

Technical summary

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Deprived communities experience disproportionate levels of environmental threat

R&D Technical Summary E2-064/1/TS

Deprived communities suffer the worst air quality, and are more likely to live on tidal floodplains and near to polluting industrial sites, according to new research by the Environment Agency. The analysis used the Government's Index of Multiple Deprivation and data on air quality, flooding and facilities regulated by the Agency under Integrated Pollution Control (IPC) systems, to examine the relationship between environmental quality and social deprivation. The researchers found that:

Highlights

- Deprived communities suffer the worst air quality.
- IPC sites are disproportionately located in deprived areas in England.
- Tidal floodplain populations in England are strongly biased towards deprived communities.

Policy Background

There is increasing recognition of the links between poverty and the environment and that the poorest communities live in the worst environments. Indeed, in his speech on sustainable development in February 2003, the Prime Minister noted that "the environment, not just globally, but locally, in our towns and cities, is overwhelmingly an issue of concern for the poorest citizens in our communities".

This unequal distribution of environmental bads (such as pollution and flooding) and goods (such as access to greenspace) across society highlights the need to bring together environmental, social and economic policy objectives under the banner of 'environmental justice' or 'environmental equality'. With substantial gaps in the UK evidence base, these issues have been inadequately understood and remain a relatively uncharted area of policy.

Research Objectives

With these issues in mind, the Environment Agency set out to examine the relationship between environmental quality and social deprivation. The research aimed to inform the Environment Agency's approach to addressing environmental inequalities and the wider debate on environmental justice, regeneration and social inclusion.

Findings

The research found that:

- There is growing political and governmental attention being given to environmental equity issues within the sustainable development agenda.
- Empirical evidence of environmental inequalities is weak in the UK; with limited coverage of environmental issues, conflicting conclusions and little attempt to understand the socio-economic processes affecting them.
- There is considerable value in developing further analysis of the links between environmental quality and deprivation, which would help improve the current knowledge base, policy development and the quality of life of deprived communities.
- A review of sustainability indicators, Environment Agency objectives, issues associated with environment equality and discussion with stakeholders identified three priorities for further analysis: air quality, IPC sites and flood hazard. The analysis found that:



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- **Deprived communities suffer the worst air quality.** In England, the most deprived wards experience the highest concentrations of nitrogen dioxide (NO₂), fine particulates (PM₁₀), sulphur dioxide (SO₂), carbon monoxide (CO), and benzene. People in deprived wards are exposed to 41% higher concentrations of NO₂ than those people living in wards of average deprivation. There are also clusters of wards that have poor aggregate air quality and high deprivation in London, Manchester, Sheffield, Nottingham and Liverpool.
- **IPC sites are disproportionately located in deprived areas in England.** There are five times as many sites and authorisations, and seven times as many emission sources located in the most deprived wards. In deprived areas, IPC sites are: more clustered together; on average produce greater numbers of emissions; present a greater pollution hazard; produce more 'offensive' pollutants; produce higher emissions of PM₁₀ and carcinogens.
- **Tidal floodplain populations in England are strongly biased towards deprived communities.** There are eight times more people in the most deprived 10% of the population living in tidal floodplains, than the least deprived 10%.

However, this analysis only shows evidence of inequalities in relation to *proximity* to IPC sites and flood plains. What we don't know yet is the *relative exposure to hazard or level of risk*. It is not clear what this means for people's health in deprived areas. There is also a need to examine the effects of cumulative pollutant impacts on vulnerable communities and look at other environmental issues, such as waste, which showed the strongest correlations with deprivation of IPC sectors examined.

Recommendations

In addition to specific actions for policy and research on air quality, IPC and flooding, the researchers recommend that the Agency should:

- Continue to support efforts to further understand the nature and significance of the social distribution of pollution and risk;
 - Appoint a technical working group on environmental equity appraisal;
- Work with government, local authorities, and other appropriate stakeholders to ensure that environmental equity assessment becomes more widely adopted in the environmental impact appraisal process;
- Identify critical 'pollution-poverty' areas so as to identify those communities most in need of remedial action;
 - Develop ways of engaging and working with communities in deprived areas to ensure that their local knowledge and viewpoints are included in decision-making;
 - Undertake further research examining additional environmental and social variables, processes of

causation and the effectiveness of potential intervention strategies.

The R&D Technical Summary relates to information from R&D Project E2-067/1 reported in detail in the following outputs:

R&D Technical Report E2-067/1/TR:
Environmental Quality & Social Deprivation.

ISBN 1 8443 221 9

R&D Project Record E2-067/1/PR1:
Environmental Quality & Social Deprivation – Phase I:
A Review of Research & Analytical Methods

ISBN 1 8443 22 22X

R&D Project Record E2-067/1/PR2:
Environmental Quality & Social Deprivation – Phase II:
National Analysis of Flood Hazard, IPC Industries and
Air Quality

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Copies of these documents are available internally from the National Information Centre in Bristol, and externally from the Environment Agency's R&D Dissemination Centre, c/o WRc Information Resources, Frankland Road, Blagrove, Swindon, Wiltshire SN5 8YF, Tel: 01793 865138, Fax: 01793 514562. Website URL: www.eareports.com

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