

## Challenge Overview Sheet

# Air Quality for All

Poor air quality is a global problem but one could be forgiven for not always recognising its extent both spatially and in terms of the number of people affected. Greenhouse gases and activities to limit the effects of climate change have become far more newsworthy in large sections of the popular media and it is not surprising that air pollution has for a lot of people become synonymous with carbon dioxide emissions.

Yet insufficient focus on air quality has led to some shocking statistics coming from almost every nation and few countries able to claim cleaner air above their cities today compared to ten years ago. The challenge for geographers is not only how to raise the need for clean air up the political agenda but also how to come up with new and inventive solutions to the increasing levels of particulates in our homes and skies without compromising the economy of our cities. This all needs to be done in a viable and meaningful timeframe so that future generations are not overwhelmed by the legacy of poor air management that we seem set to leave.

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### **Fred Pearce (Environmental Consultant for New Scientist magazine)**

It is all too easy to think of air pollution as a problem of 'other places': we walk around developed cities like London and we do not necessarily associate it with the smog and industrial smells of the likes of Shanghai or Mumbai. Yet one should not forget that it was only around sixty years ago that London experienced the last prolonged bout of 'pea souper' days; days where the fog, pollution particulates and poisonous gases such as sulphur dioxide, combined to create a very thick smog in the air. This smog was so thick that one could not see through it and breathing in the smog became highly hazardous to health. In fact, the Great Smog of December 1952 is estimated to have killed five thousand people prematurely. This led to the passing of the 1956 Clean Air Act which banned the burning of coal domestically.

Yet today in Britain's large cities, we still house an invisible killer. Thousands die prematurely in the UK (often unnoted), from the inhalation of emissions from diesel vehicles. Governance has previously focussed so comprehensively on carbon dioxide emissions, and meeting international targets for greenhouse gases, that we are left to question whether other forms of emission have been missed from off the agenda and whether, as a result of this, our collective health is now suffering.

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### **Professor Frank Kelly (Professor of Environmental Health at Kings College London)**

London has a history of coal fired power generation with major, river side plants in Deptford, Bankside and Battersea to name a few (all now long disused). The poor quality coal that was burnt produced a lot of sulphur dioxide and soot; emissions that were delivered straight into the parts of London where a lot of people lived. The introduction of the Clean Air Act in 1956 tackled these two pollutants, almost down to trace levels. So this is a perfect example of how public policy became a game changer for the quality of London's and indeed all UK cities' air.

However we should not be complacent and too self-congratulatory about this achievement: the problem had not really gone away and we are now experiencing a modern type of pollution in our cities. We can sometimes see London bathed in brown smog, where the pollution levels build up due to poor air flow and dispersal. On these smog days there is a visible spike in the number of hospital admissions and in the number of people requiring medication for breathing

problems. Yet really we should be worried about all the other days when the pollution is invisible at ground level. This is made up of noxious gases such as nitrogen oxides and ozone as well as particles that are exceptionally small compared to those experienced in the 'pea souper' days: the largest particles stand at ten microns and six of these would fit across the width of a human hair. However the smaller and more common particles are just 2.5 microns in diameter: twenty four times thinner than a human hair. The new challenge is tackling this new form of pollution which comes largely from the combustion engine in driven vehicles.

Buses and taxis are now all diesel powered – a move came as a result of rising fuel prices and carbon dioxide emissions. In 2001, one in ten new cars was registered for diesel fuel use – by 2012 this figure has risen to six in ten. When these diesel emissions are mapped over London, it is little surprise that the inner boroughs, where transport networks converge, show the highest levels of pollutants. What might be a surprise is to see that all of inner London is showing nitrogen dioxide levels above the EU limit for health.

The effects of these levels on human health were examined by the Committee on the Medical Effects of Air Pollution (COMEAP). They found that particulates generated by humans are responsible for around twenty nine thousand deaths in the UK each year which is the equivalent of a loss of six months from one's life expectancy.

Modern policies have the potential to help this problem. The creation and extension of the Congestion Charge and Low Emission Zones had the intention of making London less polluted. However they do not attack the scale of the challenge and a lot more needs to be done. Some of the strategies that can (in combination) help to lower pollutant levels are

- Bus improvement programmes
- Better integrated transport links
- Best Practice Guidance for the construction industry
- Safer cycling lanes
- Pedestrian only zones or streets

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## James Thornton (CEO at ClientEarth)

ClientEarth is working to bring greater power to a number of issues including human health and the environment, a topic they have been working on improving over the last seven years. Initially, none of the major organisations within the UK were actively trying to reduce their air pollution, laying the foundations for ClientEarth to make a possible court case. With the EU having established standard acceptable levels of different pollutants and timetables for adjustments to these standards to happen, ClientEarth saw the law as a straightforward thing to police, but in fact few of the EU laws on pollution were being followed at all by anyone.

ClientEarth initially sought to sue the UK government as it was in breach of the 2010 air pollution limit for nitrogen dioxide. Citing the EU law as being vague, the UK government looked to only start complying with the law at the last possible point in the deadline, contradicting the very formation of the law of which the UK had been part. ClientEarth took the case to the Supreme Court, whose judges found their hands tied over it. It is highly unusual in European courts to pass a judgement against the state, but it was realised that if national governments found air pollution law 'inconvenient' it created a precedent for them to also disregard other forms of law, environmental or otherwise. This made the case quite monumental in environmental law and ClientEarth found themselves fighting not just for UK compliance but a revision of

the whole environmental legal system. The decision on the solution to this problem has now been passed to the European Court who at the time of writing, in November 2014, will be deciding on the fate of this case.

ClientEarth has its own perception of how the law on air pollution limits should be implemented across Europe. Firstly they believe that the law needs to state that action should be taken by national governments as soon as physically possible and that governments need to write a plan to show how they intend to lower their emissions and comply with the standards. Governments should also be guided in this matter via a number of EU decided options – governments can then be encouraged to select from this list in order to write their action plan and specific support can be given to them. ClientEarth are now looking towards other EU cities, such as Krakow who have a strong relationship with coal fired power plants, to see if they are complying with the law and hope that this test case will create a stronger climate for air quality reform.

ClientEarth see this type of reform as a good reason to stay in the EU. With all environmental law coming from Brussels, citizens of all EU countries will potentially be able to hold their governments to account over their level of compliance.

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## **Sarah Collins (Founder and CEO of Wonderbag)**

A Wonderbag is a portable, non-electric, affordable, fabric slow cooker for people from all economic backgrounds. It is a heavily padded bag, into which a cooking pot, which has been brought to boil conventionally, can be placed. Over the next eight hours, the meal can complete its cooking time inside the insulated, heat retaining bag, reducing fuel use and the time required to oversee meal preparation. Designed initially for use in homes where access to power is limited or sporadic, the Wonderbag has now also become a symbol for those trying to reduce their carbon emissions domestically, reduce their fuel bills and most importantly in the context of this challenge, reduce the indoor air pollution which characterises many kitchens in developing countries as a result of open flame charcoal and wood burning cooking stoves.

The Wonderbag has caused proven reductions in smoke inhalation and its associated diseases in African homes by taking the total cooking time for an average household down to less than an hour a day. It has been seen how the Wonderbag has empowered mothers to be more entrepreneurial and gain greater abilities to earn as well as reduce the amount of time a day women and girls are collecting firewood, which in turn has a positive impact on the level of deforestation in an area. A further knock-on effect is that girls' time is freed for studying and attending school.

Three billion people globally cook on open fires every day and more than four million people a year die prematurely due to the harmful effects of indoor air pollution. With these statistics one can see why there is a need to act quickly to reduce the prevalence of smoke related diseases. However these statistics have been around for a long time: at the turn to the twenty-first century these same numbers were being quoted but only in 2010 was the 'Global Alliance for Clean Cookstoves' formed to address these issues. Many 'cooking solutions' have come and gone, and one reason why so many have not succeeded in the long term was because they involved foreign companies trying to provide an answer in an 'aid' based framework. In this sense Wonderbag is somewhat different because it is used by people of all backgrounds in many different countries – in fact the company operates a 'buy-one, donate-one' selling model. It also uses simple and traditional technology: slow cooking itself is anything but a new concept.

The problem is trying to reach the three billion people cooking on open fires as quickly as possible and Wonderbag sees the solution coming from big businesses and corporate enterprises that are increasingly looking to improve their position of responsibility with regards to sustainability. So instead of fighting capitalism, one solution could be to join with business to make the system work for all.