

**INTARESE**  
**Work Package 1.5**

**Environmental Justice, Health and Emerging Policies**

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## *Section 1 What is Environmental Justice and how does it relate to health?*

It is now commonly understood that much of the worldwide burden of environmental ill health falls disproportionately on poorer peoples (United Nations Environment Programme 2002; UNICEF 2005). There is also substantial evidence that much environmental damage internationally is the result of the actions of richer nations or richer groups within nations – with impacts on poorer nations and poorer groups within nations (World Resources Institute 2002). Environmental Justice is a concept that links environmental health to rights debates around access to a healthy environment. It fundamentally deals with the distribution of environment goods and harms – and looks at who bears those harms and who is responsible for creating these harms, in both a practical sense but also in terms of policy decisions. It is a radical environmental health movement that has evolved from civil society groups, angered at what they perceive as the “unjust” distribution of environmental resources for health and, conversely the “unjust” distribution of environmental harms. The movement now includes a collaboration of non-governmental organisations with environmental scientists, public health professionals, and lawyers, all working on the issue of the distributions of environmental harms and the rights of everyone to a healthy environment. This chapter describes the concept of environmental justice; it discusses examples of environmental justice internationally, and concludes with a brief discussion on current policy frameworks.

### **Origins of Environmental Justice – born in the USA**

Environmental justice originated in protests in the 1980's by community groups in the USA against the repeated siting of polluting factories and waste sites in predominantly black neighbourhoods and indigenous peoples' reservations. Civil rights protestors highlighted the disproportionate burden of negative environmental impacts these caused for the most vulnerable sectors of society.

In 1994 the issue reached the White House when President Clinton issued Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This order reinforced the Civil Rights Act of 1964 by requiring federal regulatory agencies to ‘make environmental justice a part of all they do’ (Bullard 2001; United States Environmental Protection Agency 2003).

During the 1990’s the environmental justice movement developed in the UK and Europe. There, the focus became less centred around racial minorities and more specifically linked to social inequality; specifically the disparities between environmental conditions experienced by the richest and poorest sectors of society.

In Latin America, Africa and Asia, individuals, community groups, NGOs and academics are also actively involved in tackling environmental health problems that would be described in Europe or the USA as environmental justice issues.

### **Defining environmental justice**

Environmental justice is generally defined as a set of rights – that should be aspired to, sought after or demanded, in terms of both substantive conditions for environmental health, and of procedural rights – principally including access to information and decision-making. Two definitions provide examples. The US Environmental Protection Agency defines environmental justice as:

‘... the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and

policies. Meaningful involvement means that: (1) potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) the concerns of all participants involved will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected.'(US Environmental Protection Agency (USEPA) 1998)

The Scottish Executive (2005) defines environmental justice in similar terms:

‘The first is that deprived communities, which may be more vulnerable to the pressures of poor environmental conditions, should not bear a disproportionate burden of negative environmental impacts.

The second is that all communities should have access to the information and to the means to participate in decisions which affect the quality of their local environment.’(Scottish Executive 2005)

Friends of the Earth Scotland, the UK NGO that led the way on EJ in the UK summarised it simply as ‘No less than a decent environment for all: no more than a fair share of the Earth’s resources’(Friends of the Earth Scotland 2003) , which highlighted the need for justice both locally and globally.

Environmental justice has also been conceived in terms of rights and responsibilities. For example, Stephens *et al.* identify two key assertions of environmental justice as:

‘that everyone should have the right and be able to live in a healthy environment, with access to enough environmental resources for a healthy life’

‘that responsibilities are on this current generation to ensure a healthy environment exists for future generations, and on countries, organisations and

individuals in this generation to ensure that development does not create environmental problems or distribute environmental resources in ways which damage other peoples health'.(Stephens C, Bullock S et al. 2001)

### **Environment Justice and Health Inequality**

Environmental inequality is a key part of environmental justice. In effect it is a step back or precondition for injustice to occur. Inequality is a descriptive term. Conceptually, to observe or claim an environmental inequality is to point out that an aspect of the environment is distributed unevenly amongst different social groups (differentiated by social class, age, ethnicity, etc). There can be different degrees of inequality depending upon how skewed the environmental parameter is towards or away from the social groups of concern. In addition, this can encompass:

- Negative aspects of the environment such as exposure to pollution
- Positive aspects such as access to green space
- Procedural aspects such as access to information or decision-making processes

However, the crucial point is that an inequality is different to an injustice or inequity. It does not necessarily follow that because a distribution of an environmental good or bad is unequal it is also unjust or inequitable. An evaluation or judgement has to be made to progress from inequality to injustice and, as theories of justice make clear, substantially different perspectives can be taken (Young H P 1994; Stephens 2000; Liu 2001).

Factors that may be relevant in considering the case for an environmental injustice include:

- the degree of inequality that exists;
- the degree to which individuals have been able to exercise choice in their exposure to an environmental good or bad;
- whether or not an inequality has been created through the exercising of power by a public or private body (e.g. in taking facility siting decisions);

- whether or not a pattern of inequality is combined with other patterns of inequality (an accumulation of unequal impacts), or with a higher degree of vulnerability or need amongst a social group, when compared to others;
- the degree to which those exposed to an impact or risk also have a role (direct or indirect) in, or benefit from, its creation.

### **Broadening the concept**

Since its development in the USA, the conceptual boundaries of environmental justice have extended beyond local level issues. A number of different elements or interrelated component parts of environmental justice can be identified from the range of definitions that exist (see Box 1)

Whilst some people may recognise all of these component parts within their working definition or framing of environmental justice, others take a more restricted or focused view. There are also differences in the extent to which environmental justice is seen as only encompassing core environmental issues or extending – within a broader sustainability perspective – to include quality of life and social issues that have environmental dimensions to them.

### **Environmental Justice and health**

Health is a key component of environmental justice, and is a key reason why the environmental justice movement developed. This section outlines some of the evidence of ways in which environmental justice and health are linked.

### **Negative environmental impacts**

Negative environmental impacts are not randomly distributed. Generally, poorer people live in worse environments. Environmental epidemiology provides evidence of direct causal relationships between exposure to environmental pollutants and negative health outcomes. Industrial or domestic processes on a local or international scale may produce

pollutants, with health outcomes ranging from mild skin irritation to death. This exposure-outcome relationship is affected by many socio-economic factors that are treated as possible confounding factors in epidemiological analysis. Within a population group some individuals or groups are more likely to be exposed than others due to the location and conditions they live and work in.

There will be varying levels of awareness about the possible negative effects of exposure, and varying capacity to prevent it. People with existing illness or previous exposure may be more vulnerable. Some people will have good access to diagnosis and treatment facilities, others will have none. These inequalities, a complication for environmental exposure-health outcome analysis, contribute to unequal distribution of risk. An environmental justice perspective also considers who is responsible for creating environmental hazards, who benefits from the process which creates them, and who is most at risk.

Even in wealthy regions such as Europe, routine environmental exposures affecting child health such as transport-related pollution and housing, occur without citizens being able to access environmental policy for justice. Further, despite advanced worker protection fought for over this century, conditions are deteriorating for low-income workers and increasing numbers are excluded from the workforce (Navarro 1999; Stephens and Bullock 2000; Social Disadvantage Research Centre 2004). In addition, internationally, past environmental crises such as Chernobyl, and Bhopal, have all occurred despite well developed constitutional, environmental and human rights legislative frameworks at national and international levels dating back in some cases to the middle of the 20<sup>th</sup> century (Stephens and Bullock 2000; Broughton 2005)

### **Access to environmental resources: a healthy environment**

Another key aspect of environmental justice is the right of all people to environmental resources for healthy living. Epidemiologists do not work on this aspect of environmental justice extensively, but it is a critical part of the environmental justice equation. People need access to a range of environmental and social resources to be healthy:

- Physical needs: shelter, heat, food, clean air and water
- Economic needs: transport infrastructure, work, shops
- Aesthetic, mental and spiritual needs: green space, quiet, access to countryside.

Access to these resources is highly skewed, both internationally and within countries. Poorer groups are less likely to have reliable access to safe drinking water, healthy sources of food and transport infrastructure necessary for education and employment – even within wealthy nations and regions. In addition, richer countries access important environmental resources of poorer nations while peoples in those nations do not benefit and are sometimes harmed. For example, The UK consumes large quantities of raw environmental resources - metals, wood, oil and minerals - which are mostly imported. Oil is an important example – communities in oil producing countries are increasingly concerned about environmental and health damage caused by resource exploitation and there is evidence accumulating about the distribution of health impacts and development benefits associated with this resource (San Sebastian and Hurtig 2004; San Sebastian and Hurtig 2005).

Another aspect of this debate is the global inequality in consumption of the world's resources. For example, a report for the World Economic Forum highlighted that the UK's 'ecological footprint' - the total amount of land a country is appropriating in order to support its economy, is equivalent to an area over ten times the size of the UK, the 8<sup>th</sup> worst out of 122 countries surveyed. The UK has a net deficit of 4.5 hectares per person (World Economic Forum 2001).

### **Intergenerational Justice**

Even if everyone today lived in a healthy environment, environmental justice would not



be done if this were achieved at the expense of people in future generations. Stephens, Bullock and Scott (2001) identified four types of actions contributing to injustices across generations including:

- activities that impose costs on future generations without any balancing of benefits: nuclear waste will have to be managed for thousands of years; toxic waste that impacts on health of future generations.
- reducing the ability of the environment to provide non-substitutable resources and services (what environmental economists call ‘critical natural capital’)
- creating on-going negative environmental impacts: for example climate change is predicted to become more severe in its disruptive effects over the coming centuries
- using technologies with unknown and unexplored potential long-term effects – for example, there is limited scientific understanding of the long term health and environmental impacts of the vast range of chemicals we use daily

There is a significant tension within environmental justice – how do we reconcile these different aspects of environmental justice? There is no easy answer and the second thread of environmental justice theory – dealing with procedural justice, does not make the case any less complex.

### **Substantive and procedural EJ**

Substantive injustices are caused in part, by procedural injustices. Access to information can be a major barrier for individuals or communities tackling environmental justice issues. People seek information from scientists, industry, regulators, legal advisors – all of which may be complicated or expensive to acquire and difficult for non-experts to interpret. For example, waste disposal policies are not designed to hurt poorer communities, but can through the decision-making process if wealthier groups can access decisions more easily and avoid perceived harm. This aspect of environmental justice is known as procedural justice.

Box 2, for example, shows the debate within the UK on location of waste incineration plants. Poorer communities, and ethnic communities face worse social, economic and environmental conditions, but this can be linked to their inability to access decision-making processes. There are gender differences in environmental exposures and impacts: for example poor housing conditions affect women – particularly single mothers and their children. Children overall, and elderly people are often more greatly affected by environmental policies than adults of working age (Rajeev Gowda and Easterling 2000; Powell and Stewart 2001). Within the working population, there are great differences in environmental exposures, with lower income workers employed in occupations with higher exposure to hazards, on lower incomes and in greater insecurity of employment.

A substantial and fast developing part of work that defines itself as part of Environmental Justice is about ensuing access to legal systems. There are a growing number of national NGOs for whom environmental law is their main focus as well as international networks such as Justice & Environment and EarthJustice.

## ***Section 2 Environmental Justice – some current examples***

### **Local Injustice**

At a local level - the original focus of the environmental justice movement – examples of environmental injustice are most frequently linked to industry and decisions made by local and national government. Siting and regulation of manufacturing industries, waste disposal sites, energy extraction and production facilities can cause or contribute to environmental injustice with negative effects on local people's health (Wing, Cole et al. 2000; Faber and Krieg 2002; Wilson, Howell et al. 2002; Friends of the Earth Scotland 2003). These situations can arise quickly or over decades.

Box 3 shows cases of such local environmental justice. It is notable that each is linked to a wider justice issuer related to consumption of the products of each of the industrial

processes. The people who experience the local harms are not the people who benefit from the resources produced.

### **International and intergenerational EJ – what rich countries do to poorer ones and what we all do to future generations**

Perhaps the biggest environmental justice issue to emerge in the early 21<sup>st</sup> century is linked to our global development process and the sharp injustices of unequal consumption patterns and unequal impacts of the environmental burden of such patterns on both poorer peoples in poorer nations and on future generations. Climate change impacts have emerged as a key environmental justice issue for almost every international and national policy body. As a senior observer in the UK commented in 2007:

*- ‘we’ve got this problem that the most impacted people are in the developing world who are a) less able to adapt and b) not responsible for the problem. We are so connected now, across the globe, that we will be affected by environmental change wherever it occurs’ Prof Peter Cox, University of Exeter and the Met Office.(Cox 2007)*

Map 1 shows graphically how our world looks when the proportional size of pollution impacts are scaled to a map of the world.

A recent report for the International Panel on Climate Change noted that ‘On aggregate, it was estimated that climate change may already (by 2000) be causing in the region of 150 000 deaths (0.3% of global deaths per year) and 5.5 million lost DALYs/year (0.4% of global DALY<sup>4</sup>s lost per year). Even taking into account increasing wealth and some level of behavioural and socioeconomic adaptation, the disease burden caused by climate change is likely to increase substantially over time. Overall, the effects are predicted to be heavily concentrated in poorer populations at low latitudes, where the most important climate-sensitive health outcomes (malnutrition, diarrhoea, and malaria) are already common, and where vulnerability to climate effects is greatest. These diseases mainly

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<sup>4</sup> Disability Adjusted Life Years

affect younger age groups, so that the total burden of disease due to climate change appears to be borne mainly by children in developing countries.’ (Haines, Kovats et al. 2006)

### **Procedural EJ – who gets access to decision-making and who is blocked from it**

A survey of access to information, participation and justice in environmental decision-making was carried out in nine countries – Chile, Hungary, India, Indonesia, Mexico, South Africa, Thailand, Uganda and the United States - in 2001-2002.(PETKOVA, MAURER et al. 2002) Researchers found that:

- Access to justice is hampered by unclear laws
- Access to justice is constrained by limited mechanism for redress
- High costs are an effective barrier to access to justice

Even in countries where democracy is argued to have existed for centuries, many of the most disadvantaged groups feel a sense of alienation from their rights to information or decision-making. For example, local campaigner Joan Higginson describes her communities’ experiences in Scotland (Friends of the Earth Scotland 2003): *‘There is very little redress as the system and structures that are in place do very little to support them. For instance there is an imbalance within the planning system that significantly favours the developer above the community. The developer has the right of appeal whilst the local community does not. Therefore the aggrieved party has no way to address the issue unless they can afford the exorbitant and unpredictable fees for a judicial review.’*

### ***Section 3 Toward environmental justice – emerging policy approaches***

The United States were the first country to recognise environmental justice as a term in national legislation (United States Environmental Protection Agency 2003). There are many other approaches to Environmental Justice at a national policy level, but few use

the phrase directly. A sizeable number of nations (such as newer post-Soviet ones) include a right to a safe and healthy environment within their constitutions. And it is these nations that they have tended to support the principles of the most promising piece of environmental justice policy to emerge within the last few years.

### **The Aarhus Convention - the European approach**

The Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters is the first international agreement that takes forward some but not all aspects of work on Environmental Justice. Image 1 shows the substantive and procedural aspects of the agreement. As its title suggests, the Convention contains three broad themes or 'pillars': access to information, public participation and access to justice. It applies to all countries within the European Union.

The United Nations Economic Commission for Europe (UNECE) describes the convention in the following terms: “The Convention adopts a rights-based approach. Article 1, setting out the objective of the Convention, requires Parties to guarantee rights of access to information, public participation in decision-making and access to justice in environmental matters. It also refers to the goal of protecting the right of every person of present and future generations to live in an environment adequate to health and well-being, which represents a significant step forward in international law. These rights underlie the various procedural requirements in the Convention” (United Nations Economic Commission for Europe 1999). The convention entered into force on the 30<sup>th</sup> of October 2001 and was hailed as a milestone of environmental democracy.

A secretariat body based at the UNECE office in Geneva is responsible for the implementation of the Convention. The ‘Aarhus Convention Compliance Committee’ is now able to receive submissions from NGOs and the public who have challenged decision-making and non-availability of information in their own nations (where these have ratified the Convention) and been unsuccessful. (United Nations Economic

Commission for Europe (UNECE) 2007) These are then considered and where appropriate discussed at the annual meeting of nations that are 'parties to the Convention'.

Some of the first appeals came through "Green Salvation," an NGO in Almaty, Kazakhstan). One concerned the failure of the national atomic energy company, Kazatomprom, to disclose information regarding its project for the importation and burial of low-level radioactive waste from foreign countries on the territory of Kazakhstan. The second appeal concerns the illegal construction of a high-voltage (110 kV) power line through the residential district of Gornyi Gigant within Almaty.

These and other cases provided the first tests of the Convention's compliance mechanism that found in 2005 that three countries -- Turkmenistan, Ukraine and Kazakhstan -- had failed to comply with certain provisions of the Convention. Moves towards compliance are continuing and the 'Aarhus Clearing House' set up by UNECE monitors activity and promotes good practice (United Nations Economic Commission for Europe (UNECE) 2007) .

The Aarhus convention is a new type of legislation – built on principles of environmental democracy. This makes it an interesting policy, but also a highly controversial one. UNECE describe the convention in aspirational terms: "The Aarhus Convention is a new kind of environmental agreement. It links environmental rights and human rights. It acknowledges that we owe an obligation to future generations. It establishes that sustainable development can be achieved only through the involvement of all stakeholders. It links government accountability and environmental protection. It focuses on interactions between the public and public authorities in a democratic context and it is forging a new process for public participation in the negotiation and implementation of international agreements". (United Nations Economic Commission for Europe (UNECE) 2007). Only time will tell if this agreement proves to be a useful approach for international environmental justice strategies.

## **Linking Environmental Justice and Emerging Risk Assessment models in the context of Sustainable Development**

There is a growing concern to create stronger links of the environmental justice movement with the global sustainable development community. The 2002 UN World Summit on Sustainable Development in Johannesburg saw calls from NGOs for a global right to a safe and healthy environment to be a central part of work on sustainable development but this failed to get agreement from governments.

One government which has directly included Environmental Justice in its' National Strategy for Sustainable Development (NSSD) is the UK. Every country who signed the 1992 UN Rio Declaration has committed to develop such a strategy and most have done so with varying degrees of commitment. This Strategy includes the approach of 'creating sustainable communities' as one element and this includes some limited commitments on tackling environmental inequalities:

“The Government will fund further research on the causes of environmental inequality and the effectiveness of measures to tackle it in order to establish the best ways to tackle these issues in communities... the Government will in the short term focus on improving the environment in the areas already identified as most deprived...”(Department for Environment Food and Rural Affairs (DEFRA) 2005)

These are promising moves but we are yet to see environmental justice as an explicit policy goal within sustainable development strategies at international level. The most promising work continues to take place at local level. Box 4 shows one example of this from London.

Although evidence indicates the presence of serious environmental health inequalities internationally, their basis, severity, distribution, causes and potential resolution remain largely under-explored by researchers working within environmental epidemiology and

risk assessment (Sexton, Olden et al. 1993; Reichhardt 1999; Roberts 2000; Wakefield 2003). More research is needed to assess the extent and causes of current environmental injustices, and their social and health impacts, in order to inform and shape this emerging political agenda. This challenges researchers to establish a cross-disciplinary body of new knowledge and new perspectives. Questions to be addressed include:

- How are environmental impacts and risks distributed socially and in terms of health?
- How can risk assessment processes be adapted to examine environmental justice issues?
- How is access to environmental resources socially distributed? Do any studies of environmental health inequalities provide new support for redistribution, and new ways of approaching redistribution?
- What are the causal processes leading to differential impacts and access to resources?
- To what extent are national policies and actions contributing to environmental injustice in other countries (cross boundary)?
- What are the implications for the UK of an international perspective? Are we ready, for example, for contraction, convergence and compensation?
- To what extent is there procedural justice in processes of environmental policy and decision-making?
- Are policy and legal mechanisms inclusive of different social groups?
- What governance responses can and should be made in response to evidence of inequity in environmental impacts and access to resources?

Health impact assessment (HIA) is a potential tool for environmental justice. It has been defined as ‘the estimation of the effects of a specified action on the health of a defined population’ (Scott-Samuel 1998). HIA is similar in principle to environmental impact assessment (EIA) and incorporates, to a lesser extent, elements of risk assessment. The UK government has recently shown a clear commitment here - all four UK national public health strategies referred to the necessity for health impact assessment of both national and local policies and projects. The 1998 Acheson report recommended ‘that as



part of health impact assessment, all policies likely to have a direct or indirect effect on health should be evaluated in terms of their impact on health inequalities, and should be formulated in such a way that by favouring the less well off they will, wherever possible, reduce such inequalities' (Acheson 1998). To date the UK government has agreed to this recommendation, but few HIAs look at distributional impacts. As policies processes advance in the field of environmental justice, there is a need to train those working in risk assessment and HIA to understand the concepts of environmental justice and to develop methodologies for its inclusion in analyses.

### *Conclusions*

Environmental Justice is still low on many policy agendas and perhaps even lower on the agenda of HIA and risk assessment professionals. This may be due to a lack of understanding on the part of scientists on how to incorporate EJ into their methodologies. The policy process may be slow due to a lack of capacity among those worst affected to engage on policy issues. Building capacity to engage is likely to be central to any long-term change in this area, and this is likely to help develop increasing links between those working on environmental issues and those engaged with social justice. This will gradually put pressure on risk assessors.

Environmental justice may also become an increasingly important issue as the impacts of global climate change are felt. Many likely 'climate refugees' are coming from poorer nations such as Bangladesh that have low carbon emissions themselves yet suffer disproportionately from the policies and practice of richer nations. Even within such poorer nations there are likely to be environmental injustices since poorer communities are often on more marginal land and may be more vulnerable to flooding and droughts.

At the same time, there is an emerging toolkit for governments, individuals and communities to use to implement environmental justice. New assessment techniques, policies, and laws may allow the more transparent establishment of rights and responsibilities, and this in turn brings new legal, reputational and financial risks for

those acting in an irresponsible way.

Environmental justice is not a panacea for all social injustices or all health inequalities. But overall, Environmental Justice offers a fresh perspective. Environmental Justice's two basic premises are first, that everyone should have the right and be able to live in a healthy environment, with access to enough environmental resources for a healthy life, and second, that it is predominantly the poorest and least powerful people who are missing these conditions. Taking these two premises together suggests that a priority is to ensure that the adverse conditions faced by the least powerful people are tackled first. As well as implying environmental rights, it implies environmental responsibilities. These responsibilities are on this current generation to ensure a healthy environment exists for future generations, and on countries, organisations and individuals in this generation to ensure that development does not create environmental problems or distribute environmental resources in ways which damage other people's health. This is a view that reframes environmental issues as a critical and core element of achieving social justice goals, rather than as a set of priorities that conflict with social goals. If social justice can be thought of ensuring that all people have at least a basic set of minimum conditions to achieve a healthy life, then having a healthy, safe environment and access to enough environmental resources for all people is a central part of this social justice goal.

We are yet to grasp fully the impacts of our current development trajectory on either our local environment, or our global one. Environmental justice asks us to think about rights and responsibilities towards our environment and our health. It asks us to think about others and about future generations. It is not a simple environmental health policy – it is a complex approach for our complex 21<sup>st</sup> century environmental health challenges. Environmental justice offers a new frame for public health professionals interested in the traditional public field of social equity, but also is a new lens on public health within the context of global environmental change.

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### **Box 1 Conceptualising Environmental Justice**

- **Distributive justice** is concerned with how environmental ‘goods’ (e.g. access to green space) and environmental ‘bads’ (e.g. pollution and risk) are distributed amongst different groups and the fairness or equity of this distribution.
- **Procedural justice** is concerned with the fairness or equity of access to environmental decision-making processes and to rights and recourse in environmental law.
- **Policy justice** is concerned with the principles and outcomes of environmental policy decisions and how these have impacts on different social groups.
- **Intranational justice** is concerned with how these distributions and processes are experienced and operate within a country.
- **International justice** extends the breadth of concerns to include international and global issues such as climate change.
- **Intergenerational justice** encompasses issues of fairness and responsibility between generations, such as emerge in debates over the protection of biodiversity.

**Box 2 The Procedural injustices that lead to Substantive Environmental Injustice**

“When you say that it (incineration) is acceptable, it is acceptable to the more articulate sections of the population. From what you have said, the incinerator ends up in the less articulate sections of society. I do think we ought to make that quite clear.”

Lord Judd questioning Richard Mills of the UK National Society for of Clean Air and Environmental Protection in (Ryder, 1999)

### **Box 3 Scales of Environmental Injustice**

#### **Traffic, poverty and air pollution in Britain** Dorling and Mitchell (2003)

analysed air pollution, vehicle emissions and poverty in Britain finding that ‘communities that have access to fewest cars tend to suffer from the highest levels of air pollution, whereas those in which car ownership is greatest enjoy the cleanest air’. Areas with 30-40% of households in poverty had access to fewer cars and experienced the highest levels of air pollution. The authors concluded that this was ‘evidence of environmental injustice in the distribution and production of poor air quality in the UK.’ (Mitchell and Dorling 2003)

**Soft drink bottling factories, India** Local people have experienced water shortages as water is diverted from rivers through pipelines to soft drink bottling factories in rural India. The majority of people affected are India’s most marginalised groups, low-income rural labourers, whose livelihoods depend on agriculture. Access to clean water is crucial for individual health and also essential for agriculture. Local campaigners point out that, ironically, communities most impacted by the factories’ operations cannot afford to buy the soft drinks they produce.

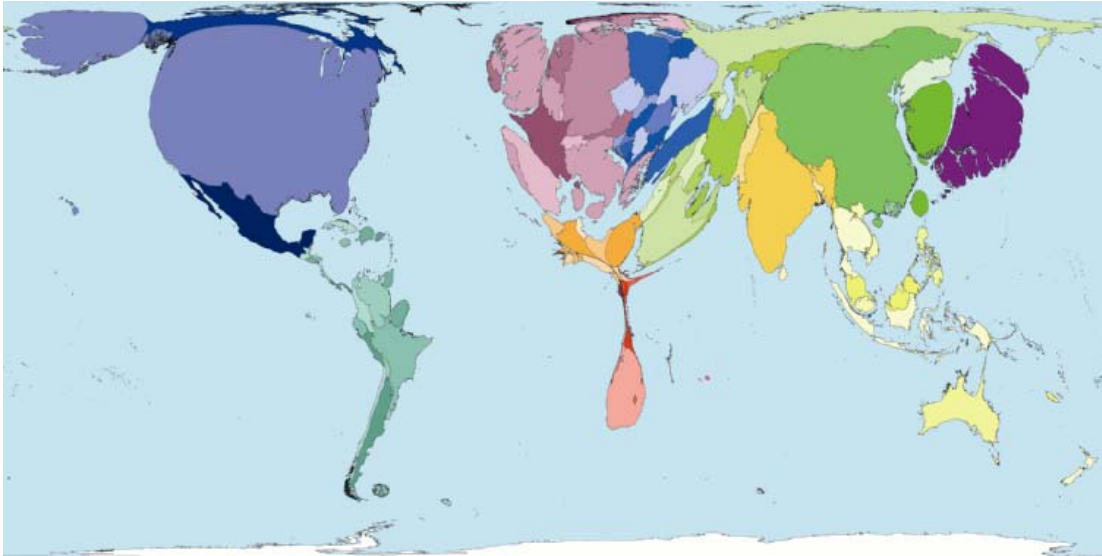
(David Santillo, Exeter/Greenpeace /ActionAid WTO)

**La Oroya metal smelter, Peru** A metal smelter complex has operated in La Oroya, Peru for over 80 years. Lead processing on the site begun in 1929 and emissions are not controlled. Recent blood sampling surveys of local children show that they are being exposed to lead in their local environment. The health effects of lead exposure in childhood range from behaviour and developmental impairment to death. Health concerns also exist about poor nutrition, sanitation and lack of safe drinking water.

Source: CDC 2005(Buchanan S, Meyer P et al. 2005)/ Doe Run Company

2007(The Doe Run Company 2004)

**Map 1: Where carbon dioxide emissions are produced....**



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*Territory size shows the proportion of carbon dioxide emissions worldwide emitted in 2002*



**Image 1 The Aarhus Convention**



**Box 4 A city-level approach in the UK**

A 2004 report, 'Environmental Justice in London', (Adebowale, Church et al. 2004) looked at issues for London. One key recommendation is for a regional 'environmental justice code' which would act as guidance for policy makers and practitioners in all sectors, and would provide a framework for the development of an 'environmental justice impact assessment'. The aim would be to ensure that no one group suffers disproportionate impacts of policies, acts, or omissions. This proposal has had some support from the Mayor of London and some parties within the Greater London Assembly, but as yet there is no evidence of such a code being developed.