Media release

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New research - Health damage from cars and vans costs £6 billion per annum to NHS and society

- ***The cost of the damage to our health caused by the average car in inner cities over its lifetime on the road is £7,714 per car. For diesel cars, the figure rises to £16,424***
- ***If every new car in 2019 were electric it would save more than £325 million in health costs in the first year***
- ***London's vehicles top "league table" of worst cities, with cars costing NHS and society £650 million per year***
- ***Swapping 1 in 4 car journeys in urban areas for walking or cycling could save over £1.1 billion in health damage costs per year***

In advance of this year's Clean Air Day researchers at the University of Oxford and University of Bath have produced new research - "*Health costs of air pollution from cars and vans*". The researchers found that the health damage effects associated with diesel vehicle emissions are around 20 times greater than electric vehicles and at least five times greater than those associated with petrol vehicles. Exposure to $PM_{2.5}$ and NO_x is linked to an estimated 40,000 early deaths.

The researchers' in-depth analysis has found for the first time that the health impact costs are significantly higher for diesel cars and vans compared to petrol, hybrid or electric vehicles over their 14 and 9-year lifetime. In inner city areas such as inner London:

- Average cost to the NHS and society of a car is £7,714
- The health damage cost from diesel cars is £16,424 and vans £24,555
- Battery electric cars and vans are as little as £827 and £1,443 – the lowest cost
- Petrol damage costs are £2,327 and £10,101 for cars and vans, respectively
- Petrol hybrids cars have a damage cost of £1,824
- Nearly 90% of the total £6 billion bill caused by emissions to the NHS and wider society comes from the impact of diesel emissions

Coordinators of Clean Air Day, the charity Global Action Plan, have also produced a league table of English regions that contribute the highest and lowest costs of vehicles to the NHS. London and Birmingham top this league table with London's vehicles bill to the NHS totalling £605 million per annum, and Birmingham £150 million per annum.

Chris Large, Senior Partner, Global Action Plan said: "This report clearly illustrates the true cost of air pollution from each petrol and diesel car and van, particularly in inner cities. Swapping 1 in 4 car journeys in urban areas for walking or cycling could save over £1.1 billion in health damage costs per year. Switching 1 million cars from diesel to electric would save more than £360 million per year in health costs from local air pollution. This demonstrates the impact that people's individual choices can have, so we would look to the government to use Clean Air Day as a springboard for year round public engagement through it's new clean air strategy."

Dr Alistair Hunt, Lecturer in Environmental Economics, University of Bath said: "Our research for the first time illustrates the individual cost that each car and van has on the NHS and wider society. Every time these vehicles are driven, they are having a significant impact on our health, equivalent to £7,714 for an average inner London car over its lifetime."

Dr Christian Brand, Associate Professor, University of Oxford and UK Energy Research Centre, said: "Cars and vans are responsible for 10,000 early deaths each year, and diesel vehicles are the main problem unfortunately. The valuation of health effects associated with diesel vehicles are at least five times greater than those associated with petrol vehicles, and around 20 times greater than battery electric vehicles. These results raise important questions as to how best to develop effective and fair air quality and transport strategies in urban areas."

This Year's Clean Air Day will show us the steps we can all take to protect ourselves and our families from air pollution and how we can improve the air that we breathe. Whilst converting from diesel to petrol cars could be seen as a way to reduce air pollution it still increases carbon emissions and so does not solve the local air pollution problem. Therefore, if we try an alternative way to travel on Clean Air Day, whether it's walking, cycling, taking public transport, or test driving an electric vehicles, we can all take an action to make a difference.

2018's Clean Air Day on 21 June will create a groundswell of action bringing thousands of people together to make UK cities cleaner and healthier. It will provide guidance on the actions people can take today to reduce the air pollution they create and advice on what they can do to protect themselves and their families in the future.

This research for the first time generated location-specific per vehicle costs calculated for cars and vans. They used the DEFRA and COMEAP impact analysis, alongside fleet make up, pollutant emissions and miles driven to create a robust model of individual vehicle damage costs.

Notes to Editors

- Global Action Plan, a charity inspiring practical action for our environment, are the organisers of Clean Air Day. For more information on Clean Air Day please see below
- Media interviews - please contact:
    - Kate Hinton – kateahinton@gmail.com / 07714 708416
    - Zoe Sobol – zoe@snowballpr.co.uk / 07971066034
- The research, "*The health costs of air pollution from cars and vans*" was conducted by Dr Christian Brand, Senior Research Fellow and Associate Professor

at the Environmental Change Institute and Transport Studies Unit, University of Oxford and UK Energy Research Centre & Dr Alistair Hunt, Lecturer in Environmental Economics, University of Bath.

- In addition the research was peer reviewed by Prof Prashant Kumar, Professor and Chair in Air Quality and Health; Founding Director, Global Centre for Clean Air Research (GCARE), University of Surrey; and Dr Abigail Whitehouse, Clinical Research Fellow at Queen Mary's Blizard Institute
- Research Methodology:
    - The research for the first time generated location-specific per vehicle costs calculated for cars and vans. They used a 'bottom up' DEFRA damage cost approach alongside fleet make up, pollutant emissions and miles driven.
    - Using the most complete data from 2015 across all data sets (Defra damage costs incl. the VOLY valuation of life, NAEI national air pollution emissions, DfT and ONS vehicle statistics) they were able to produce for the first time per car / van figures based on fuel type (diesel, petrol, petrol hybrid and battery electric vehicle) and location (rural-inner city). This approach focuses on two pollutants (NO2 & PM) and their proximity to people but is limited by only focusing on two health issues (cardiac and respiratory) and does not account for all treatment costs (A&E and GP consultations). If a Valuation of Statistical Life (VSL) were used it could produce health damage costs a factor of 4 higher than the Value Of Life Years (VOLY) methodology used within the Defra damage costs. Overall the figures produced in this report are considered conservative.
    - For a full copy of the research report please see link - cleanairday.org.uk/the-health-costs-of-air-pollution-from-cars-and-vans/
- Key figures in the media release and the research report:
    - Health damage of cars and vans costs NHS and wider society £6 billion is a new figure taken from the research "*The health costs of air pollution from cars and vans*". Previous figures such as the £22 billion figure produced by the RCP and RCPH 'Every Breath We Take' report provided the overall cost to the NHS and society from all sources of pollution.
    - Global Action Plan's alternative scenarios of reducing 1 in 4 urban journeys, switching all new cars to electric vehicles, and replacing 1 million diesel vehicles with electric vehicles have been calculated based on publicly available data for the numbers of licensed vehicles and drawing on the health costs associated with different fuel and region types from the research "*The health costs of air pollution from cars and vans*".

    - Global Action Plan's alternative scenarios detailed figures:

        - ***Swapping 1 in 4 urban car journeys*** - The savings associated with swapping 1 in 4 urban car journeys is based on reducing the annual health costs associated with urban car journeys in England across all fuel types (diesel, petrol, ULEV) by 25%.

        - ***If every car next year were EV***- The savings associated with all new cars next year being electric vehicles has been based on the total number of cars in England, and with cars having a typical lifespan of 14 years, 7% of those cars being replaced next year.

        - ***1 million cars to EV -*** the annual savings associated with swapping 1 million diesel cars to Electric vehicles is based on the difference

between the average (high) health costs for diesel vehicles and battery electric vehicles, based on a typical car life of 14 years.

Global Action Plan league tables of the highest health costs from cars in England

Table 1

The following table provides an overview of the ranked urban areas[1] in England based on information from vehicle licensing statistics from the Department of Transport[2] that indicate the number of cars registered to that area. The health costs have been extrapolated based on the academic health figures per vehicle, the number of vehicles licensed in the regions by fuel type and their rural/urban status.

	Region	Total annual health cost from cars
1	London	£650,415,549
2	Birmingham	£149,705,369
3	Leeds	£76,642,262
4	Milton Keynes UA*	£76,320,631
5	Swindon UA	£56,959,390
6	South Gloucestershire UA	£49,453,610
7	Peterborough UA	£48,925,453
8	Slough UA	£42,403,509
9	Sheffield	£38,587,781
10	Cheshire East UA	£37,959,860
11	Bradford	£37,812,501
12	Kirklees	£34,451,043

13	Cheshire West and Chester UA	£33,588,184
14	Doncaster	£30,671,666
15	Wakefield	£30,443,417
290	Melton	£1,301,133
291	Purbeck	£1,104,914
292	Rutland UA	£1,022,034
293	West Somerset	£902,363
294	Isles of Scilly UA	£19,035

*UA = Unitary Authority

Table 2
When it comes to the average health costs per car by English urban area (below), the results are fascinating, with Slough, Swindon and Peterborough scoring highest, ahead of London. London's figures are high as the health damage costs are most acute in urban environments, particularly in densely populated cities. But other regions have high per car figures based on the mix of vehicles licensed in those areas, with those areas with a higher percentage of diesel vehicles appearing higher on the list.

The Isles of Scilly ranks low on this table because nearly 10% of its vehicles are ultra low emission vehicles - compared to the national average of around 0.5%.

The average health cost per car is determined using the average health cost for the region, and the total number of cars licensed to those areas.The academic study assumes an average 14 year life span of a car, which gives the difference between the per car per year, and per car over lifetime values.

	Region	Average health cost per car per year	Average health cost per car over car lifetime

1	Slough UA	£252.75	£3,538.49
2	Swindon UA	£251.19	£3,516.66
3	Peterborough UA	£248.10	£3,473.43
4	All London	£244.10	£3,417.37
5	Milton Keynes UA	£234.42	£3,281.94
6	Birmingham	£227.08	£3,179.19
7	Doncaster	£210.63	£2,948.77
8	Cherwell	£210.33	£2,944.68
9	South Gloucestershire UA	£205.96	£2,883.41
10	Rushmoor	£205.25	£2,873.52
11	Carlisle	£204.77	£2,866.79
12	Pendle	£202.48	£2,834.69
13	Leeds	£201.90	£2,826.55
14	North Lincolnshire UA	£201.02	£2,814.33
15	East Staffordshire	£199.88	£2,798.32
234	Tendring	£39.11	£547.47
235	Wealden	£39.08	£547.15

236	Rother	£38.28	£535.86
237	Isles of Scilly UA	£35.85	£501.86
238	Isle of Wight UA	£33.34	£466.74

Reference sources for table 1 and 2:

[1] Regions have been classed as Rural, Urban or Inner London using the governments Rural Urban classification,
https://www.gov.uk/government/collections/rural-urban-classification
[2] Department of Transport, Tables VEH0105 and VEH0132,
https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01

UK's Clean Air Day, Thursday 21 June 2018

In 2017, Clean Air Day was the number one trend on Twitter and reached over 85 million opportunities to view across the UK. In 2018, Clean Air Day is set to engage even more!

*****EXCLUSIVE INTERVIEWEES, DATA AND ASSETS AVAILABLE******

2018's Clean Air Day on 21 June will create a groundswell of action bringing thousands of people together to make UK cities cleaner, healthier. It will provide guidance on the actions people can take today to reduce the air pollution they create and advice on what they can do to protect themselves and their families in the future.

Air pollution is having a major impact on our health and Global Action Plan (GAP) is working in partnership with numerous UK city councils, NHS Trusts, the Royal Colleges universities and charities on the second nationwide Clean Air Day.

Available content

Ahead of the day we are compiling requests for data, interviewees, case studies, content and more. Available assets will include the following and more:

- Toxic School Run - results of new research led by Global Action Plan
- Cost of vehicles on the economy - results of research conducted Global Action Plan and peer reviewed by leading academics
- City case studies on activities being held in schools, hospitals and workplaces
- Health spokespeople from the Royal Colleges
- Call to action: – We'll be asking everyone to leave their cars at home for the day and walk, cycle or take public transport to school or work

To secure your assets please contact:

Zoe Sobol – zoe@snowballpr.co.uk / 07971066034
Kate Hinton – kateahinton@gmail.com / 07714 708416

Further information

Global Action Plan are the co-ordinators of Clean Air Day. https://www.globalactionplan.org.uk/

Global Action Plan brings people together and inspires practical environmental action. They collect the impact of people's actions and share their stories, so more people are inspired to change. They deliver national and global programmes, through a network of local delivery teams in over 24 countries, from The United States and UK, to Hungary. Global Action Plan works with many kinds of organisations, from leading FTSE100 multi-national companies and the NHS, to local schools and community bodies. They see people as part of the solution, not part of the problem, when it comes to creating an environmentally sustainable world.