



# Environmental justice and environmental inequalities: A European perspective

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► **To cite this version:**

Eloi Laurent. Environmental justice and environmental inequalities: A European perspective. 2010. <hal-01069412>

**HAL Id: hal-01069412**

**<https://hal-sciencespo.archives-ouvertes.fr/hal-01069412>**

Submitted on 29 Sep 2014

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# Document de travail

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## « Environmental justice and environmental inequalities: A European perspective »

**N° 2010-05**

**March 2010**

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# **Environmental justice and environmental inequalities: A European perspective<sup>1</sup>**

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2010-05

March 2010

In this paper, I highlight a pressing issue facing current and future social policies in the EU: the articulation between social justice and environmental concerns. European social policies have only recently acknowledged the need to integrate the notions of environmental justice and environmental inequalities, which have been part of the US policy arsenal for almost two decades. Indeed, challenges to equality and fairness in the environmental domain are many and growing in Europe. After having defined environmental justice and environmental inequalities in the light of historical developments and recent literature, I address two dimensions of those challenges for the EU: vulnerability and exposure to environmental risk; social fairness in environmental taxation. I finally offer some thoughts on the importance of the justice approach to environmental issues in order to conceive legitimate “socio-ecological policies” able to change in the long run not only behaviours but attitudes of citizens towards the environment.

JEL Codes: F59, O52, Q48, Q54, Q58

Keywords: environmental justice, environmental inequalities, socio-ecological policies.

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<sup>1</sup> Paper prepared for the social investment seminar of the Institute for Futures Studies, Stockholm, March 2010.

## **What is environmental justice? What are environmental inequalities?**

Although it emerged as a public concern as early as 1820<sup>2</sup>, the notion of “environmental justice” was really born in the United States at the end of the 1970s, in the context of racial progress and civic activism. It served to designate at once racial and ethnic inequalities in exposure to environmental risk (pollutions, toxic waste, flooding) and the exclusion of racial minorities, especially African-Americans, Hispanics and Native Americans, from the definition and implementation of environmental policies in the US.

The defining episode of the environmental justice movement happened in Warren County in 1982, when African-American residents of this North Carolina district opposed the building of a toxic waste landfill nearby. The Warren County protests triggered investigation in other Southern communities about similar situations and the publication of a federal report in 1987 explicitly titled “Toxic Wastes and Race in the United States”, the first study to empirically document at the national scale the link between racial and social characteristics of the communities close to waste sites (the study concluded that non-whites were much more exposed to environmental hazards than whites).

In 1990, the Congressional Black Caucus, a bipartisan coalition of academic, social scientists and political activists met with Environmental Protection Agency (EPA) officials to discuss these findings and the perceived unfair treatment of minorities by EPA inspectors. In response, the EPA instituted the “Environmental Equity Workgroup” to address the allegation that “racial minority and low-income populations bear a higher environmental risk burden than the general population.” The resulting report, “Reducing Risk in All Communities”, published in June 1992, supported the claim made by the Congressional Black Caucus and offered ten recommendations towards greater fairness regarding environmental risk. One of them suggested the creation of an office to address these inequities. Later in the year, the first ever official body addressing environmental justice was established: the Office of Environmental Equity (which became the Office of Environmental Justice in 1994).

From that first sequence, the environmental justice concern not only grew in importance in the public debate but most importantly has been integrated as a general concern in all public policies at the federal level, making the US the most advanced country with respect to environmental justice.

With the Executive order 12898 of February 11 1994 on environmental justice (“Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”), the Clinton administration has indeed transformed a public concern into a federal obligation, with the section 1-101 demanding from all federal agencies that they integrate this new objective<sup>3</sup>:

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<sup>2</sup> See for instance Taylor D. 1997. American environmentalism: the role of race, class and gender in shaping activism, 1820–1995. *Race Gend. Class* 5:16–62.

<sup>3</sup> The order also established an Interagency Working Group (IWG) chaired by the EPA and comprised of the heads of eleven departments/agencies and several White House offices. Simultaneously the National Environmental Justice Advisory Council (NEJAC) was established, bringing together representatives of community, academia, industry, environmental, indigenous, as well as state/local/tribal government groups to “define and ‘reinvent’ solutions to environmental justice

...To the greatest extent practicable and permitted by law, and consistent with the principles set forth In the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions

A subsequent “Environmental Justice Strategy” has been defined in 1995 and the EPA offers today a clear definition of environmental justice on the basis of which the US government is able to take action. Environmental justice is:

...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. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

Two important dimensions have to be highlighted in this definition: “fair treatment” and “meaningful involvement” that respectively point to the traditional distinction between distributional and procedural aspects of justice. The EPA also provides a precise definition of those two concepts:

Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means that: (1) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) their concerns will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected.<sup>4</sup>

Because of these developments, environmental justice is a vibrant and fully operational notion in terms of public policy in the US, as the recent action program decided by the new head of the EPA Lisa Jackson proves.

In the light of this rich background, the basic input of the environmental justice approach can be defined simply: a public policy aiming at fairness that would not take into account environmental issues would fail in an important dimension. The relation to social policy is

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problems”. The specific purpose of this group is to provide consensus advice on a variety of documents, which include the Agency’s environmental justice agenda, the Environmental Justice Strategic Plan, the Environmental Justice Annual Report, and other Agency materials.

<sup>4</sup> Documents, references and texts quoted can be found on the EPA’s website section devoted to environmental justice, <http://www.epa.gov/compliance/environmentaljustice/index.html>

also simple: it is mediated by health issues and more generally by the impact of environmental conditions on the well-being of individuals.

In addition to the theoretical and legally operational dimensions of environmental justice in the US, the EPA has also developed a range of empirical instruments and indicators that allow a mapping of environmental inequalities on the US territory<sup>5</sup>. The EPA, alongside a number of other institutions, thus provides assessments of the geographical distribution of industrial waste facility treatment, chemical plants or landfill and of the socio-economic characteristics of the areas it covers in order to evaluate the degree of environmental justice in a given location.<sup>6</sup>

Those political, legal and technical advances towards the recognition of environmental injustices were accompanied by a vigorous academic debate about the reality of the link between racial and socioeconomic and environmental inequalities. While many empirical studies indeed prove this link to be valid<sup>7</sup> (for a survey, see Pastor, 2007), others have argued that rational land-use planning and market dynamics are mostly responsible for environmental inequalities, leaving little role for injustices understood as the result of an explicit will to outsource environmental hazard in deprived communities. Another important dimension of this debate has to do with disentangling social and racial factors in environmental inequalities (some studies have argued that income trumped race in determining environmental outcomes while others have proven that race still plays a role even after controlling for income). This last point brings us directly to the European perspective on environmental justice and inequalities.

The environmental justice debate, and more generally the crossing of environmental and social perspectives, is only beginning to develop in the European Union and at the European Union level<sup>8</sup>. The early beginnings of this approach can be dated from the drafting of the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, adopted at the Fourth Ministerial Conference in the 'Environment for Europe' process on 25th June 1998 in Aarhus. In its Article 1, the convention states as an objective to “guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in accordance with the provisions of this Convention.”

The true integration of environmental justice concerns in social policy in the EU was done first in Scotland and then in England in the early 2000s. Two speeches marked this new orientation of public policies (Slater and Pedersen, 2009 and Environmental Agency, 2007). The first one was made by Jack McConnell, Scotland's first Minister, in 2002<sup>9</sup>. He insisted that “the people who have the most urgent environmental concerns in Scotland are those who

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<sup>5</sup> See <http://www.epa.gov/compliance/resources/policies/ej/ej-toolkit.pdf>

<sup>6</sup> See “Environmental Justice Geographic Assessment Tool” <http://www.epa.gov/enviro/ej/>, soon to be replaced by the “Environmental Justice Assessment”.

<sup>7</sup> In one of the most influential of such studies, Pastor et al (2004) note for instance that “There is a strong spatial correlation in the State of California between residential race/ethnicity...and location of facilities recorded in the EPA Toxic Release Inventory that report nonzero releases of air toxics for year 2000.”

<sup>8</sup> See for instance the conference “Social Fairness in Sustainable Development – A Green and Social Europe” organized on February 2009 by the European Commission.

<sup>9</sup> McConnell, J., 2002. Speech of 18 February 2002 given at Our Dynamic Earth, available from: <http://www.scotland.gov.uk/News/News-Extras/57>

daily cope with the consequences of a poor quality of life, and live in a rotten environment - close to industrial pollution, plagued by vehicle emissions, streets filled by litter and walls covered in graffiti.” McConnell went on to say that “For quality of life, closing the gap demands environmental justice too. That is why I said...that environment and social justice would be the themes driving our policies and priorities...” Tony Blair followed on this idea, arguing in 2003 that “by raising the standards of our local environments overall, we have the greatest impact on the poorest areas” (quoted in UK Environmental Agency, 2007).

The then Scottish Executive (now Scottish Government) subsequently offered its own definition of the environmental justice principle to be incorporated in public policies in an executive program titled “Investigating environmental justice in Scotland: links between measures of environmental quality and social deprivation” published in March 2004. This definition relies on the distinction already evoked between distributional and procedural aspects of environmental justice:

- “1. the ‘distributive justice’ concern [that] no social group, especially if already deprived in other socio-economic respects, should suffer a disproportionate burden of negative environmental impacts;
2. the ‘procedural justice’ concern [that] all communities should have access to the information and mechanisms to allow them to participate fully in decisions affecting their environment.”

The Scottish Executive, in his sustainable development strategy of 2005, also highlights the importance of the issue<sup>10</sup>. In the UK, the new national sustainable development strategy, “Securing the Future”, states that one of its goals is to “ensure a decent environment for all” and makes clear the executive will to address environmental inequalities (Environmental Agency, 2007). The UK Environmental Agency (EA), stating that “environmental injustice is a real and substantive problem within the UK” then defined environmental justice in a series of report published in 2007 by making a distinction between different issues:

- Problems of environmental injustice afflict many of our most deprived communities and socially excluded groups;
- Both poor local environmental quality and differential access to environmental goods and services have a detrimental effect on the quality of life experienced by members of those communities and groups;
- In some cases not only are deprived and excluded communities disproportionately exposed to an environmental risk, they are also disproportionately vulnerable to its effects;
- Though more needs to be known about both the causes and impacts of environmental injustice, research is also needed to support the development and effective implementation of policy measures to address and ameliorate the impacts of environmental injustice.

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<sup>10</sup> See specially section 8 of “Choosing our future: Scotland's sustainable development strategy” (2005) <http://www.scotland.gov.uk/Publications/2005/12/1493902/39103>

The EA proposes to define environmental justice in three different respects:

- Distributive justice is concerned with how environmental ‘goods’ (e.g. access to green space) and environmental ‘bads’ (e.g. pollution and risk) are distributed among 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 affect different social groups.

The similarities and differences between the US and European approach (in the Scottish and British version) are quite obvious: while distributional and procedural aspects are distinguished in both cases, Europeans highlight the social conditions producing injustices while Americans insist on the racial dimension of discriminations and exclusion from decision-making process that ethnic groups suffer.

The general difference in underlying philosophies of public policy is not surprising: the US approach traditionally recognizes the universality of natural rights granted to individuals and aims at curbing discriminations faced by them in exercising those rights, while continental European countries usually focus on correcting the social processes that produce situations of inequalities (see Laigle, 2006). In the case of Scotland and England, there is thus a visible “Europeanization”, in the sense of continental Europe, of the notion of environmental justice. More generally, contrasting the US and European conceptions of environmental justice leads to three arguments:

- The first is that Europe, as much as the US, is confronted with the challenge of environmental justice (European social policies can not ignore anymore health, socio-economic and well-being impacts resulting from poorer environmental conditions). The distinct European feature here is only that Europe is lagging behind and must catch up. This is all the more surprising that Europeans and Americans do differ in their concern with regards to redressing inequalities, with Europeans supposed to be keener on correcting them than Americans.
- The second point, already mentioned, is that environmental justice issues are not likely in Europe to be perceived, analyzed and framed in racial and ethnic terms but in terms of social categories. Yet, it does not mean that environmental inequalities do not have a racial aspect in Europe (they of course do, like all social inequalities in racially diverse societies), but it does mean that the cultural and legal background of public policy in the US and the EU differs on this issue. There is both an historical and institutional explanation for this difference. Environmental justice was born in the context of the civil rights movement and was thus racialized from the onset in the US. Furthermore, only racial minorities are recognized as groups by the US federal law and not poor people, race thus being a basis for legal action in courts, while income level is not (see Pastor, 2007).



- The third question regards the possibility to conceive not only a European approach distinct from the US approach, but an integrated European approach and possibly a European Union approach to environmental justice, bringing together the different national traditions in this domain of public action. The problem here is the fragmented nature of those traditions in European countries (see Laigle, 2006).

This finally brings about the question of the definition of environmental inequalities, ie the tangible outcomes of environmental injustice. Crossing the approach by the OECD (2006b), the EA (2007) and Pye et al. (2008), one can try to define environmental inequalities as a fourfold problem:

- *Exposure and access inequalities*: The unequal distribution of environmental quality between individuals and groups (defined in racial, ethnic or social terms), whether negatively (exposure to environmental risk and hazard) or positively (access to environmental amenities) ; in this category is included the issue of vulnerability to ecological disasters - the patent form of latent inequalities in terms of exposure and sensitivity - and the risk of multiple and cumulative impact of social and environmental inequalities;
- *Policy effect inequalities*: The unequal effect of environmental policies, ie the unequal distribution not of environmental goods or bads but of the income effect for instance of regulatory or tax policies among individuals and groups;
- *Impact inequalities*: The unequal environmental impact of the different individuals and groups with regards to their income and/or lifestyles ; some scholars point to the notion of “ecological inequalities” to characterize this type of inequalities (see Emelianoff, 2006);
- *Policy-making inequalities*: The unequal access to environmental policy-making, ie the unequal involvement and empowerment of individuals and groups in decisions regarding their immediate environment.

In the remainder of this paper, I will try to illustrate what kind of challenges environmental issues pose to social policies in the EU by taking an example in the domain of exposure and access inequalities (exposure to disaster and risk) and of policy effect inequalities (social fairness in environmental taxation).

### **Vulnerability to socio-ecological disasters, exposure to environmental risk**

In the context of the growing concern regarding climate change, the notions of vulnerability, exposure, and adaptation have gained momentum. UNEP (2007) defines vulnerability as “a function of exposure, sensitivity to impacts and the ability or lack of ability to cope or adapt” and adds that “the exposure can be to hazards such as drought, conflict or extreme price fluctuations, and also to underlying socio-economic, institutional and environmental conditions. The impacts not only depend on the exposure, but also on the sensitivity of the specific unit exposed (such as a watershed, island, household, village, city or country) and the

ability to cope or adapt.” A key distinction is made here between inequalities in exposure and sensitivity. Environmental inequalities among individuals and groups indeed depend on a combination of exposure (socio-economic context, geographical context, behaviors, etc) and sensitivity (age, health, etc).

This essentially means that different people are differently exposed to environmental hazards resulting from natural extreme events. According to the “new political ecology” approach (Fitoussi and Laurent, 2008), the very notion of “natural” disasters (in terms of cause and consequence) should thus be questioned and replaced by the idea of “socio-ecological disaster” (see Laurent, 2009). As proven by the dramatic outcome of the Katrina hurricane landfall in Louisiana in 2005, this approach is not only relevant for developing countries but also directly of interest for rich countries.

A number of studies have shown that the social impact of Katrina was determined by racial and income inequalities<sup>11</sup>. Logan (2006) for instance remarks that “the neighborhoods of social groups with least resources were the ones most affected by Katrina”. More precisely, the population of damaged areas was nearly half black and below the poverty line and unemployed (see table 1). Logan concludes that “the most vulnerable residents turned out also to be at greatest risk.”, stressing the cumulative pattern of environmental and social inequalities.

Table 1. Racial and social characteristics of areas affected by Katrina

	Population	Black	Poor	Unemployed
Damaged areas	643,525	45.8%	20.9%	7.6%
Other areas	1,058,188	26.4%	15.3%	6.0%

Source: Logan (2006) <http://www.s4.brown.edu/katrina/report.pdf>

The EU also experienced very recently an important socio-ecological disaster, one of the 10 most deadly heatwaves and the 8th most deadly “natural” disaster in the last 30 years (according to CRED). In the late summer of 2003, over-mortality surpassed 30 000 people in Europe, according to the most consensual figures<sup>12</sup>. The case of France is particularly interesting, since its health care system is ranked as one of the best in the world and should thus have prevented the worse of the human impact of the heatwave. But because of the duration, intensity<sup>13</sup>, and geographical reach of the 2003 heat-wave, it resulted in the deaths of 14,800 people in France (2,000 people died on August 12 alone).

<sup>11</sup> See for instance Pastor, Manuel et al. (2006) *In the Wake of the Storm: Environment, Disaster and Race after Katrina*. New York: Russell Sage Foundation.

<sup>12</sup> Some recent estimates put the death toll at 70 000 people due to lack of initial adequate reporting of deaths especially in Italy and Spain.

<sup>13</sup> According to Météo France, the French climate institute, overall, the summer of 2003 was two degrees hotter in France than in previous record years, 1976, 1983, and 1994.

In the context of the Chicago heatwave of July 1995, Klinenberg (2002) tried to show how the 739 people killed were not equal with their fellow citizens in terms of social isolation and how therefore social inequalities played a major role in exposing individuals to environmental risk. The author developed a nuanced approach of the interplay between racial and social factors:

Another surprising fact that emerged is that Latinos, who represent about 25 percent of the city population and are disproportionately poor and sick, accounted for only 2 percent of the heat-related deaths. I wrote *Heat Wave* to make sense of these numbers—to show, for instance, why the Latino Little Village neighborhood had a much lower death rate than African American North Lawndale. Many Chicagoans attributed the disparate death patterns to the ethnic differences among blacks, Latinos, and whites—and local experts made much of the purported Latino "family values." But there's a social and spatial context that makes close family ties possible. Chicago's Latinos tend to live in neighborhoods with high population density, busy commercial life in the streets, and vibrant public spaces. Most of the African American neighborhoods with high heat wave death rates had been abandoned—by employers, stores, and residents—in recent decades. The social ecology of abandonment, dispersion, and decay makes systems of social support exceedingly difficult to sustain.<sup>14</sup>

The same kind of analysis can be developed for the 2003 heat wave in France, insisting on the demographic and socio-economic factors in exposure to the risk of death. 90% of the victims were older than 65 years old, with 67 persons killed under the age of 35, 1254 between 35 and 65 and 13 407 killed over 65 (see table 2). But a socio-economic divide also appears within the age inequality, with the socio-professional category and the degree of autonomy strongly related to the probability of dying (INVS, 2004).

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<sup>14</sup> "Dying Alone", an interview with Eric Klinenberg, Chicago University Press, <http://www.press.uchicago.edu/Misc/Chicago/443213in.html>

Table 2. Age distribution of the 2003 heatwave victims in France

Age	Population (in millions)	Number of dead
<b>&lt;35</b>	<b>26,9</b>	<b>67</b>
<1	0,7	15
1–14	10,4	4
15–24	7,8	24
25–34	8,0	24
<b>35–74</b>	<b>28,2</b>	<b>2930</b>
35–44	8,6	151
45–54	8,3	488
55–64	6,2	615
65–74	5,1	1676
<b>≥75</b>	<b>4,7</b>	<b>11731</b>
75–84	3,6	4558
85–94	1,0	5691
≥95	0,1	1482
Total	59,9	14729

Source : Fouillet et al. (2006), “Excess mortality related to the August 2003 heat wave in France” *Int Arch Occup Environ Health*. 2006 October ; 80(1): 16–24.

Contemporary research on vulnerability to “natural” disasters confirms the role of social inequalities. Cutter et al (2003 and 2006) for instance develop a dynamic empirical analysis (through geographical mapping) of “social vulnerability” in the US, defined as “a measure of both the sensitivity of a population to natural hazards and its ability to respond to and recover from the impacts of hazards”. They remark that “social vulnerability is partially the product of social inequalities—those social factors that influence or shape the susceptibility of various groups to harm and that also govern their ability to respond.”

While climate change can not be directly related to the 2003 heatwave, Della-Marta, et al. (2007), among others, have showed that the number and intensity of hot days and heat-waves exhibit a clear and disturbing upward trend in Europe from 1880 to 2005. Hence, there is every reason to believe that such disasters will become more frequent in the EU in the future, which calls for adaptation on top of mitigation efforts. Social policies are key instruments in this adaptation. As a matter of fact, France was hit by another heatwave only three years after 2003, between 11 and 28 July 2006. Only second to that of August 2003 in intensity but geographically much more limited, it was still responsible for an over-mortality of 2,000 people.

There is little doubt that extreme events resulting from climate change will increase inequality among individuals and groups - between rich and poor and between vulnerable and resilient people - even in rich countries. In this respect, we are just entering the era of environmental inequalities.

If disasters represent the materialization of environmental risk and the release of the destructive power of environmental hazard that affect people differently according to their social conditions, environmental inequalities also take the form of “passive inequalities” that affect nonetheless the health and well-being of individuals and groups on a day to day basis and actually also their ability to cope with extreme events. The UK is probably today the most advanced European country in trying to assess exposure to environmental risk. But the UK has also developed empirical tools to assess “passive” environmental inequalities.

With regard to exposure to risk, Walker et al, 2003 have showed that there are eight times more people in the most deprived 10% of the population living in tidal floodplains than the least deprived 10%. But the Environment Agency also found that river water quality is worse in the most deprived areas in England, where up to 50% of watercourses are extensively modified, providing less natural habitats for wildlife. By the same token, Walker et al, 2003 have determined that people in the most deprived 10% of areas in England experience the worst air quality, and 41% higher concentrations of nitrogen dioxide from transport and industry than the average<sup>15</sup>.

Similarly, exposure to industrial risk is found to be much higher for French cities that comprise a “sensible urban area” or ZUS than those who don’t, see table 3. Those figures indicate that 60% of people exposed to industrial risk live in a municipality comprising a ZUS. In this case, there is a clear cumulative pattern of environmental and social inequalities, as poor social conditions make people more vulnerable to risk, while exposure to risk can further affect their health and well-being.

Table 3. Exposure to industrial risk of French municipalities

	Municipalities exposed as % of the total for the category	Population exposed, in nb of inhabitants
Municipalities with ZUS	42	10 854 199
Municipalities without ZUS but belonging to a urban area comprising one	21	2 777 888
Municipalities belonging to a urban area without ZUS	11	2 194 639
All French Municipalities	5	16 452 641

Source: IFEN (2006).

To confirm the findings for the UK and assess more broadly the situation, the EA commissioned a team around Gordon Walker “to understand patterns of unequal social impact and environmental inequality for the following topics: Flooding, Waste Management, Water

<sup>15</sup> See the Environmental Agency website’s section devoted to environmental inequalities.

Quality and Cumulative Impacts”. The result was a series of reports, accessible on line, that give a precise view of the state of environmental inequalities in the UK (see Box 1).

Box 1. Reports from the project “Addressing Environmental Inequalities” (2005-7)

Gordon Walker, Kate Burningham, Jane Fielding, Graham Smith, Diana Thrush and Helen Fay (2006) **Addressing Environmental Inequalities: Flood Risk, Science Report: SC020061/SR1**, Environment Agency, Bristol.

Carolyn Stephens, Ruth Willis and Gordon Walker (2007) **Addressing Environmental Inequalities: Cumulative Environmental Impacts, Science Report: SC020061/SR4**, Environment Agency, Bristol.

Sarah Damery, Gordon Walker, Judith Petts and Graham Smith (2007) **Addressing Environmental Inequalities: Water Quality, Science Report: SC020061/SR2**, Environment Agency, Bristol.

Sarah Damery, Judith Petts, Gordon Walker, Graham Smith (2007) **Addressing Environmental Inequalities: Waste Management, Science Report SC020061/SR3**, Environment Agency, Bristol.

Gordon Walker, Sarah Damery, Judith Petts, Graham Smith (2007) **Addressing Environmental Inequalities: Flood Risk, Waste Management and Water Quality in Wales, Science Report SC020061/SR5**, Environment Agency, Bristol.

The EA has also developed empirical instruments to assess environmental inequalities, especially the Index of Multiple Deprivation (IMD). It is a composite indice which includes measures of income, employment, educational attainment, standard of housing and health and allows areas to be ranked and compared across a range of social deprivation measures. Other instruments, such as the EQI, examine environmental deprivation by looking in more detail at the environmental indicators in the IMD and add to these with other environmental quality datasets at local regional and national scales. Results for the IMD in recent years are shown in Table 4.

Table 4. Environmental inequalities in the UK according to the Index of Multiple Deprivation\*

	Areas deciles / % of population									
	1	2	3	4	5	6	7	8	9	10
0 less favourable conditions	71%	67%	61%	58%	54%	51%	46%	41%	33%	26%
1 less favourable condition	25%	28%	31%	32%	33%	34%	32%	31%	29%	27%
2 less favourable conditions	4%	5%	7%	8%	10%	11%	16%	17%	20%	26%
3+ less favourable conditions	0%	1%	1%	2%	3%	3%	6%	11%	19%	21%

\* : Environmental conditions are ambient air pollution, industrial airborne releases, green space, habitat favourable to bio-diversity, derelict land, flood risk, river water quality, and housing Data range from 2001 to 2006. Areas are split into deciles on rank of IMD - 10 being the most deprived areas. Percentages show proportion of people in those areas who suffer from that number of least favourable conditions.

Source: Environment Agency.

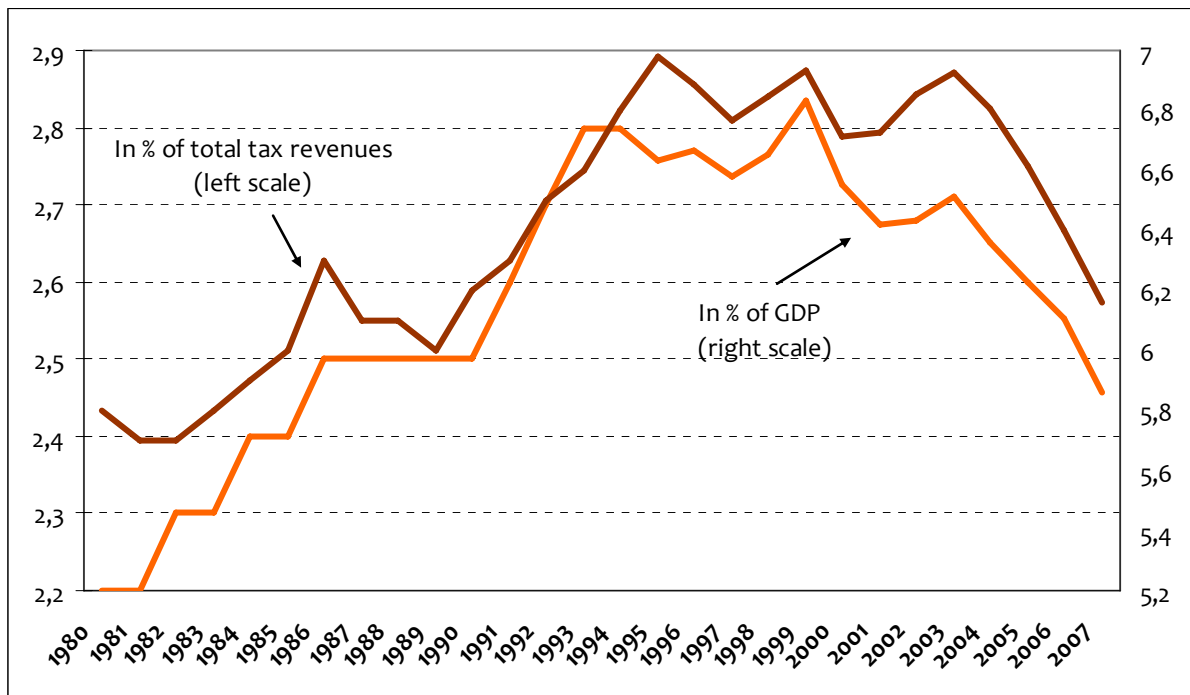
In relation to those figures, the EA notes that “around 0.3 per cent of populations in the least deprived areas experience 4 or more environmental conditions that are ‘least favourable’. This rises to around 20 per cent of populations in the most deprived areas.”

### **Fairness in environmental taxation**

Climate change mitigation requires the mobilization of all economic instruments (regulation, cap-and-trade, carbon taxation) in order to first put a price on carbon, and then to increase it gradually so as to phase out the use of fossil fuels and foster low carbon economic growth and development. In this perspective, carbon taxes are a under-used but quite efficient economic instrument to curb so-called “diffuse pollutions”, i.e. decentralized greenhouse gas (GHG) emissions stemming from transports and housing that depend on hundred of millions of users and which are therefore very hard to monitor and reduce through cap-and-trade markets (which are better suited to curb centralized pollutions by energy and energy-intensive industrial sectors). This “division of labor” between cap-and-trade and carbon taxes is particularly relevant for the EU, where the EU ETS only covers about 40% of centralized greenhouse gas emissions from around 11 000 participating installations (Laurent and Le Cacheux, 2009) leaving 60% of mostly diffuse pollutions to be treated by other instruments.

Among OECD countries, EU countries display relatively high levels of environmental taxation – in particular when compared with the United States, Japan, Canada and Australia. But the overall level of their environmental taxes remains low both in terms of percentage of GDP and of total tax revenues (graph 1).

Graph 1. Environmental taxation in the EU\*, 1980-2007



Data source: Eurostat.

\* EU 15 before 1999, EU 25 afterwards.

Within environmental taxation, the taxation of energy has followed a similar pattern, increasing from 1.8% of GDP in 1980 to 2.1% in 1993, before falling to 1.8% in 2007 (from 1995 to 2007, the ratio fell for the EU 25 by 0.4 points).

Serret et Johnstone (2006) have indeed shown that the political economy of environmental policies in general makes them uneasy to implement. They are usually perceived to be socially regressive because poorest households are supposed to disproportionately bear their financial burden while rich households receive the most benefits from them. In the case of climate change related tax policies, this may not be true in terms of benefits (since poor households benefit from climate change mitigation more than rich households that can adapt more easily to it), but it is certainly true in terms of financial burden.

The question of compensation of carbon taxes (not to be confused with that of exemption) is thus of primary importance, especially from the political acceptability point of view. If designed properly, carbon taxes are able to generate a “double dividend” – that is, a reduction in GHG emissions and a positive effect on growth and jobs if tax revenues are used for instance to reduce charges on labour. The increased tax on households and businesses’ energy consumption is then compensated by lighter labour costs, a particularly attractive option in a context of high unemployment, provided a significant part of unemployment stems from high labor costs.

Environmental taxation may be only modest in the EU, but the countries that have recently engaged in environmental or ecological taxation reforms (sometimes referred to as ETR or “green shift”), opted for the double dividend strategy, giving life to the idea that modern taxation systems should shift the burden from labour to pollutions (or from “goods to bads”).



In other words, most if not all environmental tax reforms in the EU have explicitly acknowledged the necessity to conciliate environmental and social concerns (see Table 5).

Table 5. Forms of compensation for EU countries that have implemented carbon taxes

<b>UK</b>	<b>2001</b>	REDUCTION OF EMPLOYERS SOCIAL CONTRIBUTIONS
<b>NETHERLANDS</b>	<b>1990</b>	INITIAL REDUCTION OF INCOME TAX, THEN REDUCTION OF EMPLOYERS SOCIAL CONTRIBUTIONS
<b>DENMARK</b>	<b>1992</b>	REDUCTION OF EMPLOYERS SOCIAL CONTRIBUTIONS, FAMILY ALLOWANCES, REDUCED INCOME TAXES ON LOW INCOMES
<b>FINLAND</b>	<b>1990</b>	REDUCED INCOME TAX (SINCE 1996). SINCE 2009, ABOLITION OF SOCIAL CONTRIBUTIONS BY EMPLOYERS
<b>NORWAY</b>	<b>1991</b>	ALLOWANCES FOR HOUSEHOLDS
<b>SWEDEN</b>	<b>1991</b>	REDUCTION OF INCOME TAX, REDUCTION OF EMPLOYERS SOCIAL CONTRIBUTIONS (SINCE 2001)

Source: Laurent and Le Cacheux (2009).

This compatibility issue is all the more important than the OECD review of environmental taxes (OECD, 2007) shows that the environmental efficiency of ecological taxes is generally strong<sup>16</sup> and that the countries that chose to acknowledge the potential contradiction between social justice and environmental concerns have at least partially succeeded in overcoming the problem of social regressivity of carbon taxation. Even more important, the intuition of the “double dividend” is confirmed empirically in a majority of cases (see for instance Hoerner and Bosquet, 2001), provided a distinction is made between the “weak” and “strong” form of the argument<sup>17</sup>.

Still, the OECD acknowledges that in many instances “the distributional concerns have not been addressed at all, or have come up late in the process and tackled in a more ad hoc fashion.” The OECD adds that this might lead to strong opposition and failure to implement

<sup>16</sup> National studies that are available confirm the OECD’s assessment. Studies by the German federal agency, conducted to measure the impact of reforms carried out between 1999 and 2003, show that energy consumption has fallen and that CO2 emissions might have been reduced by 2% to 3%. The study by Cambridge Econometrics (2005) on the British case also shows a 2% reduction in CO2 emissions attributable to the tax measure called the “Climate Change Levy”.

<sup>17</sup> The OECD notes that : “The weak double dividend hypothesis states that revenue recycling through cuts in distortionary taxes improves welfare relative to recycling through lump-sum payments. The strong double dividend suggests that substitution of an environmental tax for a representative distortionary tax will improve welfare. The weak double dividend hypothesis is not disputed, but the strong one is”.

effective environmental measures, and imply higher costs to society than necessary. “In order to assure that distributional concerns are properly addressed...countries should consider introducing mechanisms into the decision-making process whereby distributional impacts are explicitly analysed.”

Countries can indeed opt for different forms of compensation that might be less efficient economically than the lowering of social contributions but still manage to address the problem of social regressivity of carbon taxation. The case of France illustrates this. The French government, who is currently trying to introduce a carbon tax but whose initial proposal was censored by the Constitutional Council, has opted for the direct redistribution of tax revenues to households. The social regressivity effect of the tax is clear: the poorest French households pay a higher share of their income on energy (2.5 times more for the bottom 20% compared to the top 20%). Computations by ADEME, the French agency for environment and energy efficiency, show that, with transfers of 94 euros for people living in the country and 76 euros for people living in urban areas, the tax actually benefits French citizens up to the third decile of income distribution (see table 6). Environmental taxation can thus be progressive.

Table 6. Impact of a 17 euros/t carbon tax on the French income distribution, in euros/year

	HEATING		FUEL		TOTAL		TOTAL AFTER TRANSFERS	
	country	town	country	town	country	town	country (94€)	town (76€)
1st decile	-50	-11	-26	-19	-76	-30	<b>18</b>	<b>46</b>
2nd decile	-52	-50	-29	-22	-81	-72	<b>13</b>	<b>4</b>
3rd decile	-57	-38	-35	-29	-92	-67	<b>2</b>	<b>9</b>
4th decile	-57	-53	-44	-29	-101	-82	-7	-6
5th decile	-59	-42	-44	-36	-103	-78	-9	-2
6th decile	-51	-76	-55	-38	-106	-114	-12	-38
7th decile	-62	-95	-49	-45	-111	-140	-17	-64
8th decile	-47	-63	-55	-42	-102	-105	-8	-29
9th decile	-78	-60	-54	-48	-132	-108	-38	-32
10th decile	-99	-98	-74	-48	-173	-146	-79	-70

Source: ADEME and author's calculations.

Success stories of environmental taxation in the EU show that it is possible to preserve ecological efficiency of carbon taxes by not allowing any exemption and yet compensate households financially to ease and even overcome energy taxation's social regressivity. In other words, it is perfectly possible to render compatible social justice and sustainability through intelligent policy design.

## Conclusion: Policies, behaviors and attitudes

How to better acknowledge, measure and eventually reduce environmental inequalities in the European Union? Pye et al (2008) make a number of useful recommendations in this direction that should inspire European policy-makers to make progress and catch up not only with the US but also with best practices in the EU:

1. The concept of environmental justice should be adopted as a guiding principle for policy development at the European level and across all Member States as a means of addressing social concerns within environmental policy.
2. Environmental inequalities should be considered in the design and implementation of policy through the impact assessment process at the European, national and local levels.
3. The above recommendation requires good spatial data that can be accessed at reasonable cost, and guidance on methods to assess environmental inequalities.

More fundamentally, environmental policies should be embedded in social policies, so that true “socio-ecological policies” can be developed (Laurent, 2009). Moreover, approaching environmental issues not only by the logic of efficiency, but also along the logic of justice may help change *attitudes* and not only *behaviours* towards the environment, according to the division made by Dobson (2003). It is worth exploring this distinction in conclusion.

A number of behaviors have direct and indirect consequences on the environment: production, consumption, transportation, heating, etc. These behaviors are under the influence of the price system, and more precisely relative prices: if gasoline and heating fuel are comparatively not very expensive, households may want to live in suburban areas in houses difficult to isolate and heat, because they will not bear the true economic cost of their lifestyle. These choices should in fact suppose unbearable expenditures for residence-work transportation and heating expenditures. These expenditures, and therefore these behaviors, are economically bearable if energy price remains moderate. The price system can thus contribute to design the urban space by stretching urban peripheries, which reveals its reach.

If public authorities decide to change these behaviors in an effective way, they will have to increase the price of energy all while allowing households to opt for other more environmentally favorable alternatives. Two parameters intervene here: it is necessary that the “signal” sent by the state be sufficiently strong, ie that it really induces changes in behavior, which supposes for example to set up a carbon price high enough so as to really affect individuals decisions (the overall impact of the proposed French carbon tax set at 17 euros per ton of CO<sub>2</sub> for 2010 is for instance clearly too weak, representing a mere 4.6 billion euros or 0,23% of GDP and 0,47% of total tax revenues). It is also necessary to make sure of the effective response capacity by the citizens: this is the issue of elasticities of behaviors (if pricing is high enough but alternatives non-existent, the reform will be inefficient). In any case, environmental issues, in this case the reduction of greenhouse gas emissions, is here approached along the logic of efficiency: citizens are supposed to rationally respond to an alteration of the price system by public authorities in the name of general interest.

An all other question is the one of the attitudes with regards to environmental issues and the proper way to modify them. Behaviors, in a market economy, depend on the price system. Attitudes, in a democracy, depend on the system of values. If public authorities want to change not only behaviors, but attitudes of citizens, it is necessary to go beyond the sole principle of efficiency. One could think that this will not be necessary: by changing prices, and thus modifying behaviors, the state could progressively transform values, and eventually affect attitudes. But this is not very likely: values determine prices, not the other way around. Likewise, attitudes determine behaviors. The question thus becomes: how to change attitudes?

The justice principle then becomes crucial for environmental policies that can not only rely on a principle of efficiency. The laws of the Nature, the Darwinian laws of natural selection and of adaptation, are in a way already laws of efficiency. The added value of humans in environmental debates consists in formulating the complex problems they face in terms of justice and injustice. The essential and too often neglected link in these debates is therefore the link between ecology and inequalities, between ecological and social issues (Laurent, 2009). This link may be the key to move, in environmental matters, from attempting to change behaviors to managing to change attitudes.

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