality meter that could be worn. For one juror in particular it was important to have information about local air quality and the impact she personally was making, so that she could make informed decisions about what actions to take. The meter would tell the wearer the quality of the air at their current location. She suggested that something like a pedometer might be developed that would enable individuals to see the impact they make in real time.

> *"You have to get that mentality that you can do something on an individual level."*

She was driven by her desire to understand more about the issue so that she could usefully change her behaviour.

> *"I don't feel I live in an air polluted place but according to that guy* [the local authority witness] *I do. Now I want to know more about it. I'm obviously living in a fool's paradise."*

She was also keen that a simple measurement system be developed that was easily understandable to the general public. Without this, a measurement instrument would not be widely used. Discussions with the witnesses had revealed that existing air quality measurement systems that could be 'worn' by individuals need to be despatched for analysis and do not therefore provide instant feedback.

Recycling

There was considerable discussion of the need to recycle and reduce waste as a way of reducing air pollution from industry.

Technology

Recommendations – What we should do

- Demand/use energy meters to allow real time monitoring of energy usage
- Fit energy-saving technology where available
- Recycle

Recommendations – What Government should do

- Provide information to support reduction in use of energy

A1.4.3   Transport

New technologies for transport have been discussed above but the jurors also discussed methods of transport.

Domestic

The jurors took on board the information from witnesses that transport has a big impact on air quality. It therefore formed a centrepiece to their discussions. However, a key message to the Government is that it will be very difficult to get people out of their cars.

> *"I can't see that you're going to get people away from their cars."*

> *"I wouldn't give up my car for anything."*

> *"If I am honest I would rather adapt my behaviour in the household than give up my car…if I said I'd use the bus instead, I'm lying."*

The main recommendation with respect to transport was the need to improve public transport so that not only more people would be encouraged to use it but a wider range of people would do so. In Birmingham and the surrounding area, public transport was seen as something of a last resort, being regarded as slow, dirty, unsafe, unpleasant and inconvenient and, compared to private cars, not particularly cheap. The jurors also highlighted that in making price comparisons, individuals tend to look only at the cost of petrol and rarely include the cost of running the car.

On top of the ideas of using technology to raise awareness of the impact on air quality of an individual's car, other ideas for promoting public transport included: park and ride schemes; increased parking charges in city centres; trams; better access to the local railway network by opening more stations and running small buses to local stations; better maintenance of the bus fleet; and additional staff on buses (both "*bouncers*" and "*conductors*" were mentioned). It was felt that better maintenance and the presence of staff to prevent malicious damage would be repaid through lower repair costs. Bus deregulation was thought to be an impediment to implementing some initiatives, because of a lack of perceived central control. This was also mentioned in connection with railway services.

London's tube network was held up as an example of a desirable option because it was *"used by all sorts of people"* and because *"you never have to wait more than a few minutes for a train"*. Several jurors highlighted Scandinavian public transport as another example to be investigated and perhaps emulated.

> *"Public transport needs to be much more user friendly."*

Employers and schools were thought to have a role to play. It suggested that employers running their own buses and special school buses would reduce car journeys to work and the volume of traffic generated by the school run. At the very least, car sharing and multi-purpose trips should be encouraged.

Despite acknowledging the difficulties of changing people's behaviour, including their own, some of the jurors felt that they should play an active role as citizens. In particular

there were suggestions that people had to make sure that providers of public transport were aware of public demands.

> *"We should be voicing our opinions…and not just voicing them…you know writing letters."*

Other ideas such as encouraging walk to school schemes, more cycling, and more journeys on foot were supported but it was acknowledged that time pressures and safety concerns, tend to discourage this type of behaviour.

The acknowledged difficulty of getting people to use public transport was addressed by ideas on the development of car technologies discussed above. In addition, there was a discussion about the lighting levels on motorways and in cities but the jurors decided that there were safety issues that probably mitigated against reducing light levels significantly.

Internet shopping, rather than travelling to shops, was also discussed as a way of cutting pollution because one lorry can carry several car loads on its round. In addition, such deliveries could further reduce wastage through the use of robust re-usable crates rather than plastic bags to hold deliveries.

Commercial traffic

Some jurors were concerned that UK standards for traffic emissions might be higher than those elsewhere, and that non-UK vehicles would be more polluting. This related mainly to other European countries whose vehicles might use British roads. The jurors were informed that regulation was made at EU level on vehicle emissions but were sceptical about different levels of enforcement.

Regardless of emission standards, there was a general feeling from some jurors that non-UK traffic (especially HGVs) is using UK roads without contributing to the costs, including pollution costs. UK road tax is not chargeable and the jurors said that HGVs fill-up with diesel before entering the UK, so no fuel duty is gathered. Hence there were suggestions that there should be an entry or exit tax on non-UK registered vehicles.

Another suggestion was to ban all HGVs over seven tons at weekends (several people said this is done in some parts of the EU) and to put more freight on the railway. Jurors were aware that consumer demand for seven day opening and instant access to goods and services was generating air pollution. It was thought that to service this demand, required deliveries seven days a week. However, there was a view that many goods do not need to be delivered daily because they are stored before delivery to the shops.

At least one juror appeared not to support seven day opening for social reasons.

> *"We can get back to family values."*

Transport

Recommendations – What we should do
- Purchase vehicles with lower polluting, more efficient engines
- Think about the impact on air quality before deciding how and whether to travel somewhere
- Voice our opinions- public participation

Recommendations – What Government should do
- Provide higher quality public transport
- Grade vehicle taxes by emissions

A1.4.4   Industry

The jurors were keen to stress that there are benefits from activities that cause air pollution, most notably a healthy economy and more comfortable lifestyle. This was more important to some than others but the fact that individuals as consumers stimulate economic activity and therefore indirectly cause air pollution was accepted by all.

The jurors were largely opposed to taxes as a mechanism for changing behaviour or encouraging investment in energy saving technologies at the individual level. There was similar resistance to the idea that penalising people for "*bad*" behaviour should be a first option.

Aside from the de-motivating effect of focusing on the negative, the jurors were concerned that financial measures might impact unfairly on poorer families. For example, the idea of taxing domestic waste was rejected for three reasons. Firstly, there was concern that poorer people might have larger families and these would be disproportionately affected by a tax on the quantity of waste generated. Secondly, considering all consumers, it was felt that people have little control over the level of packaging at the point of sale. Finally, there was a view that people would seek to circumvent the tax by going out at night and dumping/fly-tipping their rubbish.

The jurors preferred to seek financial incentives that would encourage behaviour change and actively reward individuals for 'good behaviour'. The example of energy efficient cars paying a lower road tax was cited and some jurors believed that this had impacted on the behaviour of friends and family.

> *"It comes down to money for all of us."*

However:

> *"Money is a strange thing though, because there's also the status of having lots of money and demonstrating that you've got lots of money by buying a bigger status symbol. So you have to be careful with money. It can often work in the opposite way."*

Nevertheless, there was general agreement that financial incentives would probably be the most effective.

> *"It is not in the interests of commerce to do anything other than pollute. They don't pay the costs of pollution, in other words, at the point of sale the cost of pollution are not included in what we buy. That's the issue. Some how or other we have to change that. How do we make the cost of pollution included in the products we buy at the point of sale?"*

It was suggested that energy companies might consider pricing policies that reward customers for reducing demand.

> *"For example if instead of using 500 units in a quarter you used 350 you would get a 10% reduction."*

However, few believed that such corporate behaviour was likely.

> *"You won't get the gas companies to try to persuade you to use less."*

One way of addressing the issue of reducing demand for, and use of, resources was the suggestion of pollution vouchers and this is how they were described by the juror who suggested them.

> *"Points would be allocated to each product and at the supermarket till these are scanned and added. Each person is issued with a fixed number per month and when they exceed this they either have to pay more or trade them with others. You would start with today's average. Supermarkets could be brokers – not taxation… The only regulation would be that every product must have its pollution points…and to issue vouchers… It's totally classless and we've done it before with ration books… It would be like handling club card points."*

Interestingly, although the jury were impressed with this idea, it was thought to require too much political will to be practical.

> *"I bet they don't do it."*

Despite having widespread support amongst the jurors, this idea was not included in the final set of recommendations to Defra. This was despite one of the witnesses informing the jury that it was similar to the idea of domestic tradable quotas that has been considered in the context of carbon dioxide emissions.

Industry

Recommendations – What we should do
- Put pressure on corporations to inform us and be more environmentally friendly
- Encourage industry to provide local employment
- Demand less packaging
- Demand information on the amount of energy used to produce products - colour coding
- Buy local produce

Recommendations - What Government should do
- Support new technology development
- Regulate

A1.4.5   Regulation

Some jurors believed that only regulation would bring about some of the changes in individual behaviour that they saw as desirable.

> *"For this to succeed you have to take the choice away… Whilst we all have options and the ability to choose whether we do certain things or not, we're gonna take the easy option, the options we've always taken."*

Most of the jurors accepted the need for appropriate regulation of industry, but thought that a good deal of improvement had already taken place. Against this backdrop some suggested promoting the idea of corporate social responsibility to encourage good practice, not just regulations to curb bad practice.

There was widespread awareness that regulating industry impacts on the economy and therefore a feeling that it should be minimised. It was also felt that any regulation should be at the EU level and if local councils are to have responsibility for implementing policy and policing regulation, they must have the necessary tools for the task. There was a recommendation that the UK should look to Scandinavia for examples of good practice.

Waste

There was much discussion about the level of waste generated by packaging and the air pollution caused by its initial production and the subsequent need to dispose of it. A number of jurors felt that many goods are *"over-packaged"*.

> *"We should demand less packaging."*

This was an area where it was felt the Government should regulate if industry would not co-operate. However, the discussion returned again to education and information. One witness commented that with respect to recycling, there is a low level of demand for green

(lower quality) glass. In addition to being largely unaware that such quality issues existed, the jurors agreed that they would be quite happy to have goods in green bottles and jars if it is more environmentally friendly. At present they did not have this option or access to the information that might help them to demand it.

Recycling

There was considerable discussion about recycling generally and the pros and cons of driving to a recycling centre. The focus however, was on the need to reduce waste and improve domestic waste collection services; for example, the provision of separated waste collection services varied across the areas from which the jurors were drawn. Regulation should require the most effective services in all areas. Germany was held up as an example of good practice.

Labelling

Part of making people more aware of the impact of their actions was thought to be changes in the way goods are labelled. One juror was very concerned that products can be labelled as products of the UK if they are packaged in the UK. She informed the group that food that is imported but then packed in the UK goes to the shops labelled as UK produce. She felt this was wrong and was not helping consumers to make informed choices to minimise air pollution by buying local produce.

> *"In supermarkets we would like to know what the local produce is…have its own section or be labelled in some way."*

Developing a system whereby the amount of energy used to produce a product is indicated on the packaging, for example using a traffic light system of three colours, was mentioned.

Vested interests

Some jurors were very aware of the need for the political will and support required to develop new technologies. They suggested that an appropriate framework is required to ensure that emerging technologies are supported and not sidelined because industry or the trade unions feel threatened. One juror gave an example of a development in fuel technology in the late 1940s but which he believed had been shelved because of vested interests and which one witness said is now being developed in China.

Pollution police

There was a suggestion that local people could act as pollution police, in a system similar to community policing, or that individuals could be encouraged to act as pollution police and report offending individuals or households. One of the breakout groups had a discussion about a "*dirty diesels*" hot line.

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│                                                         │
│                     Regulation                          │
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│                                                         │
│     Recommendations – What Government should do         │
│                                                         │
│                                                         │
│     •  Light touch to sustain industry                  │
│                                                         │
│                                                         │
│     •  Devise rewards for good behaviour not penalties  │
│        for bad behaviour                                │
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A1.4.6   Lifestyle choices

The jurors agreed that individual citizens' decisions are the main drivers of air pollution. Choosing to buy a product and thereby causing it to be produced and transporting it to the point of use, is a polluting process, as is deciding a make a trip and deciding on which mode of transport to use. While the jurors appreciated that there are some technological solutions, such as particle traps fitted to vehicles, the focus of discussions was on demand and use and whether this could, or should, be reduced and if so how. This line of thinking linked the issue of air quality to other environmental issues such as global climate change, recycling, waste disposal and energy generation and conservation. Broadly speaking, saving energy by reducing demand/usage was seen as an action that would have positive impacts across this range of issues. Some jurors believed that this was the most important issue to be addressed, others questioned the practicality of enforcing demand reduction.

A parallel line of thinking also led the jurors to an appreciation that there are benefits associated with the activities that lead to air pollution. Society needs goods and services and individuals need employment. In some instances in the UK the positive effect of economic activity might be more important to local residents than the negative impact of poorer air quality. As one juror said:

> "He [one of the witnesses] showed that picture of Stoke with all the smoke but the reason it's not like that any more is because the jobs have all gone to China."

While this is not as clear cut as it sounds, because modern industrial processes are much cleaner than those of the past, it makes the point that the economic issues linked to air quality were well understood. One woman, working in the car industry, went further:

> "Eventually I won't have a job. People want all these things [cleaner production methods] but they won't pay for it. The work will go to China and Poland."
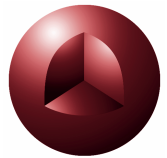
This individual also raised the question as to whether scrapping fully functioning equipment to replace it with equipment that produces less pollution really reduces overall pollution because of the pollution caused by making new equipment. This comment raises the concept of full life cycle analysis as a part of the process of regulation.

A1.5 *Conclusions*

By the end of the process there was a consensus that air quality is a more serious issue than any of the jurors had thought before they joined this jury.

> "*My wife says I'm a pollution bore now*"

On a scale of concern from one (unconcerned) to ten (very concerned), most jurors had moved considerably higher up the scale. One of the break-out groups recorded this on a flipchart as shown below.

How concerned are we?

Before CJ

1(Not at all)   5   10(Very)

1(x2)   **2(x2)**   **5**   **6**

Average Before =2.83

After CJ

1(Not at all)   5   10(Very)

                            5   **6.5**   **7.5 8**   **9**   **10**

Average After =8.83

When this sub-group was asked why they regarded air quality as so much more important at the end of the process compared to the start, they cited the adverse health impacts of poor air quality.

This change in the jurors' perspectives was a result, not just of the information with which they had been presented during the first and second hearings. It also resulted from the interchange of thoughts and ideas stimulated through their probing and questioning of witnesses and of each other.

Even jurors who said that they had been conscious of the quality of the air (usually because of their health or the health of a close family member) before joining the jury said that it was something that they accepted. It had not occurred to any of the jurors that they personally, or members of the public generally, could have an impact on air quality. As with global climate change and carbon dioxide emissions, they had felt it was too big an issue for individuals to make a significant difference. However, the jurors came to see air quality as distinct from, and different to, CO_2 emissions and climate change, which had not necessarily been the case at the start.

> "*There's almost two issues isn't there, which I'd never divided quite as strongly as I'm now seeing from this morning's session. There's a global warming issue and there's a pollution issue*"

Appreciating this distinction led the jurors to make more recommendations for themselves than for Government. They saw the issue as one that requires action from individual citizens as well as from Government. They also saw that individual actions could drive the market towards more sustainable products and processes. Nevertheless, they identified a key role for Government in providing information to stimulate action by individuals and in giving a lead. Moreover, it was suggested that most Government actions should be taken as investments that would lead to improved air quality and thus improved health.

Overall it can be seen that the jurors believed that:

- the issue of air quality is a global issue and can only successfully be addressed by policies at that level, although implementation may be local;
- actions can be taken at the local level that will have a noticeable effect on local air quality;
- it is the responsibility of everyone to take action and it is vital that the public is better informed about the issue and how they can help, if air quality is to improve;
- industry should continue to strive to improve products and processes through technological developments;
- financial incentives, rather than taxes, have a role to play in encouraging behaviour change;
- regulation will be required but should be light touch so as to not disadvantage UK industry's competitiveness or poorer individuals in society; but that
- the Government has a wider role to play in supporting the development of an infrastructure that will encourage and support behaviour change.

A2.6 Defra response

The Defra representative responded that she was pleased to receive such a comprehensive set of ideas and that all would be considered. She did however, make the point that there could be no guarantees that all the ideas would be taken forward by Defra. For example, some may be impractical following further thought and development. Others may fall outside Defra's remit, although the Department would pass on relevant ideas to other responsible organisations. She confirmed that part of her role was to ensure that the recommendations and final report were widely circulated within Defra to ensure that they were considered by the appropriate people.

Volunteers were sought to attend a meeting with Defra officials later in 2006. After the meeting these delegates will feed back to those who said that they would like to be kept informed about the project.

A2.7 Epilogue: Changed perceptions and behaviour

During the telephone call backs for the evaluation a lot of the jurors commented on the impact that taking part had had on their views and behaviour. Some talked of a new awareness about a subject with which they had not previously engaged. Others talked of a greater appreciation of something that had already concerned them to some degree.

> "*I knew a lot more at the end, it seemed much more important*."
> "*People who didn't give a damn finally did*."
> "*My opinions deepened as much as changed*."

For some of the jurors there were critical moments that had sparked their interest, but for others it was the steady accumulation of facts and ideas that had shifted their perceptions.

> "*Some of the graphs showed what problems there are*."
> "*It was the health issue that was important*."
> "[Information about] *diesel and transport were particularly influential*."
>
> "*On a small scale a 'path to enlightenment' rather than a 'big bang of revelation.'*"
> "*It was a gradual process of accumulation*."

The jurors were only asked if their views had changed, but a number spontaneously said that their behaviour had been influenced.

> "*I am changing things…I am writing to the BBC about reports of air quality*."
> "*I'm trying to recycle more*."
> "*It has opened my eyes, I preach to other people now. I bought everlasting shopping bags and I'm trying to keep waste down. I switch off lights at work and nag my colleagues.*"

Some of the jurors recognised that such changes might not be permanent and may be constrained by time and practicality, but they expected their increased sensitivity to air quality and sustainable activity more generally to last.

Part B – Literature Review

B1. Introduction

This section of the report reviews academic and 'grey' literature from the UK that has addressed public perceptions of, and/or knowledge about, air quality, air pollution and its effects or impacts. Studies addressing air quality information use are also included. Individual studies are first reviewed in some detail, before the final section synthesises some results from across studies.

B1.1 Scope of the review

This review has concentrated on UK studies that have addressed, at least to some extent, public perceptions of air quality and air pollution. Some of the studies and reports obtained through the search on this subject have also addressed associated concerns such as views on air quality information, and possible solutions to air quality problems. Such information has therefore also been included, but as the literature search did not hold these as central, relevant work that concentrates on these issues may have been omitted.

The author acknowledges that there are further bodies of literature of relevance to the wider concerns of the overall project. These include: studies from outside the UK, in both the developed and developing world; studies on environmental justice and environmental equity with respect to air quality; work on the regulation and management of air quality; studies of public behaviour and preferences regarding transport use; research on environmental attitudes in a more general sense; research on public perceptions of environmental risk and its management. In addition, it has not been possible to review all publicly available local authority literature on the air quality management consultation process, although it is acknowledged that local authorities other than those cited will also have produced research on their own residents' views on local air quality and in particular on management options within their borough.

A full description of the methods used to identify sources is provided in section C.

B2. Academic studies

B2.1   Early Work

The earliest traced UK study regarding perceptions of air pollution is that of Wall (1973), carried out in South Yorkshire. At the time of the study, local authorities, under the Clean Air Act of 1956, had been invited, but not compelled, to submit programmes of smoke control. In South Yorkshire there had been reluctance by many authorities to do so, with a notable exception in Sheffield. Wall was interested in whether the differences in policy between the coalfield local authorities and Sheffield reflected real differences in the desires and attitudes of local residents. He suspected that people might be reluctant to acknowledge a problem and change behaviour in an area where mining was an integral part of the culture, and where for instance 'concessionary coal' was part of the wage structure.

Wall surveyed 40 residents in each of three coalfield locations which had shown differing attitudes towards the possibility of smoke control, ranging from very against to actively in favour. The area (Rawmarsh) which had been most against controls was also the most highly polluted with pollution levels twice the national average, and the area which had been active in designating smoke control zones had the highest proportion of wealthy

residents. The survey investigated three issues: perceptions of various aspects of the air pollution problem; knowledge of legislation and evaluation of its effectiveness; and adjustments people made to cope with pollution.

In terms of perceptions, Wall found that few people defined air pollution solely by cause or effect but tended to mention a combination of source, effects and specifics. Health effects were, however, seldom incorporated. When asked what the main pollutants were, particulates were mentioned most, perhaps due to visibility. Industrial sources were the most perceived source; fewer rated domestic and traffic as important. Wall interpreted this as a displacement of blame away from the self. The majority saw pollution as a problem in their area, and overall there was a correlation between measured pollution level and perception of pollution as a problem.

Despite not mentioning health effects in defining air pollution, the main worry when given a hypothetical 'serious situation' was health, with little variation between areas. Damage to the house and its contents, and clothes were also important. Most denied that air pollution affected them financially.

Most respondents had knowledge of how the legislation affected them and what their local authority was doing, and most thought smoke control zones the best way to combat pollution, even in the 'reluctant' Rawmarsh area. It therefore seemed that the policy differences were not necessarily reflecting the attitudes and beliefs of residents. In all the coalfield areas however, residents were more pessimistic about future prospects than residents of Sheffield had been in a previous survey. This has resonances with later and wider research where a tendency for poorer communities to feel less optimistic about change is a not uncommon finding (e.g. Day 2004a).

Regarding coping behaviour, in response to an open question, over a quarter said they would do nothing, or did not know what they could do, and others doubted the efficacy of possible actions. Staying indoors was a popular response, and closing windows. Wall characterised all these as withdrawal, which may be cognitive (denial), emotional, or physical (staying in). Fewer said they would complain, or leave the area. Changing fires or fuel was mentioned by few. There were some differences between areas, possibly due to income levels and the viability of alternatives such as leaving. In a similar question, where alternatives were offered, the most popular responses were not hanging out washing, keeping children in, staying in and keeping the windows closed. The least popular were moving temporarily, not using a car and writing to a newspaper. Change in fuel use was also fairly low. Overall, then, preferred responses were passive and reactive rather than pro-active, and the amount of personal responsibility or efficacy felt was low.

B2.2　　　Studies regarding industrial sources of air pollution

A collection of UK studies has focused on the north east of England and on communities living in proximity to industrial sources of pollution. The study by Moffatt *et al*. (1995) tackled a specific community's perceptions of the health effects of such pollution, and considered these perceptions in relation to an epidemiological study in the same place. The community lived close to a coking works in Tyneside. The initial standard epidemiological study had been undertaken in response to public concern, and data about public views and concerns were originally collected as a by-product of the epidemiological survey. Moffatt *et al*. however decided that both types of data were important, as local concerns and context were part of the reality of the wider situation.

The data on people's own views and experience came from the survey administered to a random sample in three areas: one close to the coking works, one a little further away and a control area much further away. The total sample was 3015. Some responses were to coded questions and so treated quantitatively, whist other questions were open-ended and provided more qualitative data. They found few differences in self-reported general health among areas, but a significant trend in reported children's health, improving from inner to control areas. There was a sharp gradient when asked specifically about the effects of local industry on health, more that 40% of adults from the inner area feeling adverse effects and 34% reporting effects on children. Estimates were higher for people they knew well rather than themselves. The problems that were attributed to pollution were specific: upper and lower respiratory tract disorders, and wider concern about a dirty environment. In terms of what people felt put their health at risk, stress from pollution outweighed smoking, money, work, diet and all other factors in the inner area, with a highly significant trend across all three areas.

The qualitative data from open-ended questions showed frequent unease and worry – but not conviction - about the health effects of emissions in both study areas. Unease was mostly expressed along with observations of smoke and dust inhalation, as a kind of reasoning from evidence.

The epidemiological data showed a significant excess of some but not all respiratory conditions: chronic phlegm, sinus trouble, glue ear, allergies and headaches all had a gradient from inner to outer to control areas. Asthma and bronchitis showed minor, not statistically significant differences. GP consultations for respiratory complaints also strongly correlated with air quality in the study area. The researchers concluded that although self-reported health and GP visits could be put down to sensitisation, discounting the views of those exposed could result in potentially damaging health effects being overlooked. They consider that the public concerns expressed were 'in certain respects well founded'. This was due to the convincingness of the patterns observed, especially in contrast to the control area, and also because more recent modelling had shown that emissions may at times have been higher than previously realised, thus invalidating the original toxicological assumptions.

Howel *et al.* (2002) examined public views about air pollution, risks to health and air quality information in Teesside and Sunderland, Teesside being an area dominated by heavy industry, while Sunderland is characterised by light industry. This study looked for relationships between perceptions and personal factors, relative deprivation and district. This was through a survey with a sample size of 2,744, followed by 41 qualitative interviews.

They found the strongest association with perceived pollution was with proximity to industry, those closest to heavy industry perceiving air quality to be the worst. After controlling for other factors, deprivation level had only a weak association with perceptions. There were few associations with personal factors; after controlling for deprivation, those with chronic illness were more likely to rate local air quality lower and industrial pollution as a serious problem. In the interviews, they found that the higher level of concern in communities closest to industry reflected problems related to nuisance – dust, smell and noise - but also concerns over potential health risks from air pollution or accidents. However, although the majority of people in this area were concerned about

pollution, more were concerned about unemployment, crime and poor housing, and these problems were brought up much more in the interviews than was air pollution.

Howel *et al.* conclude that the presence of industry plays a key role in shaping perceptions of air quality and that the importance of factors associated with a specific place and not just personal factors should be noted when looking at influences on these perceptions. However, as there is no data on physical air quality in this study, it is not clear whether the factors associated with a specific place are to do with the likely presence and distribution of pollution that might accompany industry, or whether there are further effects associated with location at work.

Another paper from the same larger study (Bush *et al.* 2001a) implies the latter. Here the authors analysed data from the qualitative interviews in Teesside using a theoretical framework concerned with ideas of stigma, based on the work of Goffman (1963, cited in Bush *et al.* 2001a) among others. They argue that Teesside suffers from a spoiled identity as a place, 'discredited' on the basis of industry, air pollution, poor health and social exclusion - i.e. technological stigma, pollution (dirt) stigma, health stigma and social stigma. Perceptions and images of air pollution and poor health, they argue, have a symbolic function and can be used as discrediting characteristics to stigmatise a place: dirt being interpreted as a signifier of imperfection and inferiority. They conclude that implications of this are that policies to improve the image of the area may be thwarted by the strength of the associations.

In a further paper about air quality information provision, based on the research in Teesside and Sunderland, Bush *et al.* (2001b) assert that the public do not passively assimilate scientific information, but rather "the social validation and legitimisation of expert information is actively negotiated in relation to a range of resources, including experiential and local knowledge" (2001b:215). They found that many people did not feel air quality information to be relevant to them because they were not affected by it, but that even those who did feel affected, for example asthma sufferers, often did not find the information useful because they were powerless to change the situation. Their interviewees felt that only scientists had the technical ability to measure air pollution, but nevertheless scrutinised air quality information for validity, reliability and trustworthiness, using everyday experiences to do so – a process that the authors see as reflection on the 'epistemological status' of the information. The authors advocate public participation and consultation in order to develop a more meaningful system of information provision.

B2.3   *Studies concerned with traffic sources and mixed sources of air pollution*

Stevens *et al*. (1994) made a study of parents' perceptions of the links between air pollution and children's asthma, in primary schools in the London Borough of Ealing. They employed a survey (863 responses) followed by 20 in-depth interviews. They also circulated a questionnaire to community health practitioners and paediatric respiratory health consultants. Stevens *et al*. found that 22% of parents with an asthmatic child spontaneously cited air pollution as a cause of the asthma, making it the most commonly cited factor, although an even higher number (25%) were unable to specify a cause. In contrast, 16% of community health workers and 8% of specialists cited air pollution as a cause. In the qualitative interviews, it emerged that parents often could not identify a clear cause but there was a consistent belief that air pollution must be at least partly responsible.

In terms of triggers to asthma, air pollution was rated the fourth most commonly cited by parents, after allergens, weather, and infection; again it was rated much less important by medical professionals. In interviews, parents' views were vague but few felt it had no effect. Many found it difficult to define the child's exposure.

All parents, whether of asthmatic children or not, felt that urban air posed serious risks to their children's health. Indoor air was felt to be better quality, posing little risk. Parents felt that exposure to outdoor air pollution was beyond their control.

Advice from health professionals was rated the most useful source of information about asthma and its control, but interviews showed that people mostly referred to informal hearsay and messages from the media, and felt that links were 'common sense.' Despite the perceived risks, most parents of asthmatic children never kept their children indoors to avoid pollution; 75% however did avoid busy roads at least sometimes.

Stevens *et al*. report a significant linear relationship between ratings of asthma impact of traffic, and perceived local air quality – i.e. parents who thought air pollution affected their children tended to perceive their air quality to be worse than the modelled figures would predict, and worse than did other parents. They conclude that these are biased perceptions; it certainly seems that they are raised perceptions, but the conclusion that they are wrong rests on the assumption that the modelled estimates are unproblematic and correct, and provide an indication of actual exposure. Stevens *et al.* conclude that expert opinion is problematically uncertain, there being a difference between community workers and consultants, and that a lack of clear expert opinion coupled with a lack of observed evidence and difficulty defining exposure leads to uncertainty and misperception among parents.

Williams and McCrae (1995) used social surveys to investigate the subjective nuisance effects of air pollution from road traffic on the public in six UK cities, 1992-1993. Both residential and commercial sites were selected in each city, and three classes of people were surveyed: pedestrians, householders, and business people – the latter defined as those working in offices or shops in the survey areas.

Air pollution overall ranked as the third highest concern in a list of 11 major social issues – after unemployment and law and order. Global environment ranked fifth. In a list of local environmental issues, amount of road traffic, and smoke fumes and odour were ranked second and third, after litter. Over 40% of all business and household respondents stated that they were 'very' or 'extremely' bothered by these issues. The frequency of outdoor disturbance from smoke and fumes, and/or dust and dirt from road traffic was generally high, and highest among commercial respondents. 90% of commercial respondents were bothered at least some of the time by dust/dirt. In terms of effects indoors, there was more concern about dust and dirt than fumes. However most respondents experienced only minor to moderate indoor disturbance from vehicle-derived pollution. Noise was the most important vehicle-derived pollutant in the home. Outdoor disturbance was significantly higher with smoke, fumes and odour predominating as the cause. Female respondents generally showed greater disturbance than males, and 45-65 year olds were also often more bothered than those younger or older. The most cited concerns outdoors (but not indoors) were health concerns, with soiling and odour also being significant. Pedestrians showed a slightly higher level of concern about their health.

Overall, the authors found the data to be surprisingly consistent between the different sites, despite different social and economic circumstances.

Beaumont *et al*. (1999) is a pilot study about air quality information use and awareness using a questionnaire circulated to the members of the university of Middlesex alumni (sample size of 650). They found that 80% of respondents wished to have access to air quality information, with the greatest reason for this being health concern for self or family members (56%). Fifteen per cent required information in order to plan activities to avoid pollution. The most common reason given for not requiring information was not being affected. However, less than 3% overall said they were not interested at all.

In terms of types of information requested, 88% wanted information on health effects, 83% on how to avoid air pollution, and 80% and what one can do to reduce air pollution. The most commonly cited existing source of information was TV (78.3%), followed by radio and newspapers, and these were also the preferred sources. A strong need for local information was however indicated.

The work of Bickerstaff and Walker (1999a, 1999b, 2001) is based on a study of perceptions of air pollution in Birmingham, where traffic would be the major source, although industrial point sources in the vicinity were also a factor. They used a questionnaire survey with a sample of 378 followed by 50 one-to-one interviews. The study took place in 3 residential districts selected on the basis of socio-economic status, measured by education, occupation and car ownership – presumably the aim was to provide a range, but this is not entirely clear. Within the three areas the sampling covered a cross-section in terms of proximity to sources of pollution, both transport and industrial. The fieldwork was carried out in 1996.

Over 56% of respondents were aware of negative air quality conditions. When asked in an open-ended manner how this awareness came about, the single most important factor was health-associated impacts (22%) followed by different kinds of sensory evidence (totalling 29.1%, mostly visibility and smell.) The interviews also confirmed the role of sensory indicators in awareness and concern, for instance visible indicators of dirt deposits and pollution haze in the air (Bickerstaff and Walker 2001). The importance of direct sensory evidence concurs with many previous studies. However the 44% not aware of a problem is higher than many previous studies, which the authors suggest may be due to the non-visible nature of much recent pollution, compared to the industrial and domestic smoke problem of earlier studies. They suggest that the physical nature of pollution may be more important than media coverage in forming awareness. Only 3.4% identified the media in forming their awareness of bad episodes, and none cited government information. For those who were aware from the media this came mainly from news weather forecasts and was often not actively sought.

Direct questioning on the use of information sources found a limited awareness and use of sources of air quality information (Bickerstaff and Walker 1999): 10.3% used the media often, 38.9% infrequently and 50% never. Government sources were less popular: 5.1% using them frequently and 32.3% infrequently. Forty eight per cent of respondents used no information services at all, ever. The authors conclude that provision of information, or its use, is not enough to change perceptions, but this is perhaps a questionable conclusion, as only 56% of people in their survey showed any awareness and 52% of people used some kind of information service at some time.

In terms of sources of pollution, 90% saw cars as significant and 49.5% as the principal cause, a reasonable reflection of scientific assessments. However buses and HGVs together accounted for more mentions than cars indicating perhaps a tendency not to see themselves as the polluter. Forty-one per cent saw industry as significant and 20% as the principal source. There was a positive correlation between age and the identification of industry as paramount, implying a reliance on past direct experience. Temporally, overall an improvement in the last 50yrs was perceived but a decline compared to five years previous to the study. By far the highest perception seasonally was that summer was the worst time of year.

Asked where they thought air pollution was worst in Birmingham, 40% used sources, mainly traffic arteries, to define this. Where areas were defined, the city centre dominated, which is the zone of maximum source concentration. References here were also made to the general untidiness, the lack of greenery and the density of buildings in shaping perceptions as to why air quality would be worse here. In all evaluative categories, people gave more positive ratings to their own local area than to Birmingham as a whole. As in previous studies, this could represent cognitive dissonance, or denial; Bickerstaff and Walker (2001) see this as a possible reluctance to draw a direct connection between city-wide and local air quality, and the attendant risks. However as no reference is made to any comparative physical data, it is difficult to conclude to what extent denial may be happening; it is possible that the differences in perception could be explained by physical differences in quality.

Bickerstaff and Walker (1999a) state that no relationship was found between socio-economic status (presumably at individual level) and perception or concern. Women however showed more negative perception of air quality both city-wide and locally, and greater concern. However in the 2001 paper, they develop an argument concerning the influence of social class. Here they say that the least concern was shown in the high status neighbourhood, while stronger worries emerged in the low class area. They feel that although differences in physical environment may account for some of this, the fact that the area of medium socio-economic status was more concerned than the area of highest socio-economic status, despite having a similar level of satisfaction with their environment, is evidence of a class effect. However, there are no tests for significant differences between the two areas in the quantitative data.

Bickerstaff and Walker (2001) suggest three possible reasons for a class effect in levels of concern. First, they say, this could be due to logical processes based on source proximity and the physical environment. The presence or otherwise of greenery appeared to be significant, as did the level of physical management – litter, dog fouling etc. This has an indirect relationship with poverty. Second, there is a possible role of financial empowerment. Those who choose to live where they live see it as better; for poorer people residence is dictated by restricted economic opportunities and so they may exhibit more dissatisfaction. Thirdly, it could be due to a reluctance to recognise negative environmental conditions particularly when satisfaction is high – a case of denial or cognitive dissonance regarding the risk, or unwillingness to acknowledge vulnerability. However the authors do not really offer any evidence for any of the three explanations or evaluate which is most likely, and so their argument remains somewhat unsubstantiated.

In terms of the effects of air pollution, direct health impacts were found to be the most important, while less immediate environmental impacts did not emerge as an issue. Thirty eight per cent identified some impacts other than health, short-term damage to the natural environment being highest. A weak association between identification of non-health impacts and income and with occupational status was observed. In concurrence with earlier US studies, concern over wider impacts may be higher in higher social classes, but health concerns seemed to be across the board in this case, as observed earlier.

Forty five per cent claimed to experience, in themselves or in the family, health problems attributed to air pollution, highest being asthma, then other respiratory complaints, and hay fever or allergies. When asked about level of concern, 53.2% claimed a high or very high level of worry over local air quality, and 50% were concerned or very concerned about personal and family health impacts. Not surprisingly, measures of concern and worry were correlated. A higher level of concern was exhibited for the health of family relative to respondents' own health. In the interviews (Bickerstaff and Walker 2001) few people identified personal health impacts but the majority made a connection between air quality and health at an abstracted societal level. The authors see this as a 'perception gap' – a reluctance to acknowledge personal and local vulnerability, which again they see as possible denial or cognitive dissonance. However, the extent to which strong feelings about personal impacts should be expected to show up in an interview sample of 50 is perhaps questionable.

One of the main conclusions of Bickerstaff and Walker's work is that air pollution as an environmental risk is experienced very much locally and through lived experience. This leads them to conclude further that information will be judged as irrelevant if it does not engage with people's own experience, and therefore professional bodies must actively seek and engage with public understandings of air pollution. They advocate community involvement approaches and argue that local institutions are best placed for such endeavours. These points are also made in a separate paper evaluating air quality information (Bickerstaff and Walker 1999b) where they reiterate that people evaluate information sources through a process of contextualisation and sense-making in relation to their real lives. Again they conclude that people relate to air quality and air quality information most at a local level.

Kelay *et al*. (2001) report on a survey of 439 people carried out in the Guildford area in 1999. Respondents included residents of urban, suburban and rural areas. Responses showed that the most polluted areas were considered to be the town centre and a motorway intersection, which corresponded fairly accurately with measured and modelled air pollution data. This was acknowledged as a simple analysis though, and the paper recommends a geographical information system analysis to examine more thoroughly differences between perceived and 'actual', i.e. measured/modelled levels. The rest of the paper discusses a proposed further methodology but no further outputs from this project have been traced. The paper concludes with a recommendation that public participation should be a key part of air quality management, encouraging integrations of lay and expert assessments and two-way communication with the aim of social learning and establishing mutual trust.

McDonald *et al*. (2002) report on the results of a focus group study in the London borough of Camden's clean zone pilot area in 2000. Four focus groups were carried out with a total of 19 participants. About half the participants said they knew something about air

pollution, mainly from TV and radio. Education, work and talking to people were other sources. Few had heard of local air quality management initiatives.

Some of the participants in this study were not too concerned about air pollution, feeling they were aware of it only if their attention was drawn to it. Others felt strongly about it and took measures to avoid its effects such as holding their breath when crossing the road. Again, most understood air pollution through smell, sight or physical effects, with dirt and grime being other common indicators. Comparisons over time and place were made. Participants felt that there were health effects but did not understand the specifics of this. Frequent references were made to their own experiences.

Technical terms were generally not understood and were disliked; air pollution maps for this reason meant little. Relative statements were found more meaningful and constructive, with maps of before, current and ideal scenarios suggested. Information about why people should be concerned seemed to be important.

The researchers found perceived lack of control to be a strong theme, with a rejection of personal responsibility and an acceptance of air pollution as part of London life. Car owners did not seem to make links with their own behaviour, despite cars being identified as the main cause of pollution. Generally, solutions that did not impinge on their own lifestyles were desired. Participants wanted public education about the issues, and also recommended better and cheaper public transport.

McDonald *et al*. concluded that there is a wide dichotomy between the technical and scientific emphasis of air quality policy and the public's socially constructed perceptions; air pollution therefore should be debated in a wider context that incorporates issues of quality of life, equity and social justice. Participants were able to manage and combine information but need not become experts. Most felt under-qualified to come up with solutions. A recommendation was made for two-directional exchanges of information, opening up the process to incorporate local expertise – in a format such as a citizen's jury. The paper indicates an intention by the authors to undertake such work but no further outputs have been traced.

Williams and Bird (2003) investigated perceptions of air quality and quality of life in and urban area of London (Wood Green) compared with a suburban area (Wimbledon). They surveyed 100 householders at each location, sampled by age and gender quota, and for comparison obtained air quality data from local monitoring sites. These sites however, were up to two miles away. The authors describe a striking difference between the 'actual' recorded pollution and the public's perception, concluding that the people make the presumption that air pollution levels must be constantly high in a large city with large volumes of traffic. [The assumption however that monitoring sites close to parks two miles away give an accurate picture of actual local air quality is very questionable – air pollution does indeed tend to be concentrated close to busy roads and is variable over a very small scale.] This study also found women to be generally more likely to rate air pollution slightly worse than men.

Overall, dirt and fumes from traffic was ranked third in a list of unpleasant aspects of life, after serious illness and job loss. Further comments revealed health concerns to be an important factor. Residents of Wood Green (the urban area) showed greater annoyance than residents of Wimbledon – regarding fumes (70% in Wood Green annoyed or very

annoyed), dust and dirt, congestion, danger, traffic speeds, inconsiderate parking and aesthetic impacts. 'Fumes' and 'dust and dirt' were the issues of overall most concern in connection with air pollution.

A study by a team from the Stockholm Environment Institute in York (Yearly 2000, Bailey *et al.* 1999, see also Yearly *et al.* 2003) addressed how local knowledge may be combined with expert knowledge and information. This work used group interviews with local stakeholders to evaluate an air pollution model in Sheffield. The respondents questioned the assumptions of the model, its operation and the suitability of sites chosen. They were also concerned about opportunity costs and questioned the usefulness of an expensive model to provide information when they were not able to do anything about the situation anyway. Issues of trust in the council in the way that the model might be used were also raised.

Participants drew on their local knowledge of traffic patterns and of operating practices in local industrial point sources to question some of the model's output, and were able to add useful information (Yearly 2000). Bailey *et al.* (1999) also report that the health effects of air pollution were to the fore of concerns in all six Sheffield groups. The public information system connected with the modelling was not seen as useful by many, as they suggested it gave insufficient information. Participants were at the time mostly unaware of air quality information on Teletext and the internet. Bailey *et al.* report a tension between available information being seen as inadequate and other options being seen as too technical and inaccessible. It should be noted that the six groups were of varied stakeholders, some with a certain amount of expertise in related areas: environmentalists and conservationists; representatives of a city centre housing community; a community group from a specific area near multiple sources of pollution; representatives of groups campaigning on traffic issues; public sector workers including health specialists; and representatives of the local business community. Bailey *et al.* concluded that the involvement of those other than the 'lay public' was advantageous as it allowed useful discussion on how air pollution modelling and monitoring might improve, from the point of view of those working in related areas.

In the further study, extended to Bristol and York (Yearly *et al.* 2003), similar groups produced spatial representations of their local knowledge of pollution, which were then digitised into maps. These maps showed a high level of correspondence with the experts' models, but areas of divergence were interesting in the light of the local knowledge that was being used. The citizens' maps were found to be very credible and to provide a very useful complementary source of information to the model.

A team at the University of Liverpool (Myers *et al.* 1999; 2004) have undertaken work concerned with schoolchildren's knowledge and attitudes about air pollution. They used a questionnaire with 11-16 year olds in eight English schools and found that ideas of sources of pollution centred on transport, industry and power generation; fewer thought that it could be natural. Most however knew that it need not be perceptible, and many were aware that pollutants could interact to produce synergistic effects.

Air pollution was seen as producing respiratory disorder, particularly asthma. About half thought it could be associated with foetal malformation. Many also thought plants would be affected. Air pollution was also associated with global environmental damage – global warming, acid rain and ozone depletion.

In terms of control, students were most in favour of education, followed by obligation, legislation, and lastly taxation. The majority felt companies should act, then society, then lastly their own peer group. Older students held the corporate sector more responsible, and themselves less so.

The authors also concluded that some students held environmentally sympathetic attitudes without necessarily being well informed about the science underlying environmental problems.

Day (2004a,b) carried out a detailed study of public perceptions of air pollution and its effects in four different neighbourhoods in the borough of Barnet, north London. The study consisted of a first stage of qualitative interviews (32) followed by a postal questionnaire survey with a sample size of 200, which took place in 2001 and 2002. The four neighbourhoods differed in terms of socio-economic status and levels of pollution.

Day found that people living in different levels of pollution did rate their air quality differently, and that rated levels corresponded quite well with modelled levels, in a relative sense. People in all areas felt their local air quality to be better than that of central London. Participants identified the main source of pollution both locally and in central London as being traffic of all kinds. Trees and vegetation were felt to improve air quality, both by emitting oxygen and by filtering the air. People with asthma and rhinitis type allergies (including hay fever) rated local air quality significantly worse, across all four areas.

Levels of concern were higher in the two areas of worse air quality, but linked very much with other traffic-related concerns of safety and noise. In the most deprived area, other issues such as crime, drugs and housing were greater concerns, but some concern for air quality was still registered. Day-to-day concern in all areas was however quite low; for many people this was because they did not feel personally vulnerable to the effects. Suffering from respiratory problems and allergies was related to a higher rating of air pollution as a local problem. Connections with global issues of climate change and ozone depletion were however consistently and spontaneously made, and there was greater concern expressed over this scale.

Day's study had a particular emphasis on the perceived health effects of air pollution. Overall, participants in the research felt air quality to be fundamentally important for general health. Health impacts did appear to be more felt and of greater concern than did other impacts. The perceived effects were mainly thought to be exacerbation of respiratory conditions, particularly asthma, and of rhinitis type allergies including hay fever. To some extent there was a belief that air pollution may induce the onset of some of these conditions, particularly asthma in children. As well as conditions of the respiratory tract, there was a less strong feeling that air pollution may affect skin conditions, such as eczema. Possibilities were also raised regarding developmental disorders in children, cancer, other irritation type symptoms, for example of the eyes, and other lung conditions. As well as link being made with specific conditions, air pollution was felt to be bad for health in a general, systemic way, causing lethargy and tiredness and possibly shortening life expectancy.

Substantial proportions of people felt that their own health was affected by adverse air quality: 28% of respondents to the survey felt they had a condition that had been caused by air pollution (mainly asthma and allergies) and 36.5% claimed to have a condition that was exacerbated by air pollution. Even more – 57% - thought that the health of people close to them was affected, again mainly through respiratory and allergic complaints, but also noticeably including skin problems. However due to the small sample size, these figures should not be seen as necessarily representative of the wider population.

The effects of air pollution were most felt by those with asthma, chest problems and allergies. As well as people with chest problems and allergies feeling most vulnerable themselves, they were also seen as the most vulnerable groups by others. However, in this sample, living in an area of higher or lower pollution was not related to levels of perceived personal health impacts. Impacts were felt in other places, including work, shopping and leisure places, and on journeys.

Other non-health related impacts of pollution were also felt, and were mainly related to dirt, both outside and inside the home, and on the person. The dirt-related impacts were felt most in the more polluted areas.

Few behavioural changes were evidenced; the most common reaction was keeping windows closed, especially among those who lived on a busy road. Many people also avoided walking along busy roads when possible, especially when with children. Those with asthma, chest problems and allergies were more likely to take such actions and to stay indoors during bad episodes. Most people did not feel staying indoors to be feasible, and few people thought that complaining to authorities would achieve anything.

In terms of possible solutions to air pollution problems, technological solutions were the most popular including more efficient engines and cleaner fuels. Public education through media campaigns was also strongly favoured, and planting more trees and greenery was suggested. Public transport was seen as important in planning for pollution control, but there was a lot of pessimism about the future of public transport in London. Buses were preferred to the tube, which was almost universally seen as dirty, unreliable and expensive. Raising petrol prices was the least popular option by a significant margin; congestion charging and traffic restrictions were also not very popular. Car drivers were more likely to rate these options lower.

Central government were seen among Day's respondents as having the most responsibility for taking action on air quality, with world leaders also figuring highly – reflecting the global aspect of people's view of the air pollution problem. People saw themselves as having less responsibility, though still a relatively high degree, but they trusted themselves most to take action. Levels of trust in other parties to take action were generally low, with local, London and Central government being trusted more than private business or world leaders, which were trusted the least. The Government was however, seen as short-sighted, not wanting to make unpopular decisions and not wanting to spend the necessary money. The view that the Government is overly influenced by oil and car industry lobbying was also prevalent. Very few of the participants in the research had heard of local air quality management. There was scepticism about the council's ability to do anything about air quality, mainly due to lack of resources and the need for co-ordination at a larger scale. However, most people thought it was a good idea to try.

In common with some earlier studies, Day found that people relied largely on physical senses, especially smell, to detect air pollution at a given time and place. Dirty windows and cars were again additional cues. Direct health-related effects such as wheezing and sneezing were further important indicators, more so for those with respiratory and allergic conditions. People did however, also get information through the media about air pollution in a general sense. This was particularly important regarding the global aspects. In terms of forecasts, TV forecasts were used more than other sources, but none were very frequently used, and the process seemed to be passive, rather than an active seeking out of information. Respondents with conditions made worse by air pollution tended to use forecasts more.

Knowledge about the health effects of pollution was formed largely through observation of self and close others. 'Common sense', in the sense of no referral to expert validation, was also important. Nevertheless a lot of uncertainty about this knowledge was expressed and there was generally a high degree of faith in expert knowledge and in science to understand the effects of pollution. The majority of those surveyed felt the general public did not know enough about air pollution and its effects. The most popular ways for information to be disseminated were through the media, and by means of leaflets to the door. The most trusted sources of information were university scientists, environmental groups and doctors. Business interests were the least trusted, with central government only a little higher.

Day (in press) also concluded that apart from physical levels of pollution, other features of places affected how people perceived or experienced pollution. Ratings of air pollution were found to be affected by perceptions of other physical and social problems. Additionally, the presence of trees, open spaces and greenery could lessen the stress-related and psychological impact of pollution.

B3. Central and Local Government Reports

B3.1 Central Government

In 2001 DEFRA commissioned a survey on public attitudes to quality of life and to the environment where 3,700 respondents aged 18 or over were interviewed in England, across the different regions. This was also designed to enable some comparison with some earlier surveys on similar topics. The survey covered a broad range of issues, but several questions provide data on attitudes to air pollution and related topics.

When prompted, 73% of respondents overall felt air pollution to be a very important quality of life issue. Air pollution was also ranked highest out of a list of environmental problems. Some 52% of respondents said they were very worried about traffic fumes and smog, with a further 36% fairly worried. Some 43% were very worried about fumes and smoke from factories, with 39% fairly worried. Responses to both these questions showed an increasing trend in levels of worry over time in surveys since 1986. Females appeared more worried overall than males regarding both these questions, going by the percentages in each category, although tests of significant difference are not provided. People in older age categories also appeared more worried than younger regarding traffic fumes, although not regarding industry. Degree of worry about traffic fumes *decreased* with increasing level of educational attainment, and a similar trend seemed apparent for factory fumes.

In 2001, 41% of respondents believed that air pollution would cause the most concern of a number of environmental problems in 20 years time. Higher proportions of younger people compared to older people thought this. Some 52% thought that traffic, taking into account congestion, fumes and noise would cause the most concern, with no obvious age or gender differences.

Fresh air was one of the key reasons given in the survey for people visiting the countryside in 2001. Some 40% gave this reason, which made it joint third in rank, after tranquillity and scenery.

In the 2001 survey, 37% of respondents said they had regularly used public transport instead of a car, which compared to 24% in 1996/7 and 10% in 1993. 31% had regularly cut down on car use for short journeys, compared to 27% in 1996/7 and 22% in 1993. Those who had regularly or occasionally cut down on car use for short journeys were asked why: the most common responses were to get more exercise (59%, and higher among older people and women), and to save money (25%). A fifth (19%) cited environmental reasons. Those who had not cut down on car use for short journeys were asked why not: 37% said they could not use their car less (greater with increasing age), 26% cited lack of time or desire, and 22% said due to lack of public transport availability.

Some 94% when prompted said they would strongly or slightly support stricter controls on factory emissions to the air, rivers, and sea; 84% would strongly or slightly support charging factories for emissions; 53% said they would strongly or slightly support restricting the use of certain roads when air pollution levels were high.

B3.2 Local Government

Brighton and Hove Council (Brighton and Hove Council 1999) commissioned Abacus Research to carry out research regarding perceptions of air pollution and methods of communication of air quality information within their authority area, in February – March 1999. Four focus groups, 216 street interviews and 204 self-completion surveys were completed. Findings indicated that air quality was of concern to residents. It was 'measured' through the senses – smell, feeling it – and through seeing dirty windows and dead trees, and also noticed by physical and health impacts. Air quality was commonly described in comparison to other, more polluted areas such as London.

Traffic was seen as the key cause of air pollution (92%), with topography and weather also seen as affecting air quality. Good air quality could be encouraged, it was believed, through less use of cars and a better bus service; also more trees (20%) and green areas (14%).

In this study, air quality appeared to be seen as a national and even global issue, with national government being given most responsibility (75%) (this was the highest level of government given as an option). The local council were also seen as having a role, largely through traffic management, though there were concerns about their interests in the tourism industry. Residents themselves felt unable to do much and felt national and local government should provide inspiration to the individual.

Air quality monitoring was seen as important in Brighton and Hove with those suffering from health conditions more likely to see it as very important. TV, radio and newspapers were seen as the most appropriate communication tools. Some suggested notice boards in shopping centres and on streets. People felt that the information given should consist of an overview of why and how air quality affects people as well as specific information on local air quality, in non-technical language.

Some local authorities have made available reports on their Air Quality Management Area (AQMA) consultations; two of the obtained reports include relevant information on the public's perceptions and views and so are included here.

Bristol City Council carried out their consultation in 2001 (Bristol City Council 2001). As part of this process they produced a summary leaflet and questionnaire which was sent to most properties both residential and commercial, within the proposed AQMA as well as about 500 individuals and organisations who had previously registered an interest in air quality with the Council. Additionally, the leaflet and questionnaire were made available at doctors and dentists surgeries, council libraries and area housing offices across the city, at the council offices and on the council website. Of about 7,600 posted questionnaires, 2,500 were returned (it is not clear whether some of the returns were through the website).

Over 90% of respondents were concerned or very concerned about air pollution from traffic in Bristol – this is however a largely self-selected sample so a higher than average concern would be expected. Some 88% were concerned about climate change and 79% about traffic safety. Levels of concern were consistently lower among those driving to work, and highest among cyclists. The 25% suffering from breathing problems were also consistently more concerned about the environmental issues given.

Nearly 90% of respondents thought the council should be giving a high priority to improving air quality in Bristol. Support for priority action was lowest among those using a car for all trips, but this was still relatively high at 80%. In terms of measures to address pollution, improved public transport was the most popular with 98% support for inclusion in the Action Plan. Safer Routes to School, Park and Ride and roadside emissions testing were also popular with 89%, 80% and 79% support. Road user charging and controlled parking zones had the least support – about 37% and 35%. There was variation in willingness to accept limitations on driving; those who habitually used a car for all trips were not surprisingly the least in favour with 30% unwilling to accept any limitation although 70% said they were willing to accept at least some limitation.

York City Council, in conjunction with the University of the West of England, reported on their Air Quality Action Plan consultation in 2002 (York City Council 2002). This consultation comprised two sets of two workshops in August 2002. The first set was an evening session for residents and small businesses, and a morning session for wider stakeholders. This involved the identification of specific options for consideration in more depth. The second set of workshops was run with the same set of participants being invited, in order to prioritise these measures. Residents were recruited through an existing Residents Panel database, businesses were recruited through a telemarketing company and other stakeholders were invited by letter directly.

On arrival at the first workshop, participants were asked what they thought would happen if the council did nothing to improve air quality. Most responses cited health disbenefits, linking increasing pollution with lung problems and asthma, particularly in children. Detrimental effects on tourism, and damage to the built environment and the city's heritage were also recognised as potential outcomes. There were also links made between poor air quality and increased likelihood of climate change. The overall consensus was that doing nothing was 'not an option'.

The measures taken forward from the first workshop to the second were grouped into issues around public transport and alternative transport; traffic management and car parking; and planning and education (promotion). It was recognised that a package of measures would be needed. The potential barriers to implementing options were also discussed, and those brought up included the difficulty of getting individuals to change travel behaviour; cost; and the need for a strategic approach taking into account other planning issues in the city.

The preferred options after the two workshops were specific in many ways to York but followed the groupings of improved public transport, traffic management including non-car lanes, and planning/education/promotion, including encouraging mixed use developments, promotional activities with businesses, and public education about the links between air quality, transport and health. It should be taken into account though that this consultation involved businesses and particular interest stakeholders as well as the 'lay' public. Additionally, other measures such as promoting electric vehicles were thought to be important in general but not within the remit of the council. Some also thought that public education was the responsibility of central government.

B.4 Synthesis

Overall there is an encouraging degree of consistency in results between case studies of different times and places. Studies did not all address the same questions, but the body of work does provide a useful amount of overlap in coverage, that allows some comparison and synthesis of results.

Several studies found that perceived levels of pollution corresponded quite well with scientifically measured or estimated levels, at least in a relative sense (Wall 1973; Kelay *et al.* 2001; Yearly *et al.* 2003; Day 2004). Williams and Bird (2003) concluded that there was a poor correspondence, but they were taking physical pollution measurements from some distance away from where the survey and interviews were conducted.

Studies that addressed how people assessed air quality generally found that sensory methods of perception such as smell were very important (Brighton and Hove Council 1999; Bickerstaff and Walker 1999b; McDonald *et al.* 2002; Day 2004 a,b). Dirty windows and cars provided further cues (Brighton and Hove 1999; Bickerstaff and Walker 1999b; McDonald *et al.* 2002; Day 2004a,b). Additionally, direct health impacts were another way in which people were alerted to poor air (Brighton and Hove 1999; Bickerstaff and Walker 1999b; Day 2004a,b). Estimations of air quality also seem often to involve a process of comparison with other places (Brighton and Hove 1999; Bickerstaff and Walker 2001; McDonald *et al.* 2002; Day 2004 a,b).

Traffic was identified as a major source of pollution in more recent studies (Kelay *et al.* 2001; Brighton and Hove 1999; Bickerstaff and Walker 1999a, 2001; Day 2004a,b) which seems to represent a development from Wall's earlier work. Industry appears to be still regarded as an important source, not surprisingly in the industrial areas (Howel *et al.* 2002; Moffatt *et al.* 1995) and possibly more so by older people (Bickerstaff and Walker 2001). Weather was also perceived to affect air quality in some studies (Brighton and Hove 1999; Bickerstaff and Walker 1999a; Day 2004a).

The presence of asthma or respiratory disorder it appears may lead to higher estimation of pollution levels (Bristol City Council 2001; Howel *et al.* 2002; Day 2004a,b; Stevens 1994 in parents of asthmatic children). Several studies found women to have raised perceptions or concerns as compared to men (Williams and McCrae 1995; Bickerstaff and Walker 1999a; Williams and Bird 2003; Day 2004a,b; DEFRA 2001) – a finding that is quite common in research on risk generally. There was a further indication in some studies that raised perceptions or concerns might occur where there is dissatisfaction with other aspects of the residential environment (Bickerstaff and Walker 2001; Day 2004a,b).

There was a very consistent finding that health issues were of high, often the highest, concern in terms of perceived impacts, actual or potential (Wall 1973; Moffatt *et al.* 1995; Howel *et al.* 2002; Stevens *et al.* 2004; Williams and McCrae 1995; Beaumont *et al.* 1999; Bickerstaff and Walker 1999a; Bailey *et al.* 1999; McDonald *et al.* 2002; Williams and Bird 2003; Day 2004a,b; York City Council 2002). Apart from health, dust and dirt indoors or on the person's clothes/body were a very frequently cited annoyance and concern (Wall 1973; Moffatt *et al.* 1995; Howel *et al.* 2002; Williams and McRae 1995; McDonald *et al.* 2002; Williams and Bird 2003; Day 2004a,b).

Health concerns generally centred around respiratory disorders (Stevens *et al.* 1994; Moffatt *et al.* 1995; Myers *et al.* 1999, 2004; Bickerstaff and Walker 1999a, 2001; Day 2004a,b; York City Council 2002). Rhinitis type allergies arose as a concern in more than one recent study (Bickerstaff and Walker 1999a; Day 2004a,b) which did not appear to reflect only a connection with pollen. The possibility of foetal malformation was also mentioned in two studies (Myers *et al.* 2004; Day 2004a). However in studies that examined health concerns, such associations asserted between cause and effect were generally found to be characterised by uncertainty (Moffatt *et al.* 1995; Stevens *et al.* 2004; Day 2004a,b).

Knowledge or concern about health effects was found to be generated through reasoning from evidence of exposure in the self and others around them (Moffatt *et al.* 1995; McDonald *et al.* 2002; Day 2004) and/or seen as common sense (Stevens *et al.* 1994; Day 2004a,b). Health effects seemed to be seen to be greater in others than in the self (Moffatt *et al.* 1995; Bickerstaff and Walker 2001).

There is disagreement in the literature over the degree to which external information sources such as government information and the media had a role in forming knowledge and perceptions. Several studies found that public air quality information sources were little used (Beaumont *et al.* 1999; Bailey *et al.* 1999; Bush *et al.* 2001b; Bickerstaff and Walker 1999b; Day 2004a,b), often because most people did not feel it relevant to them as they were not greatly affected. Some authors argue that people related to air quality as a local issue and rely on their own local and sensory knowledge, and thus air quality information must engage with this in order to be relevant (Bush *et al.* 2001b, 2002; Bickerstaff and Walker 1999b). However, other studies report that people do accrue and cite information from the media, often in relation to wider issues such as the health effects of air pollution (Stevens *et al.* 1994) or the global impacts of pollution (Day 2004a,b). The media are thus likely to be an important source of information about air pollution as a general issue. Where sources of specific air quality information were used, they were generally found to be mainly TV, newspaper and radio forecasts (Bickerstaff and Walker 1999a; Beaumont *et al.* 1999; McDonald *et al.* 2002; Day 2004a,b), often passively rather than actively sought. Information was seen to be most relevant to those with respiratory disorders affected by pollution (Beaumont *et al.* 1999; Brighton and Hove 1999; Day 2004a,b). More information from scientists and professionals was however requested in some studies (Stevens *et al.* 1994 Beaumont *et al.* 1999; Brighton and Hove 1999; Day 2004a,b).

The global dimension of air pollution issues did emerge quite strongly in some more recent studies (Brighton and Hove 1999; York City Council 2002; Myers *et al.* 2004; Day 2004 a,b) although as stated above, other authors feel that air quality is made sense of as a local issue (Bickerstaff and Walker 2001; Bush *et al.* 2002). The emergence of the global dimension may be a recent development in the public discourse around air pollution.

Some studies addressed the question of whether there was a relationship between perception of, or concern over, air pollution and deprivation or class. The findings here are mixed. No direct relationship between perceived pollution and deprivation appeared to be found, but a recurring finding is that people in poorer or more deprived areas often prioritised other concerns such as housing, employment and so on (Howel *et al.* 2002; Day 2004a,b) although there is indication that this did not lead to diminished concern in an absolute sense (Day 2004) but may even raise it (Bickerstaff and Walker 2001). The

DEFRA survey showed some incidence of increasing proportions of respondents concerned in groups with lower educational attainment (DEFRA 2001). Generally, concerns appeared to be across the social spectrum.

In terms of behavioural adjustments, studies that addressed this generally found that they were few, closing windows being one of the main ones (Wall 1973; Day 2004a,b) as well as avoiding busy roads or traffic fumes (Stevens *et al.* 1994; McDonald *et al.* 2002; Day 2004a,b). Sufferers from respiratory problems seemed to make the most adjustments (Day 2004a,b). No studies found that people actively complained to authorities.

Several studies found that individuals felt relatively powerless to change the situation in general, and/or rejected any responsibility on themselves (Wall 1973; Brighton and Hove 1999; Bush *et al.* 2001b; McDonald *et al.* 2002; Day 2004a,b). There was some indication overall that people in more deprived places felt more fatalistic in general and less able to achieve change for themselves (Bickerstaff and Walker 2001; Day 2004a,b). Responsibility was seen to lie in some studies with national or international government (Brighton and Hove 1999; Myers *et al.* 1999, 2004; Day 2004 a,b;) and to some extent local government (Brighton and Hove 1999; Day 2004a,b) although studies that asked, found few people had heard of local air quality management (McDonald *et al.* 2002; Day 2004a,b). There were also trust issues around both central and local government (Yearly 2000; Day 2004a,b). The private sector was also held responsible to some extent (Myers *et al.* 2004; Day 2004a,b) although one study found they were trusted the least (Day 2004a,b).

Relatively few of the reviewed studies addressed actual suggested solutions, although local authority reports are generally more concerned with this. Some studies found that generally scientists and experts were felt to be the most qualified to find solutions (Bush *et al.* 2001b; Day 2004a,b; McDonald *et al.* 2002). Public transport appeared a more popular (at least partial) solution (Brighton and Hove 1999; Bristol City Council 2001; York City Council 2002; Day 2004b) and provision of more trees and greenery was an interesting recurring theme (Brighton and Hove 1999; Day 2004b); likewise public education (York City Council 2002; Myers *et al.* 2004; Day 2004b).

A major conclusion of several studies was that there is a need for engagement between the scientific community and the public in order to develop more relevant information and policy, and also in order to facilitate exchange between different kinds of expertise (Bickerstaff and Walker 1999b; Yearly 2000, 2003; Bush *et al.* 2001b; Kelay *et al.* 2001; McDonald *et al.* 2002).

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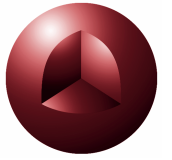
Part C – Technical Report

C1. Introduction

This section of the report details the methodology used by the People Science & Policy Ltd team and describes how it differed from the classic Citizens' Jury model. It then goes on to describe the following elements of the project:

- the advisory committee;
- the literature review;
- the composition of the jury;
- the first hearing;
- the second hearing;
- the third hearing;
- the report; and
- the evaluation of the project.

C2. Methodology

C2.1 Citizens' Jury

Citizens' Juries® are a trade marked development from the Jefferson Center in the USA. In the Jefferson Center model, the main elements of Citizens' Jury are:

- An advisory committee
- Telephone survey recruitment of jury
- Random recruitment of a representative jury
- Witness selection by the jury
- A charge for the jury to address
- Hearings on consecutive days
- Recommendations from the jury
- Report drafted by the jurors
- Publicity for the event and the recommendations
- Evaluation

For this project there were a number of objectives that led us to modify the traditional Citizens' Jury (as defined by the Jefferson Center) format. The final project design included the following elements:

- An advisory committee
- A literature review of public perspectives on air quality
- Telephone recruitment of jury
- Three hearings lasting 3½ days over a six week period
- A charge for the jury to address
- Witness presentations to the jury, selected by the project team to answer jurors' quesitons
- Opportunities for jurors to debate the issues
- Recommendations from the jurors to Defra
- Report drafted by PSP and agreed with the jurors
- Publicity for the event and the recommendations
- Evaluation

The jury was held in Sutton Coldfield in the West Midlands.

C2.2 The advisory committee

C2.2.1 The role of the advisory committee

The role of the Advisory Committee was set out in the papers for its first meeting as follows:

"The role of the Advisory Committee is to ensure that the project is not biased in any way and thereby to provide credibility for the process. The Committee will be made-up of individuals with different views and expertise. In addition the Defra contract officer will be a member of the Advisory Committee. The Committee will oversee:

- *the recruitment and selection of members of the public;*
- *the development of the question(s) for the public to address;*
- *the development of the agenda for the sessions;*
- *the general conduct of the project;*
- *the selection of independent experts to meet with the members of the public;*
- *other information presented to the members of the public.*"

C2.2.2   Recruitment of the advisory committee

Drawing on the knowledge of the full PSP team, individuals with suitable experience and expertise were identified and proposals were put to Defra, who made further suggestions. Potential members were sent initial invitations, which were despatched on 18 October for a meeting on 22 November. We do not believe that this was adequate notice and not all those invited were able to accept the invitation to join the Advisory Committee, even without attending this meeting. Written invitations were augmented by telephone and e-mail conversations and ultimately an advisory committee that met the description above was appointed. The final composition of the advisory committee was as follows:

> Professor Peter Brimblecombe (University of East Anglia)
> Dr Jason Chilvers (University of Birmingham)
> Robert Evans (Johnson Matthey)
> Professor Stephen Holgate (University of Southampton)
> Dr Sarah Honour (Defra)
> Professor James Longhurst (University of the West of England)
> Rob Pilling (National Society for Clean Air)
> Dame Helena Shovelton (British Lung Foundation)

In addition Simon Barnes (Society of Motor Manufacturers and Traders) initially accepted an invitation to join the Advisory Committee but subsequently withdrew in order to act as a witness for the jury instead.

C2.2.3   Method of working

The original plan was that that the advisory committee would meet once shortly after the start of the project (meeting held on 22 November 2005) and thereafter would work by email, supported by telephone contact with PSP. A schedule was provided at the first meeting setting out when Advisory Committee members would be consulted on the various stages of the project showing deadlines for reply. This was to ensure that members had reasonable notice of the periods when they would be asked to commit some time as the turn-round times were short.

One of the Committee suggested that it would be a good idea to have a further meeting towards the end of the project, to discuss the draft report and the learning from the project. This proposal was readily accepted and a final meeting was held on 23 March 2006 after the draft report had been circulated to the committee.

C2.3   Literature review

The literature search made use of several channels for information gathering. The following databases were searched for academic articles:

- Cambridge Scientific Abstracts (CSA) (which searches a suite of databases concurrently, including Applied Social Sciences Index and Abstracts, social services abstracts, sociological abstracts, worldwide political science abstracts, recent references related to the social sciences/humanities)
- Web of Knowledge/web of science
- International Bibliography of the Social Sciences (IBSS)

The search functions of these databases were used, employing combinations of the keywords perception* / understanding; air; quality / pollution.

In addition, the web search engine Google Scholar was used in a similar manner, using these keywords. Google scholar searches for scholarly articles and related publications.

Once obtained, the bibliographies of academic articles were also checked for further relevant material.

Further to article searching through these means, academics and researchers known by Dr. Day to be working in the field were contacted to ascertain whether there were any more recent developments of their work. Where direct contact was not possible, the web pages of researchers and research centres were checked for relevant publications and outputs.

Some 'grey' literature was pinpointed by the Google search; members of the project advisory group were also helpful in pointing to further local authority reports of possible relevance.

Full hard copies of all articles and documents were obtained through downloading from websites, through electronic journals or where necessary, through the university inter-library loan system. All documents were read critically in full, summarised, and key methodological issues noted. The review provided however is not a full critical review in that the quality of individual articles is not assessed and reported, although methodologies and sample sizes are noted and on occasion important considerations are highlighted.

The scope of the literature review is necessarily limited and this is acknowledged within the review.

C2.4   The jury

Recruitment

Twenty-two jurors were recruited by telephone from within a 12 mile radius of Sutton Coldfield using a recruitment questionnaire. Specific post codes were targeted and numbers were randomly selected from these post codes to find jurors. Telephone numbers were identified from a variety of sources:

- The BT telephone book
- 118.com
- BT.com
- An employment agency (to ask respondents permission to contact them)
- The Chamber of Commerce (to help to get business related people from all backgrounds)

- The Electoral Role

The recruitment questionnaire ensured a sample profile that was a cross-section of the UK population in terms of age, gender and ethic mix. Drawing on the findings from the literature review, it also ensured the involvement of groups who have been found to have particular concerns about air quality – for example those with asthma, chronic obstructive pulmonary disorders or heart disease. Both car drivers and non-drivers were included. Twenty jurors arrived to join the jury for the first hearing. One dropped out due to transport difficulties, so only 19 attended the second hearing. Another juror was asked to work over the third hearing, resulting in 18 jurors working through the final recommendations. The recruitment questionnaire is at appendix 1 and the profile of the jurors is at appendix 2.

C2.5 The first hearing

The first hearing lasted 2½ hours and the agenda can be found in appendix 3. The hearing was facilitated by the directors of People Science & Policy Ltd, also present throughout the session were the Defra project manager and Professor John Murlis.

After an introductory warm-up session at which the jurors were introduced to each other, to the project team, to Defra and to the Citizens' Jury format of the project, the jurors were split into two groups – male and female – for an initial discussion of environmental issues. It was during this session that the topic of air quality was introduced and first thoughts and knowledge about the subject probed. The groups were brought back together for a presentation by Professor John Murlis on air quality. A copy of the presentation overheads can be found at appendix 4. This generated a number of questions and further discussion. This session ran into the final session which addressed the 'charge' to be considered by the jurors and the topics that witnesses would be required to cover.

The length of the session did not allow the jurors to consider a detailed list of witnesses and their areas of expertise, which would have given them more ownership of the process.

C2.5.1 The charge

The draft charge that Defra officials proposed for the jury to consider was:

> *'What improvements, if any, would people like to see in air quality and how should these be achieved?'*

However, the jurors were unwilling to take this charge on board for two main reasons. Firstly, they felt that they did not know enough about the options for improvement, which they thought might be dependent on the causes of air pollution.

> *"I'm a bit concerned, because unless I personally learn a lot more I can't answer that question. I don't know what improvements I want to see because I don't know what's on offer."*

> *"I think improvement for me would be very difficult because we don't know what we're at now…you can only improve if you know what state you are at this point in time."*

Secondly, they were uncomfortable in being asked to speak on behalf of the wider community.

> *"I think it's a bit ambitious for a small group like us to put forward some suggestions for improving air quality."*

At the end of the session the jury felt that they could more readily address a series of questions:

1. Is there a continuing problem with air pollution?
2. If so what kind of problem is it?
3. What actions would be preferable?
4. At which level should decisions on actions be taken?
5. At what level should actions be taken?

These questions were taken forward to the second hearing. However, the jury never fully engaged with the concept of having a 'charge' to address. The topic was seen as too complex and the jurors felt that their initial knowledge was at too low a level for them to engage with a single sentence 'charge' early on in the project. In the final session one juror said that she felt able to address the initial charge now that she was much better informed. None of the others responded to this and as a group the jurors found it easier, and perhaps more realistic, to concentrate on making 'recommendations' to Defra around the five questions that had provided the framework for the final day. This framework supported the jurors in drawing conclusions from their own discussions and the information which had been presented to them during the previous hearings.

Both the PSP team and the Defra representative believed that for this project it was far more important that the jurors had control over the agenda and the nature of their outputs than to gain a response to a specific charge.

C2.6   The second hearing

The second hearing took place over the weekend of 21 and 22 January 2006 and the agenda is at appendix 6. The majority of the time was taken-up with the witness hearings. Following a round robin of thoughts and additional questions from the jurors, each witness was allocated a half hour slot and asked to present for 10 minutes, allowing 20 minutes for questions from the jurors. The list of witnesses is at appendix 7 and their presentations are available at appendix 8. The hearing was facilitated by the directors of People Science & Policy Ltd, with additional sub-group facilitation by Professor John Murlis and Dr Rosemary Day. The Defra project manager was also present throughout the hearing.

In order to maximise the opportunities for jurors to reflect on the information being provided and to exchange views with each other, the witnesses' presentations were interspersed with breakout sessions. Two of these breakout sessions were on the Saturday with one on the Sunday. The jurors were divided into four smaller groups, each with a moderator, to provide opportunities for those less comfortable speaking in the larger group to air their views and raise questions. The breakout groups were mixed by gender and background so that within each breakout group there was a range of experiences to stimulate ideas and questions.

After the final breakout session on the Sunday, a feedback session enabled the four groups to present their thoughts to each other. The purpose of this was to allow a sharing of thoughts in order to stimulate ideas that might lead towards the development of recommendations in the final hearing.

C2.7   The third hearing

The third hearing took place at the same venue on 28 January 2006 and the agenda is at appendix 9. The Defra project manager and Professor John Murlis were present throughout the day but no other experts were present. For part of the time the jurors worked in three breakout groups facilitated by Professor John Murlis and the PSP team. After lunch the three breakout groups presented their ideas to each other and worked together to compile a final list of recommendations for Defra. At the end of the day the jury nominated a representative to present their recommendations and conclusions to the Defra project manager, who briefly responded.

C2.8   The report

In the classic Citizens' Juries® method, the report is drafted by the jurors. This was not the method used in this case for a number of reasons. To give the jurors time to write a report would probably have required another full hearing session on a third weekend, which would have made recruiting and retaining the jurors more difficult. More importantly, Defra required a report that described the research process and findings that emerged during the project as well as final recommendations. The three hearings generated a wealth of material in terms of flipcharts and recordings (both audio and video). Analysing this material and using it to underpin a report that gives a full picture of the project is a specialist task and one that could not be done by the jury in a limited time.

C2.8.1   The drafting process

Defra's objectives included wanting to gain an understanding of public values, which involved understanding initial views before information is imparted and debate and deliberation take place, as well as the jurors' final conclusions. In addition, Defra wanted to gain an understanding of how and why views change. Hence the report included sections that discuss these issues using a qualitative research framework.

PSP staff listened back to recordings of the sessions and produced notes tracking main themes and illustrative quotes that were used to underpin the report. These were augmented by material captured on flipcharts during the sessions.

C2.8.2   Seeking jurors' comments

At the final hearing the jurors were told that they would be sent a draft copy of the report before its formal submission to Defra and that comments would be welcome. When the jurors were sent the draft report a covering letter re-iterated the importance of their comments in finalising the report.

> "*It is important to us and Defra that the report is an accurate representation of your views, so we would like you to look at this draft and let us know whether we have reported things accurately. For example are there major things that we have left out or have we put too much emphasis on some things and not enough on others? You can let me have any comments either by phoning or e-mailing using my direct contact details:*

020 7554 8635

mark.dyball@peoplescienceandpolicy.com

or by dropping me a note at the postal address at the foot of this letter."

PSP's previous experience has been that few participants send back comments, so comments were also sought during the telephone follow-ups undertaken as part of the evaluation (see section C.3).

C2.8.3   Responses

Three written response were received by e-mail, 15 jurors fed back comments during the telephone follow-up. There was no response from two jurors, one had provided an incorrect (out of date) telephone number and could not be contacted. We were unable to contact the second at a convenient time for them to provide feedback, although contact was made on two occasions and further messages were left.

On the whole the jurors were satisfied that the report gave an accurate summary of the proceedings of the jury and that the quotes used represented the spectrum of opinions. In particular, all of the jurors thought that the descriptions of the hearings and the conversations that they contained were well summarised.

However, there were some concerns over the recommendations. In the draft report, the recommendations were presented separately from the reflections. Not all of the ideas discussed, some of which had quite strong support, were included in the jurors' final recommendations, which were at a more strategic level than some of the individual actions suggested. Some jurors felt that as a result the recommendations section seemed "*bland*" in comparison to the rest of the report. In this final report we have merged the two sections so that the recommendations sit within the context of the jurors' wider discussions.

C3.   Evaluation

There were three strands to the evaluation:

- immediate written response from the jurors;
- subsequent follow-up with jurors; and
- email feedback from witnesses.

C3.1   Immediate response from the jurors

The 18 jurors who had attended all three sessions were asked to complete a short feedback questionnaire, before leaving, at the conclusion of the final session. A full marked up version of the questionnaire is at appendix 10, with some excerpts below. The questionnaire sought to gain immediate feedback on the following issues:

- Were participants able to express their views freely and openly without feeling intimidated?
- Were the witnesses able to provide sufficient information?
- Feedback on the presentation style of the witnesses
- Were participants able to grasp the science and any other technical issues? How easily?
- Was there sufficient time for debate and discussion with the witnesses?
- Was there sufficient time for debate and discussion with the other jurors?
- Had views on air quality changed?
- Would Defra take the jury's recommendations seriously?
- The way that the event was run.

The jurors were asked not to add their names as the intention was that feedback should be frank and it was felt that anonymous responses would encourage full and open responses. In particular, the jurors were encouraged to emphasise any ways that the event could have been improved in order to help provide good practice feedback to Defra.

Initial feedback was very positive, in particular the jurors felt that they had been able to express their views.

Q1 Were you able to express your views freely and openly in the main sessions?	
Yes completely	14
Yes but sometimes I felt nervous	4
Not as much as I would have liked........	0
Not at all	0
Don't know..	0

Q3 Were you able to express your views freely and openly in the breakout sessions?	
Yes completely	18
Yes but sometimes I felt nervous	0
Not as much as I would have liked........	0
Not at all	0
Don't know..	0
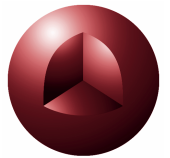
The jurors were also largely content with the information provided during the process (both quantity and accessibility).

Q6	In general were you able to understand the information presented at the second meeting?	
Yes, all of it..	7
Yes, most of it..	11
A little of it..	0
None of it..	0

Q7	Do you feel that there was...	
Too much information............................	1
About the right amount of information.	14
Not enough information........................	2

There were also very positive views on the witnesses.

| Q5	In general, did you find the presenters...	
Helpful...	16
Confusing	0
Able to answer my questions	5
Self important..	0
Did not want to listen to my opinions	0
Able to explain themselves clearly	7
Able to answer the questions.................	6

The jurors were happy with the way that the event was run.

Q15	Overall, how well do you feel the event was run by the facilitators?	
Very well..	16
Fairly well	1
Not very well	0
Not at all well	0

However, there were some indications that more time for conversations both with witnesses and amongst the jurors themselves would have been appreciated by a minority of the jurors.

Q9	Do you feel that there has been enough time for debate and discussion with the witnesses?	
Yes	12
No	5
Not sure	1

Q10	Do you feel that there has been enough time for debate and discussion with the other jurors?	
Yes	12
No	3
Not sure	2
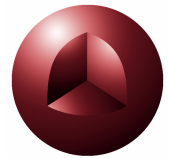
All 17 of the jurors who answered the question stated that they were now "*more concerned about air quality than I was*". Reasons for this included:

> "*Concerned previously…now even more aware.*"
> "*Impact on:*
> - *health*
> - *day to day life activity*
> - *transportation*
> - *lack of measurements available.*"
>
> "*So many issues were brought up, things I never thought about.*"
> "*I didn't understand the implications, but now I do – on a scale of 1-10 I am now 10 but before I was 1.*"

There was a mixed response over the degree to which the jurors thought that Defra was really listening.

Q13	How seriously do you feel that Defra will take your views?	
	Very seriously	6
	Fairly seriously	8
	Not very seriously	3
	Not at all seriously	0

Some jurors thought that the investment in the event and the response of Defra staff showed a commitment.

> "*Why should they create a Citizens' Jury if they are not going to act on it.*"
> "*I believe that the feedback from Defra is genuine and that they are interested in our opinions.*"

Some who thought that the responses would be taken fairly seriously thought that pragmatism might win out over idealism.

> "*Political Departments/Involvements. Will be difficult to bring items to fruition*"
> "*Obviously not all ideas can be incorporated.*"

A couple were more cynical, believing that their views would not be taken seriously because:

> "*We are just Joe Public.*"
> "*Those at the top have other agendas.*"

C3.2   Subsequent follow-up with jurors

The jury process as implemented by PSP emphasised the importance of allowing the jurors time for reflection. So as well as asking for immediate feedback, the jurors were asked to consent to being telephoned after they had been sent the draft report. This was to give the jurors an opportunity to provide additional feedback on the process after having time to reflect on their experiences.

The jurors were sent the draft report in the week commencing 6 March 2006 and follow-up telephone calls were made during the week starting 20 March 2006. We made up to

three attempts to contact each juror, at different times of the day. In total we spoke with 16 jurors. The topic guide used for the telephone interviews is at appendix 11.

C3.2.1 Opportunities to express views

The telephone follow-up work confirmed the messages from the immediate feedback. The jurors had found the experience enjoyable and stimulating.

> "*I only went for the money, but I really enjoyed it.*"
> "*I thoroughly enjoyed the whole process.*"

The jurors all still felt that they had been given ample opportunity to make their points. With the benefit of hindsight a number commented on the importance of breaking into smaller groups. It was also acknowledged that this had given them the confidence to speak, which they might not have had in the larger group. Others who had been confident of speaking in the larger group recognised that the small groups had provided extra opportunities for the less confident. Someone also brought up the point that the extra conversation in the small groups allowed more ideas to be brought forward for the whole group to consider.

C3.2.2 The witnesses

Again, the telephone follow-up work confirmed the initial findings. The jurors were impressed with the range of witnesses and their ability to engage with the jury. Some witnesses were felt to have been better than others, with different jurors citing different witnesses as the stronger ones. Overall however, the jurors were impressed that the witnesses treated the jurors and their questions seriously. A couple of jurors said that they had been impressed when some of the witnesses had the honesty to say "I don't know" to some questions.

> "*We got the sort of people we wanted. They worked hard to answer our questions.*"
> "[they] *answered questions if they could and said they couldn't if they couldn't.*"

Related to the issue of smaller groups breeding confidence, one juror said that having the witnesses around during breaks and meals had been very helpful as it provided a chance to raise questions in a more informal setting. This again helped those who were less confident about speaking in the larger group.

The information provided by the witnesses was highly valued, this was seen as being central to the whole process.

> "*…very effective, enabled me to come forward with a better informed opinion*."
> "*I didn't know much before they spoke, this drew a lot out of us*."
> "*You couldn't have bought the education we got*."

C3.2.3 Changed perceptions and behaviour

A lot of the jurors commented on the impact that taking part had had on their views. These are reported in the Epilogue section in Part A.

C3.2.4   Expectations of Defra

During the telephone follow-up, the jurors still hoped that Defra would use the outputs of the jury to develop new policies, particularly with regard to communication. A number recognised that Defra as a department had many issues to cover, including the particularly topical "bird flu", but had faith that the air quality team would seek to make best use of the investment that had been made in the Jury.

> "*I hope Defra will listen, this was real people talking, once they understood things.*"
> "[The] *results should be publicised…brought to the attention of more people.*"

C3.3   Feedback from witnesses

We did not seek formal feedback from the witnesses. However, a number provided unsolicited comments both during the event and during subsequent e-mail conversations. All the written feedback was positive and highlighted that these witnesses had found the event not only enjoyable, but interesting and useful.

> "*It was an interesting day, I enjoyed it a lot.*"
> "*I found it interesting to take part in the Citizens' Jury exercise, which is something that* [name of witness's organisation] *is very supportive of.*"
> "*I thought it was a really special occasion and one that I enjoyed very much. I thought it was excellent in all respects.*"
> "*I thought the session yesterday was very enjoyable and useful.*"
> "*… and I enjoyed the day.*"
> Witnesses unsolicited e-mail comments

It is important to remember that the witnesses were, on the whole, people who were supportive of the process. When they were initially approached, many of the witnesses were happy to "*help*" Defra and a number expressed their "*interest*" in the process. Although the witnesses were all offered an honorarium to take part, the sum offered would not have represented commercial recompense for their time and effort. Despite this positive pre-disposition, the unsolicited feedback shows that they were not disappointed by their experiences.

Part D – Conclusions

D1. Introduction

This final part of the report draws together the three preceding parts in order to allow an overall assessment of the project against Defra's original objectives. This includes an assessment of the fitness for purpose of the modified Citizens' Jury approach used, and a description of the lessons learned that should inform similar deliberative activities.

The first section of this part of the report ties together the hearings with the literature review to place the findings of this project in a wider context. The next section draws on the evaluation and our own observations to highlight lessons learned during the project. The final section of this part of the report looks at the fitness for purpose of the project as finally delivered and the wider applicability of the modified Citizens' Juryappraoch.

D2. Setting the Jury in a Wider Context

D2.1 Consistency with previous work

Initially the jurors' views reflected much of what was found in the literature. Similarities were found across a range of issues, including:

- individual assessments of air quality;
- causes of poor air quality;
- effects of poor air quality;
- sources of information about air quality; and
- behaviour to combat poor air quality.

D2.1.1 Individual assessments of air quality

The literature review found that on the whole, sensory methods of perception such as smell were very important. Additionally, direct health impacts were another way in which people were alerted to poor air quality. These assessment methods were reflected to some degree amongst the jurors, with visual indicators such as "*hazes*" being mentioned as well as health-related impacts, particularly amongst children.

The literature review also found that estimations of air quality often involved a comparison with other places. This was certainly the case for the jurors who initially suggested differences between urban, rural and coastal air quality. Whilst many assumed that rural air quality was better, some questioned whether farming practices had adverse impacts on rural air quality. The jurors were surprised to find that rural air quality can be poor, even though the underlying causes of this are different from those associated with poor air quality in urban areas.

D2.1.2 Causes of poor air quality

Transport and industrial emissions were both suggested as causes of poor air quality by the jurors. As in the literature reviewed there was a sense that industrial emissions might be less of an issue than previously.

Weather was also perceived to affect air quality in some of the studies reviewed and this was certainly brought up at an early stage by the jurors.

D2.1.3 Effects of poor air quality

The literature review found that there was a consistent view that health issues were of high, often the highest, concern in terms of perceived impacts, actual or potential, these health concerns generally centred on respiratory disorders. It was apparent that the jurors also regarded impact on human health as the main cause for concern associated with poor air quality.

D2.1.4 Information

There is disagreement in the literature over the degree to which external information sources such as government information and the media have a role in forming knowledge and perceptions. As far as the jurors were concerned they were aware of almost no

official or Government information, so any perceptions were founded on personal experience and media portrayals.

D2.1.5   Global or local?

The global dimension of air pollution issues emerged in some more recent studies that were reviewed, although some work suggests that air quality is made sense of as a local issue. This resonates strongly with the jurors who saw air pollution as a global issue with local impacts.

D2.1.6   Social factors

Generally, the literature review shows that concerns about air quality appear across the social spectrum. Given the size of the jury it is unwise to draw too many conclusions, but certainly by the end of the process there were shared concerns, and hopes, across the jury, which had been recruited to be a cross-section of the public.

D2.1.7   The need for engagement

A major conclusion of several studies was the need for engagement between the scientific community and the public in order to develop more relevant information and policy, and also in order to facilitate exchange between different kinds of expertise.

This is something that came through strongly from the jurors although from a subtly different viewpoint. They were keen that policy-makers should be driving engagement and that the scientific community (the witnesses in this instance) should play a role in supporting engagement.

D2.2   Departures from previous work

Although there were a number of similarities between the jurors' attitudes and those found in the literature review, some clear differences emerged. These were most noticeable as the jurors gained knowledge and confidence.

D2.2.1   A powerless public?

Several studies found that individuals felt relatively powerless to change the situation in general, and/or rejected any responsibility on themselves. Some studies found that responsibility was seen to lie with national or international government and to some extent local government.

The jurors initially shared this feeling of powerlessness. Once clear distinctions emerged between global and local impacts and it became clear that local actions could have an impact, the jurors started to believe that they had both responsibilities, and the ability, to effect change.

The jurors' belief that they could, and should, be a force for change is powerfully reflected by the way that they split their recommendations into two categories, those for Government and those for themselves.

D2.2.2   Solutions

Relatively few of the reviewed studies addressed solutions. Some studies found that generally scientists and experts were felt to be the most qualified to find solutions. Public

transport appeared a popular (at least partial) solution and provision of more trees and greenery was a recurring theme, as was public education.

The Citizens' Jury was intended to support jurors to make recommendations for action and the jurors spent a significant amount of time discussing potential solutions but it was not just the framing of the study that enabled them to devise recommendations. The witness sessions had given the jurors a greater understanding of the causes and effects of poor air quality and had also stimulated them to think about solutions and actions. Taken together, these factors had provided the jurors with the confidence to identify solutions, some quite radical and to start to build defences against charges of impracticality.

The jurors agreed that public education was important and placed this at the centre of their recommendations for Government action. However, they were not simply recommending education as an abstract concept, but offered thoughts on how campaigns might be structured. They appreciated that it was impractical to give the entire population the same depth of experience that they had been through. Instead they proposed short clear messages about key issues, such as the impact of poor air quality on health, simple actions that individuals can take and the point that air quality is not something that is too big for individuals to influence.

D2.3 Conclusions

There are enough similarities between the views of the jurors, especially those voiced early in the process, and public perspectives found in the literature to be confident that the jurors were a cross-section of the broader public.

However, it is critically important to note the important differences that emerged as the jurors became more confident. The combination of increased knowledge and the belief that they were being taken seriously, led the jurors to be far more willing to propose solutions and accept responsibilities than had been reported in the literature review of studies of the public who had not been through such a process. This confirmation that, given suitable support, 'ordinary people' are perfectly willing and able to engage in science-based policy debates, is an important finding for policy-makers.

D3. Learning and Good Practice

There have been four areas where we believe that important lessons have been learned, these are:

- the advisory committee;
- recruitment of witnesses;
- maintaining momentum; and
- delivering the project.

D3.1 Advisory committee

Many deliberative or consultative approaches specify a role for an independent advisory or oversight body. The purpose of this body can be two-fold. Firstly it can comment on practice and process and provide independent verification (oversight). Secondly, it can provide added value by actively contributing to the development of practice and process (advisory).

If the purpose is to meet a specific policy need, the need for an advisory group should be questioned. If the contractor has expertise in the process and the broad policy area and the client/policy owner has knowledge of the policy and scientific issues, then an external advisory committee may not add any extra value. An internal steering group of officials will suffice. If there is insufficient expertise in the commissioning organisation to select a contractor, an external advisory group might provide support at this stage.

D3.1.1 Timing

Recruiting an external advisory committee takes time. Based on this project we suggest that **at least 8 weeks** is allowed between initial approaches and a first meeting. It is likely to take 3-4 weeks to confirm the membership and finding a mutually convenient date then requires a further 4-6 weeks. Starting the project with a live meeting is important. A good deal of useful work can be done by telephone and e-mail, but physically getting people together allows a much better sharing of visions and understanding. In particular, the presence of the funder/policy customer on the advisory committee is important to set out any likely constraints that could affect the design and delivery of the project.

A truly advisory committee can add value. The members will provide additional expertise to that available to the funder and the contractor. For example the members may know of other relevant work that has not yet reached the public domain and they may know of, or better still have access to, suitable people to act as expert witnesses. However, an active advisory committee will mean that additional time is required for the process, as it is crucial that members are given time to respond to proposals and calls for advice.

D3.1.2 Who to invite

It is always tempting to think that the "top people" are required. This is especially so if deliberative or proactive consultation activities are relatively novel and thus quite high profile within an organisation. It is true that more senior people are likely to have had the opportunities to develop a broad overview of issues, which can be very helpful. However, more senior personnel have greater calls on their time. It may be useful to trawl more widely and to consider more junior personnel who understand the issues, but who have a

lower profile and may be able to commit more time. The funder/policy customer is likely to be well placed to support the contractor in identifying suitable members.

D3.1.3 Advisory or oversight?

The more that an advisory committee is required to do, the more time it will need. Funders/policy clients need to consider the balance between the need for a project to meet a particular timetable and the value added by an external advisory committee.

If time is short and the most crucial role for an independent body is to provide re-assurance regarding transparency and fairness then it is worth thinking about an oversight committee, with fewer responsibilities, for example simply commenting on witnesses rather than proposing them.

D3.2 Witnesses

Most deliberative or consultative approaches strive for "informed debate". If this is to be achieved then it is important that information is introduced during the process. A widely used method is expert contributors (or witnesses in the language of the Citizens' Jury model).

Some processes suggest that participants (jurors) should play a central role in the selection of experts. This approach is particularly relevant when the subject under debate, and the relevant actors, is one with which participants are familiar but this is unlikely to be the case with many science-based issues. An ideal scenario would be to be able to present the jurors with a long list of witnesses from which they could prioritise the people they wish to see and areas they wish to cover, whilst retaining the ability to ask for different specialisms/topics to be included. Failing this, the participants should be given the freedom to set out the topics that they would like to explore further and the types of people with whom they would like to interact. Whatever approach is taken, the final identification of, and approaches to, appropriate individuals are likely to be a matter for the contractor, the client and, perhaps, the advisory committee.

D3.2.1 Timing

Just as for the advisory committee, it takes time to recruit expert contributors or witnesses. This Citizens' Jury was able to run to the timetable it did thanks to immense goodwill on the part of the witnesses. It would be a risk to rely on such goodwill always being present.

If the lay participants are to be a true cross-section of the public then many will be working. This means that sessions will need to be arranged to suit them i.e. evenings and weekends. This places extra demands on experts/witnesses, who are therefore likely to be supporting the project in their own time. Providing an honorarium is a gesture of goodwill, but is unlikely to be a commercial (or academic) reflection of the input provided.

Witnesses are likely to be eminent in their field and therefore to have numerous commitments. It is perhaps more important to have senior individuals as witnesses than as members of the advisory committee, as the witnesses send messages to the jury about the importance of the process that the advisory committee does not. Hence the ideal scenario would see potential witnesses signed up well in advance, **we suggest a minimum of 6-8 weeks**. From that long list a final list can be confirmed taking into account the questions

raised by, and preferences of, the lay participants (jurors). However, even with a long list in place, it is not always possible to foresee all of the jurors' requirements, so there needs to be the capacity to recruit additional experts at less notice.

D3.2.2   Briefing

Witnesses may be very eminent in their field, but may not have experienced a similar event before and may be nervous. It is therefore important to brief the witnesses fully, to ensure that they understand the nature of the process, their role and that they are aware of who else is participating. Sending out the agenda will provide an understanding of who else is participating and will help witnesses to focus their contribution.

A certain amount of briefing can be done in writing and by e-mail, but personal contact either by telephone or face-to-face is important and time should be allowed for this.

D3.2.3   Presentations

It might be thought that using formal presentations could introduce a distance between lay and expert participants. However, the time per expert witness is likely to be limited and presentations will help to provide a focus. It might be that a presentation is prepared as an aid to the witness, but not used as a formal presentation. Having a presentation to review also allows the project manager to offer guidance on its suitability for the event, for example the tone, level and length. This can help to ensure that the lay participants get the most out of the expert witnesses' inputs.

Distributing lists of questions from lay participants and providing guidance on which element specific witnesses might cover, will help to avoid excessive duplication and overlap. This process will allow witnesses to make unique and complementary contributions.

In addition to the formal elements of the programme, it is very helpful if the witnesses can be available during informal sessions such as lunch and other refreshment breaks. This can provide two additional opportunities for the jurors. Firstly, those who may be unwilling to talk in the larger group have an additional opportunity to talk with the witnesses. Secondly, it provides an opportunity for further deeper exploration of issues that have been raised in the formal sessions.

D3.3   Momentum

The standard Citizens' Jury process is run over consecutive days. That model was not adopted on this occasion as the intention was to hold the sessions at times that would be convenient for working people.

This Citizens' Jury was run as three separate sessions and it is likely that most deliberative activities will entail a number of sessions. It is important that momentum is maintained so that the jurors feel that they are using, and building on, the information that they are gathering while it is fresh.

A gap of between two and four weeks between an initial briefing session and the main evidence session(s) is workable and it may be necessary to err towards the longer gap to ensure that witnesses are in place. However, the process should then move relatively

quickly from main evidence session(s) to conclusions (1-2 weeks) while enthusiasm and energy levels are high.

D3.4 Delivering the project

D3.4.1 Venue and facilitation

It is important to have an appropriate venue that allows both whole jury and small group activities and offers flexibility to the facilitators. It should provide a comfortable environment that is neither so smart that it is intimidating nor so downmarket that it is off putting. Visiting the location and ensuring that its managers will be able to meet the event's needs is an important part of the preparatory process.

Catering is appreciated by participants but in what are likely to be tight schedules it is important that provision of refreshments is managed. For example, if working in a hotel environment it will be more time efficient to have an exclusive buffet made available close to where the group is working than to use the restaurant facilities. This approach will also keep the group together and foster informal conversations that keep the project moving.

It almost goes without saying that the style of facilitation is critical, but it is vital to the success of the process. Taking part in a deliberative consultative event will probably be a novel experience for most of the expert contributors as well as for the lay members. The facilitators need to create an atmosphere that encourages open discussion and mutual questioning, when many participants could be initially quite nervous. Making people feel that they are valued is crucial and part of achieving this is facilitation style, but another factor is the physical environment as described above.

D3.4.2 A technical "friend"

During the Citizens' Jury project, John Murlis adopted a role as the jurors' technical "friend". He was positioned as something of an expert, although the full breadth and depth of his expertise was not detailed, and he introduced the topic to the jurors. Thereafter he concentrated on stimulating questions from the jurors rather than providing them with answers. His approach of responding to questions with comments like "*that's an important question, we need to make sure that we get you a witness who can deal with that*" rather than providing an immediate answer, even though he could often have done so, added to the jurors' confidence.

In the sessions with witnesses, John took a questioning role, supporting the jurors and adding follow-ups where answers may not have been clear to non-experts to ensure that accessible information was being provided. This left the main facilitators free to manage timetables and dynamics.

This role of an expert ally was very useful in terms of supporting the overall group dynamic and should be considered in similar activities in the future.

D3.4.3 Sub-groups

In an extended activity such as a Citizens' Jury it is often desirable to break the whole group into smaller groups. Sometimes a quick and easy approach can be used for example men and women, the left hand side of the room and the right hand side. Often however the facilitators will want a more planned split.

To help with allocating participants to sub-groups, the facilitators should write short pen pictures of the participants immediately after the first session. This will mean that like-minded people can be put together if that is appropriate, equally people who appear to have different perspectives and backgrounds can be given the chance to interact more closely.

D3.4.4 Allow adequate time for the jurors to reach conclusions

The Citizens' Jury process accelerated as the jurors became more confident and more knowledgeable. By the concluding session the jury was able to develop recommendations largely without facilitation. This is ideal in terms of ensuring ownership of the final feedback, but does mean that the jurors will require time to get to their own conclusions. It is important to allow enough time for participants to pull things together although a deadline will encourage focus at the end of the event. The final hearing was four hours long and five would have been better.

In the concluding session the jurors used the limited time available to come to generic conclusions and recommendations. While useful in themselves, this meant that some of the concrete policy options that had been discussed earlier in the hearings were not included, even though some had gathered a good deal of support amongst the jurors. These options included:

- regulations on traffic;
- "pollution vouchers";
- "pollution police" or equivalent rights for civilians to report polluters; and
- the development of personal pollution monitors.

We cannot judge whether with a little more time the jurors would have worked in some of these options to the final recommendations or whether there was some 'self-censorship' involved. There had previously been discussions about whether or not specific options would be regarded as practical by Defra. However, with a longer final session, the facilitators could have raised the question of why specific options were not included without leaving the jurors worried that they might not be able to complete their main task of agreeing some recommendations.

D3.4.5 Cost

This project was run to a fixed budget and has been delivered on budget. However, this has only been possible due to the goodwill extended by a number of contributors. In particular, members of the project team have reduced normal charges because of their belief in the importance of this pilot and witnesses have given up time and effort, often at short notice, for a modest reward.

On one level such contributions could be regarded as achieving good leverage for a public sector investment. However, if this type of activity is to become a central part of science-based policy making then there will be limits to how much can be achieved on goodwill.

D4   Fitness for Purpose

This project has successfully shown that a deliberative approach can be used to:

1. enable members of the public to find out about air quality issues;
2. understand the values of the general public whose views are usually absent from policy consultations;
3. provide policy-makers with an understanding of the public's expectations in respect of air quality;
4. provide policy-makers with an understanding of the policy actions to improve air quality that are acceptable to the public; and
5. demonstrate how participatory methods can contribute to policy development in the field of air quality.

Each of these issues is discussed below.

D4.1   Informed public

This Citizens' Jury has shown that members of the general public are quite capable of understanding and questioning information regarding air quality. The jurors stated that they were much better informed at the end of the project than at the beginning, they were also much more confident in the validity of their views.

Information exchange relied on the input of a number of experts and this was a very different scenario from the jurors being left to find things out for themselves. Information was provided in a variety of formats and the jurors showed that they were perfectly capable of assimilating and analysing this data. A mix of formats, spoken presentations, diagrams, graphs, photographs and questioning provided a range of opportunities for all the jurors to engage according to individual preferred ways of working.

Given time to engage with the key issues, easy access to information and perhaps most importantly, the incentive to access it, members of the public were able to identify what was important to them regarding air quality and come to informed conclusions about appropriate actions.

It is important that policy-makers recognise that very few, if any, members of the jury would have pro-actively sought information about air quality prior to taking part in this project. If the jurors are typical of the wider public, and section D2 above suggests that they are, simply making information available, however accessible in terms of either content or media, will not lead to broad swathes of the public taking the opportunity to find out about the topic.

D4.2   Public values

The jurors' values could be summed up as:

*   a desire to minimise adverse health effects;
*   support for ensuring a competitive UK economy that provides jobs; and
*   a belief in the fair treatment of less well-off members of UK society.

D4.3   Public expectations

The values set out above underpinned the jurors' expectations. They did not expect anyone, whether an individual or a corporate entity, to be allowed the freedom to pollute in such a way that seriously affected the health of others. Some groups were thought to be at greater risk, these included children, the elderly and the less well off. Children and the elderly were both seen as more susceptible to pollutants, while the less well off were seen as having less freedom to move away from a source of pollution.

However, the jurors did not expect that controls over pollutants to be so tight that the competitiveness of UK industry would be adversely affected. There was a relatively consistent UK focus to the discussions and although air quality was seen as a global issue, concern about either pollutants, or steps taken to control them, were largely driven by local impacts.

There was a hope that society as a whole might be able to move towards a philosophy of lower consumption, which would provide knock-on benefits in terms of air quality. There was however, little expectation that this would happen to a degree that would have a profound effect on air quality. The jurors therefore recommended that Government should take the lead with a number of actions that could minimise UK air pollution.

D4.4   Acceptable policy actions

Government was expected to take a number of actions, in particular it should:

- continue to regulate the emission of air pollutants;
- reward good behaviour as well as punishing failure to comply with regulations;
- raise the understanding of the impact of individual behaviour on air quality; and
- support investment in cleaner technologies and promote their uptake.

Although some of these actions would have costs for Government, the jurors were keen that expenditure should be seen as an investment. Actions that would lead to improved air quality and thus improved health across the country were seen as also having economic benefits against a backdrop of ever-increasing demands on the National Health Service.

Information was seen as central to making different actions acceptable. The jurors were keen that there should be carrots available as well as sticks, but many accepted that to change behaviour there was often a need to limit choice and regulate options. If this is necessary then the jurors thought that it was crucial that Government take a proactive role in explaining its actions. They spoke of campaigns to "*pave the way*" for actions.

D4.5   Participatory methods

This project has shown that there is a clear role for participatory methods in developing air quality policy. Such approaches can be used to bring new ideas to the policy mix. Values can be explored more deeply when participants are asked to consider solutions and to make recommendations as they set a baseline for behaviour. However, the impact knowledge has on jurors' perceptions as they go through any participatory process makes them atypical of the wider public and this must be borne in mind when interpreting the findings, as the literature review shows.

The greater sense of responsibility and empowerment embodied in the jurors by the end of the process is a function of their greater knowledge and confidence. If policies are to be developed that require a confident and empowered public, steps must be taken to ensure that such a public exists. Indeed, the provision of material that would engage the wider public so that they could make more informed decisions about how their lifestyles impact on air quality was one of the critical areas the jurors thought Government should address.

## D4.5.1 Broader applicability of the Citizens' Jury model

As we have explained, this project was not a classic Citizens' Jury, although many of the principles were included in the final design. In terms of broader applicability, the project is probably best thought of as an example of a participatory method rather than as a Citizens' Jury.

If participatory methods can be used to access both initial perceptions and informed views about a topic that was not an immediate priority for many of the jurors, then it can be assumed that similar approaches can be effective across a range of policy fields. Indeed, this is our experience at PSP.

It is not useful to think in terms of one model or another being particularly applicable to specific policy areas or issues. The flowchart below offers an alternative way of thinking about choosing between techniques. This relies on an initial assessment of where the public are, rather than what the issue is, as all the broad categories of policy issue all feed into the same initial question:

"Is the public aware of the issue?"

The answer to this question sets the framework for thinking about the most appropriate techniques. While the flowchart leads to possible options, these are not necessarily exhaustive and it may be best to use the flowchart as a way of ruling out some options rather than trying to identify the perfect methodology. Much as we have done in this project, classic methodologies can provide ideas, principles and good practice, but logistics and practicalities will almost always lead to a bespoke design to meet a particular policy need.
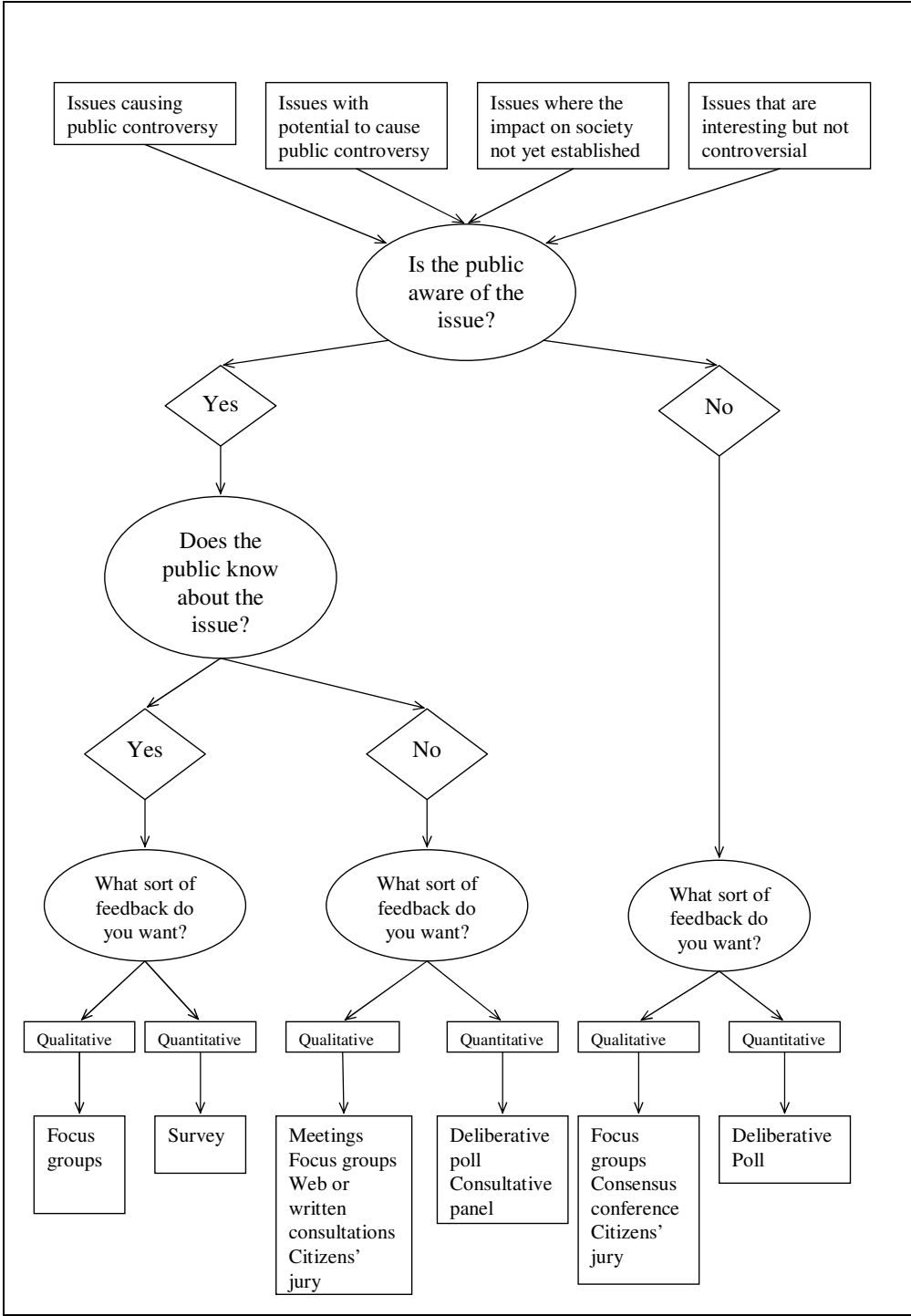
Source: People Science & Policy Ltd *"Dialogue with the public: Practical guidelines",*
Research Councils UK, August 2002.