

**Do Firms Adopt Lower Standards in Poorer Areas?  
Corporate Social Responsibility and Environmental Justice  
in the EU and the US**

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**Abstract**

Within the context of broader debates on Corporate Social Responsibility (CSR) and Environmental Justice (EJ), this paper examines three key questions: first, how the standards that corporations adopt at the global scale trickle down into local site-level practices; second, whether levels of corporate environmental performance vary from place to place; and third whether any variations in corporate environmental performance relate to the principles of EJ. To do this, the analysis draws upon recently disclosed data to evaluate variations in the environmental performance of oil refineries across the US and the EU. It finds significant variations in emissions of some key pollutants. These exist both across the range of refineries, with dirtier refineries emitting at least five times as much as cleaner refineries, and between the EU and the US, with refineries in the EU emitting more than twice as much as refineries in the US. At the local level, it finds that there are correlations between higher levels of emissions from refineries and lower levels of income, employment and population density. Although these findings provide support for some of the contentions of the EJ movement, they do not say anything about causality, and as a result we cannot say definitively that companies adopt lower standards in poorer areas.

**Key words**

European Union

United States

Corporate Social Responsibility

Environmental Justice

Oil Refineries

## **Introduction**

In 1970, Milton Friedman famously stated that companies should have no social responsibilities other than to maximise returns to their shareholders (Friedman, 1970). However, proponents of Corporate Social Responsibility (CSR) have long argued that companies have responsibilities to a broader range of stakeholders on issues such as working conditions, community relations and environmental protection (see Whitehouse, 2003; van Marrewijk, 2003; Zadek, 2004). In recent years there has been a proliferation of initiatives relating to CSR - the UN's Global Compact, the OECD's Principles for Multi-National Enterprises and the UN endorsed Global Reporting Initiative are three of the highest profile schemes. The fact that more and more companies are signing up to or endorsing such initiatives seems to suggest that the arguments put forward by the proponents of CSR are having some effect.

Beyond their broad statements of intent, CSR initiatives have both procedural and substantive dimensions. To date, the bulk of corporate activity has related to the procedural dimensions of CSR, for example as companies have developed policies, management systems and audit protocols and as they have started to open up and engage with stakeholders. Recently, however, emphasis is increasingly being placed on the substantive implications of corporate activities. In many settings, stakeholders are increasingly keen to know not only whether companies have CSR policies and procedures in place, but also whether these have gone on to influence the social and environmental outcomes that are experienced by different social groups in the diverse contexts in which companies operate.

As well as begging for the development and publication of consistent and reliable indicators of corporate performance, substantive concerns such as these introduce important issues of Environmental Justice (EJ) into the debate on CSR. EJ has been defined as the fair treatment and meaningful involvement of all people - regardless of race, colour, national origin, or income - in the development, implementation and enforcement of environmental policies (Bass 1998, Bullard & Johnson 2000). EJ therefore recasts many environmental issues so that they are not only to do with resource use or pollution but also to do with equity, justice and human rights (Boyle and Anderson, 1998; Agyeman, 2002; Zarsky, 2002).

Like CSR, EJ has both procedural and substantive dimensions. By calling for the meaningful involvement of different social groups, EJ raises important procedural questions about the ability of different social groups to engage in and exert influence over environmental decision making in different contexts. Similarly, by promoting the fair treatment of different social groups, substantive issues about the level and distribution of different environmental impacts are brought to the fore. The debate on EJ has become more significant because of observations that poorer and more deprived communities are often excluded from exerting influence in the decision making processes that affect them and that they are disproportionately affected by negative social and environmental outcomes (Adeola, 1994, 2000; Dobson, 1998; Foreman, 1998; Schlosberg, 1999; Shrader-Frechette, 2002; Walker, 2003).

The significance of EJ to governments and regulatory agencies is being discussed with increasing frequency. The US Environmental Protection Agency for example has adopted a policy on environmental justice and has pledged to provide 'equal protection for all populations' (US EPA, 2003). Similarly, the Environment Agency for England and Wales has recently promoted the inclusion of environmental and social justice as a key theme in the UK's Sustainable Development Strategy (EA, 2004; UK Government, 2005). However, the relevance of the concept of EJ to corporations and to the debate on CSR has yet to be fully explored. This is surprising as there are some major issues which are clearly of wider relevance. For example, with regard to the procedural dimensions of CSR, proponents of EJ might ask companies about the steps they are taking to ensure that the most deprived and excluded groups have a voice in stakeholder engagement processes. Similarly, with regard to the more substantive aspects of CSR, advocates for EJ might ask companies about the steps they are taking to ensure that the most deprived or vulnerable communities are not disproportionately affected by their environmental impacts.

### **This paper**

This paper presents the results of research which was conducted in the period between December 2003 and January 2005<sup>1</sup>. The research focused on the CSR policies and the environmental performance of companies within the oil and gas industry. To allow benchmarks of corporate environmental performance to be developed, the project focused on one relatively generic process within this sector, namely oil refineries. Thereafter, the research was conducted in three phases:

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- 1 - Examining Corporate Governance Processes. The first phase involved a qualitative evaluation of the ways in which corporate policies on CSR are translated into local, site-level practices.
- 2 - Evaluating Levels of Corporate Environmental Performance. The second phase sought to link these site-level practices with quantitative measures of environmental performance for all of the refineries in the EU and the US.
- 3 - Examining the Evidence for EJ. The third phase sought to establish whether any variations in environmental performance across the range of refineries in the EU and the US related to the principles of EJ.

Within the discussion that follows, the focus, methods, data sources and results of each phase of the research are discussed before conclusions are drawn and recommendations for theory, policy and practice are made.

### **Phase 1 - Examining Corporate Governance Processes**

If they are to make a substantive difference, CSR initiatives must translate from broad statements of intent at the global or corporate levels into tangible changes in behaviour and performance at the local level. Issues of corporate governance are central to this process (Monks and Minnow, 2002). In this first phase of the project, we sought to evaluate the governance processes at work within firms, particularly as corporate policies 'trickled down' into site level practices. This first phase of the research drew its data from a review of the policies and reports published by UK-based firms in the oil and gas sector, coupled with interviews with corporate-level health, safety and environmental managers. The data for this phase of the project was gathered in March 2004 and is based on a review of corporate reports from 2002. Follow-up interviews with managers were conducted in March 2005.

The results of this phase were mixed: of the nine oil and gas companies listed in the UK, we found that the CSR policies of the three largest oil and gas companies (BP, BG and Shell) were substantially better developed than those of the smaller firms. The major differences related to the level of detail within the policies, procedures and reporting frameworks adopted by the firms and to the amount of information on these aspects that was placed in the public domain. Given these discrepancies, the decision was taken to focus on the three leaders rather than the remaining laggards.

Our review established that each of the three larger companies within the sector had well established corporate policies relating to the environmental aspects of CSR. Each of the firms set out some aspirations and targets for corporate environmental performance and they offered some detail on the procedures used to translate corporate policies into site-level practices. They also provided information on how site-level activities were monitored, and how their performance was audited and verified. The firms also made explicit commitments relating to some of the procedural issues that link CSR with EJ - for example, they each had clear statements on transparency, engagement, equity and human rights. Their commitments on transparency were reflected in the publication of corporate reports which provided externally verified data on their aggregated environmental impacts.

With regard to their policies and procedures, each of the companies stated that all of their sites had to contribute to corporate aspirations and targets and to comply with all relevant laws and regulations. Although in some instances they were guided by international standards<sup>2</sup>, decisions on site-specific standards tended to be devolved to the site level. In the case of BP, for example, site-specific standard setting was based on deliberations between local managers and their consultants or certifiers on the significant environmental aspects to be addressed by environmental management systems such as ISO14001. As well as presenting very limited levels of transparency and no opportunities for direct stakeholder involvement, such a devolved decision making process does not necessarily ensure consistency, and all of the companies suggested that levels of environmental performance varied from site to site.

With regard to the provision of data on site-level environmental performance, behaviour varied considerably across the three firms. One of the three (BP) routinely provided such information through site-level environmental reports, one (Shell) provided site-level reports for particular 'hot-spots', and one (BG) did not publish site-level data. Although BP and Shell stated that they used a common reporting framework to release such site-level data, only BP's site-level reports allowed the environmental performance of one site to be evaluated over time or the performance of different sites to be compared and contrasted,

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<sup>2</sup> For example, managers from both BP and BG claimed in interviews that if, for example, local air quality exceeded WHO or EU limits, this would be picked up in local level reviews and tighter emissions standards would be set. However, the extent of their local environmental monitoring activities, and the nature of the decision making processes that might be triggered by a breach of minimum standards, were not discussed in any of their corporate reports.

and then only with other BP sites. Consequently, it was impossible for the environmental aspects of CSR to be compared and contrasted on a consistent basis across the sector. Furthermore, within the corporate and site level reports, little or no reference was made to key outcomes such as levels of local air quality or the health of local populations.

Thus, even amongst the leaders in the sector, corporate governance processes focused on policies and procedures and on aggregated, corporate-level performance measures. Although both site-level standards and performance varied, the absence of clear, consistent and reliable data meant that it was impossible for stakeholders to compare and contrast the performance of different sites. This restricted the ability of stakeholders to make informed decisions and to focus their engagements with the companies on individual sites or on particular aspects of their performance. It also meant that they could not make any observations about variations on environmental performance or about the links between CSR and EJ.

## **Phase 2 - Evaluating Corporate Environmental Performance**

Phase 1 showed that even the leading companies in the sector examined rarely disclosed site-level data, and where they did so it was not provided on a consistent basis or in a common format. However, this does not mean that no such information is in the public domain; increasingly data on corporate environmental performance is being made available by governments and regulatory agencies through the publication of what have come to be known as Polluting Releases and Transfer Registers (PRTRs). Typically, such registers publish on-line data on the regulated emissions from industrial sites, thereby establishing an opportunity for stakeholders to find out about the environmental performance of different industrial sites and to make judgements about their impacts on health and the environment.

Driven by the adoption of legislation both on human rights and freedom of access to information, PRTRs are becoming much more commonplace, at least in industrialised countries. Starting with the publication of the Toxic Releases Inventory (TRI) in the US in the late 1980s, such registers have spread and are now in place in Canada, Australia, Japan and, most recently, across the EU as a result of the creation of the European Polluting Emissions Register (EPER) in 2003. Such developments may be significant: previous research has found that the provision of such access to information can have a significant effect both on the governance processes that exist around industrial sites (i.e. the nature and influence of the relationships between regulators, stakeholders and firms) and on the

environmental performance of those sites (see Konar and Cohen, 1997; Terry and Yandle, 1997; Khanna *et al*, 1998; Stephan, 2002, Gouldson, 2004).

By using the data released by PRTRs as the basis for Phase 2 of the project, we were able to develop benchmarks of environmental performance for all of the oil refineries in the EU and the US (see Table 1). While PRTRs provide the best available data on emissions from such facilities, it is important to note that there are some problems with the data that they provide. These problems relate to the consistency of the data included in different PRTRs and to the scope of the available data. The key issue is that only annualized emissions data was provided for each site. As a result, there is no information on key indicators such as the number of times within the year that emissions limits were exceeded, the number of accidents or incidents, or the levels of air quality in the surrounding areas. Even so, PRTRs provide the only consistent, standardized data set, and they can still support a meaningful analysis of variations in corporate environmental performance.

\*\*\* Insert Table 1 about here

As the PRTRs in the US and the EU do not include data on the characteristics of each refinery, we had to incorporate data from a third source, namely the Oil and Gas Journal's Worldwide Refining survey (OGJ, 2001). Using this data, we characterised each refinery according to its capacity - whilst measures of production rather than capacity would have been a better indicator, such data are not routinely available. Similarly, because different types of refinery exist, we followed standard practice for the sector (see OGJ, 2001; Leffler, 2000) by categorising each refinery according to its complexity<sup>3</sup>. Ideally, we would also have adjusted emissions according to the age of each refinery and the nature of the crude oil that was processed, however such information is commercially confidential and is not widely available.

Once the different data sets in the EU and the US were combined, we were able to compare and contrast the annual emissions from 232 refineries across the EU and the US (see Figures 1 and 2). We focused particularly on two pollutants - sulphur dioxide and benzene - as these are two of the key emissions from oil refineries with impacts on local

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<sup>3</sup> Complexity 1 is a 'Simple Refinery' with crude distillation, cat reforming and distillates hydrocracking. Complexity 2 is a 'Complex Refinery' which equates to a simple refinery plus a cat cracker, alky plant, gas processing. Complexity 3 is a 'Very Complex Refinery' which includes a complex refinery plus a coker which eliminates residual fuel production (Leffler, 2000, p215). In theory, emissions from a Complexity 1 refinery would be the lowest, and 3 the highest.

and regional air quality and on public health. For each of these emissions streams we identified two different indicators. The first indicator was for total levels of emissions of each substance from each refinery. This is an important indicator for local communities that are interested in the absolute levels of emissions that might influence air quality and public health. The second indicator was an eco-efficiency indicator which focused on emissions per unit of capacity for each refinery. This is an important indicator for analysts interested in relative efficiencies and levels of production.

\*\*\* Insert Figures 1 and 2 about here

The results of the benchmarking study show considerable variations in corporate environmental performance. As can be seen in Figures 3-6, there was a wide range of emissions levels from the different refineries. Even when the outliers were removed and we focused on variations across the inter-quartile range (i.e. the refineries at the top and bottom of the central 50%), the ratio of the highest to the lowest emissions was significant: for SO<sub>x</sub> and benzene, total site emissions varied by factors of 7.4 and 7.3 respectively, whilst eco-efficiency measures varied by factors of 5.4 and 5.3 respectively. Although to some extent these variations reflect differences in the complexity of the refineries, they exist despite the presence of regulations in both the EU and the US that oblige refinery operators to adopt the best available technologies and techniques and/or to comply with particular emissions limits.

\*\*\* Insert Figures 3-6 about here.

As well as finding significant variations across the range of the refineries, there were also dramatic variations between levels of environmental performance in the US and the EU. For SO<sub>x</sub> and benzene, on average total site emissions in the EU are 2.4 and 4.4 times higher than those in the US, while average levels of eco-efficiency in the EU are 1.9 and 2.5 times worse than those in the US. In summary then, the benchmarking study found that there are substantial variations in the environmental performance of oil refineries, and that these variations exist both across the range of refineries, and between the EU and the US. Such findings support the results of previous studies that have also highlighted the variability of emissions from oil refineries (see EDF, 1999; PDC, 2004).

### **Phase 3: Examining the Evidence for EJ**

As well as evaluating variations in corporate environmental performance, we were also able to collect data on the social and economic characteristics of the communities that lived in the areas where the refineries were located. This enabled us to examine some of the key aspects of environmental justice - namely whether emissions from oil refineries were higher in more deprived areas. As indicators of social deprivation, we used data relating to unemployment, per capita GDP and population density (again see Table 1). Because EJ is often seen to be a particularly local phenomenon, we examined the relationship between environmental performance and the socio-economic status of local communities at two scales by collecting socio-economic data on both the counties and the districts within which the refineries were located. A simple GIS model was used to align the emissions data with the socio-economic data at different scales. Once more there were problems with gaining access to consistent, reliable socio-economic data, particularly from those countries within the EU. However, with time we were able to collect adequate data from various census agencies and research bodies, but only for the US, the UK, Germany, France and Italy. The total sample size for this section of the research was 176 refineries rather than the 232 refineries included in Phase 2.

The results of the investigation into the links between corporate environmental performance and the socio-economic status of local communities generated some significant results. Based on a series of simple bi-variate regressions, we did not find statistically significant relationships between levels of emissions and the socio-economic indicators at the county level. However, we did find such relationships at the district level. This supports the view that EJ is a particularly local level phenomenon. The results from the local-level analysis are presented in Table 2. They reveal some significant relationships between total site emissions and local socio-economic conditions. For example, they indicate, with 99% confidence, that higher levels of emissions of both SO<sub>x</sub> and benzene correlate with higher levels of unemployment in local communities. For eco-efficiency, the results consistently suggest, with at least 90% confidence, that lower levels of environmental performance correlate with lower levels of per capita income, higher levels of unemployment and lower levels of population density.

\*\*\* Insert Table 2 about here

Although the correlations reported above are all statistically significant, it is important to note that they do not explain all of the variation in emissions. At most, 13% of the variability in measures of eco-efficiency can be explained with reference to the socio-economic indicators. This is not surprising, as other factors such as the age of the refineries or the sulphur content of crude oil inputs are likely to be more significant determinants of emissions, but there are no data available for these.

Furthermore, whilst the results have highlighted the presence of some significant correlations, it is important to note that they do not tell us anything about causality. As a result, we cannot say that these environmental injustices arise because firms adopt lower standards in poorer areas. Based on insights from previous research (see Gouldson, 2004), we can speculate that these correlations might, potentially, be based upon one or more of the following groups of factors.

First, environmental injustices might arise due to variations in the intensity of governmental, civil and self regulation. For example, polluting industries may be more likely to be built or expanded in poorer areas, or they may be regulated less intensively or put under less social pressure in poorer areas. It may also be that firms are less likely to invest in pollution control or to adopt voluntary environmental management initiatives in poorer areas.

Second, they might emerge as a consequence of patterns of economic development and the dynamics of the labour market. For instance, the areas around polluting industries may be likely to become poorer as new employers are dissuaded from moving in or as existing employers move out. It may also be that agglomeration tendencies lead to clusters of polluting firms within the same area. Host areas may also become poorer as firms employ fewer people from the local area as they become more capital and skills intensive.

Third, environmental injustices may be the result of patterns of social change and the dynamics of the housing market. For example, the areas around polluting industries may become poorer as richer populations move out or as poorer populations move in. In some instances, the areas around polluting industries may become poorer as 'buffer zones' are created around the facilities which restrict on-going investments in the area.

Such causal linkages are undoubtedly complex and need to be explored much more fully in future research than they have been to date.

In summary then, we find that levels of emissions are higher, and levels of eco-efficiency are lower, in poorer and less densely populated areas. Whilst the limitations of the available data prevented us from investigating any of the causal links in this research, these results lend support to some of the central claims of the EJ movement. As far as we are aware, this is the first time that an industry-specific analysis of this type and on this scale has ever been completed.

## **Conclusions**

Within this paper, we have reported the results of research into the substantive, environmental outcomes of CSR policies and the extent to which these relate to the principles of EJ. To address these issues, the research drew upon the best available data in the public domain to evaluate variations in corporate environmental performance. A number of key conclusions can be drawn from the research.

With regard to the development of corporate governance processes, the research suggests that the leaders on CSR have much better developed policies than the laggards. However, even amongst the leaders the governance processes used to translate broad, corporate commitments into site specific standards are either not well developed or are not transparent. More particularly, the principles established to guide site-specific standard setting processes are not clear, and standards are commonly set through devolved decision making processes where there is considerable discretion and little transparency. Thereafter, data on site level performance levels is rarely available, and where it is available it is not provided in a common, consistent format. These factors make it virtually impossible to compare and contrast performance, be it from company to company, from site to site or over time. This clearly limits the influence of external stakeholders.

In some contexts, the absence of corporate reporting on site specific standards is compensated for by the publication of PRTRs. In theory, these provide site-level emissions data in the same format for similar processes, and as a result they enable comparative measures of corporate performance to be established. However, there are some problems with quality and scope of the data. A major issue is that PRTRs are simply not in place in many countries and so corporate performance cannot be scrutinised in many countries of the world. The PRTRs that have been established in different countries are often not entirely compatible, there are inconsistencies in the data, and some potentially valuable

data is commonly not reported (for example on short term variations in emissions, the numbers of incidents, links with air quality).

Even so, the data that is made available through PRTRs clearly has value. Using the data, we found significant variations in emissions, both across the range of refineries and between the EU and the US. At the local level, we found that lower levels of environmental performance correlated with lower levels of income, employment and population density in the districts where the refineries were located. While these findings lend support to some of the central claims of the EJ movement, it is important to note that these findings do not reveal anything about the causal relationships that might lead to these correlations between emissions and socio-economic conditions in host areas. As has been discussed, these might come in a number of forms.

With regard to the future development of CSR initiatives, it is clear that CSR is a rapidly evolving field, and that there is scope for the fuller integration of aspects of CSR and EJ. However, when we stray into the normative dimensions of these debates we immediately encounter some complex questions. Should companies necessarily adopt the same standards wherever they operate? If not, should they only comply with local laws? What should they do if these fail to provide adequate protection for local communities? Should they then comply with certain minimum standards, such as UN or WHO ambient quality standards? And what is it socially responsible for a company to do when it contributes to but is not the sole cause of a breach of minimum standards? Whatever the answers to these questions, the position of many advocates of CSR and EJ is that companies should have explicit policies on such issues, that these should be accompanied by effective corporate governance processes and that they should publish clear, consistent and comprehensive reports on performance, including on emissions and outcomes at the site level. On these grounds, it seems that even the leading companies still have some way to go.

With regard to the wider adoption of CSR initiatives, it is clear from our review that the CSR initiatives of the leading companies are much better developed than those of the less proactive companies. However, the debate on how best to promote the wider uptake of CSR initiatives rumbles on and there is often little consensus on how to proceed. Should CSR be mandatory or voluntary? Is there a 'business case' for CSR or should it be incentivised? To what extent can we rely on information-based approaches to drive its development and diffusion? The analysis in this paper has shown that the provision of information through the creation of PRTRs can play an important role in enabling

stakeholders - at least those with the capacity to access and process the data - to make more informed judgements about corporate performance. Potentially, this gives them some ability to drive the development and diffusion of CSR initiatives by rewarding the leaders and sanctioning the laggards. However, to enable more informed judgements to be made on corporate performance, PRTRs could be adopted in more countries, the PRTRs in different countries could be made more compatible, and all of the PRTRs could usefully be extended to include more data on both the social and the environmental aspects of CSR. One possibility is for governments in the EU or the US to set up an extended PRTR framework to encourage those firms that have their either have their headquarters or are listed on the stock markets within their borders to report site specific data in a common format for all of their sites around the world.

Thus, we have been able to evaluate variations in corporate environmental performance, and we have found some support for the view that emissions are likely to be higher in poorer areas. While these results are significant in and of themselves, they have also raised many questions - particularly on the causal factors that are associated with environmental injustices in different settings and on the more normative dimensions of the debate on corporate social responsibility and environmental justice.

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**Table 1: Data Included in the Quantitative Study**

<b>88 EU refineries, 144 US refineries</b> (All data is for 2001 unless otherwise stated)		
<b>Units</b>	<b>Variables</b>	<b>Data Sources</b>
Refinery Capacity	Barrels per annum	OGJ
Refinery Complexity	Type 1, 2 or 3	OGJ
Refinery Emissions	SO <sub>x</sub> and benzene emissions per annum (metric tons).	EU - EPER, US - TRI/NEI (1999 data)
Home County/District Characteristics	GDP per capita (expressed as purchasing power parity), unemployment (indexed against national averages), population density (people per km <sup>2</sup> ).	EU - Eurostat (NUTS 3) and national agencies (LAU2) US - Census (counties and congressional districts).



Table 2: Quantitative Results: District Level

Pollutant	Independent Variables	Dependent Variable: Site Emissions		Dependent Variable: Site Eco-efficiency	
		Coefficient (t statistic)	R-square	Coefficient (t statistic)	R-square
SO <sub>x</sub>	GDP	-0.105 (-1.167)	0.011	-0.049 <sup>a</sup> (-2.282)**	0.043
	Unemployment	0.735 (3.223)***	0.065	0.045 (3.362)***	0.069
	Pop Density	-0.497 (-0.969)	0.006	-0.0000129 (-1.668)*	0.018
Benzene	GDP	-0.001 (-2.923)***	0.071	-2.158 <sup>b</sup> (-5.259)***	0.135
	Unemployment	0.913 (3.570)***	0.085	0.572 (2.850)***	0.055
	Pop Density	-0.003 (-1.433)	0.015	-0.119 <sup>b</sup> (-2.726)***	0.052

a: independent variable is logarithmic

b: both dependent and independent variables are logarithmic.

\*\*\* denotes significance at the 1% level;

\*\* denotes significance at the 5% level;

\* denotes significance at the 10% level

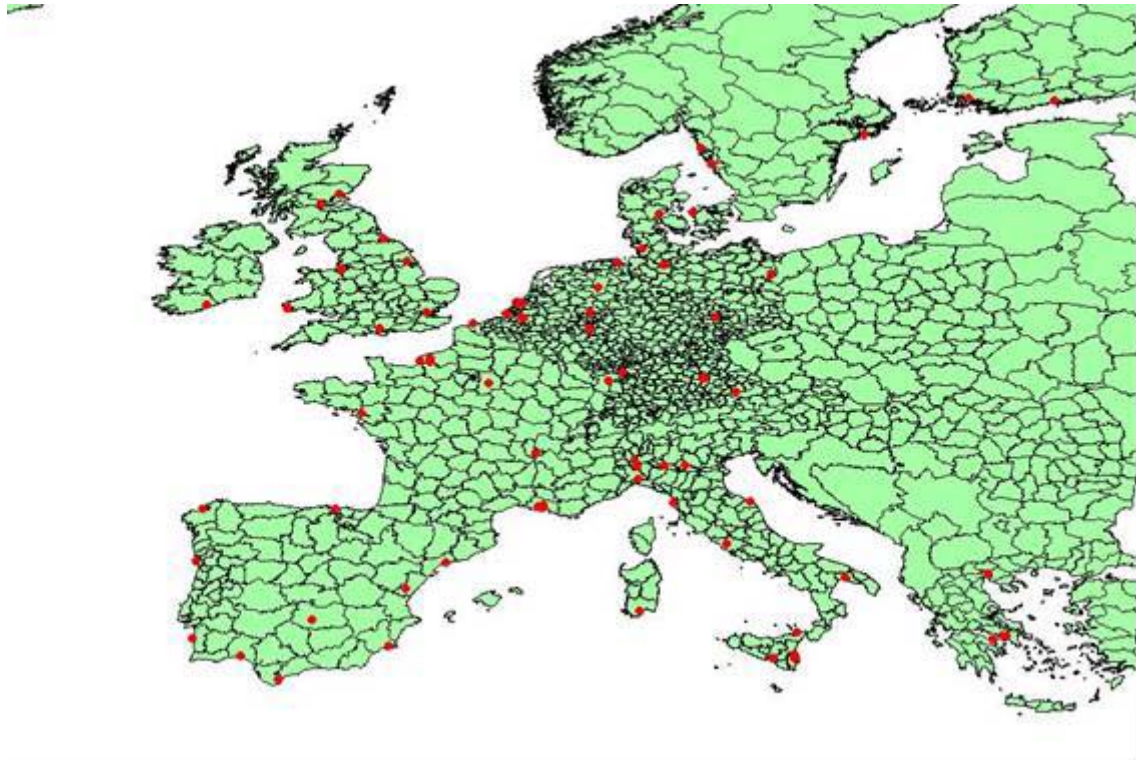


Figure 1: Location of Oil Refineries in the EU

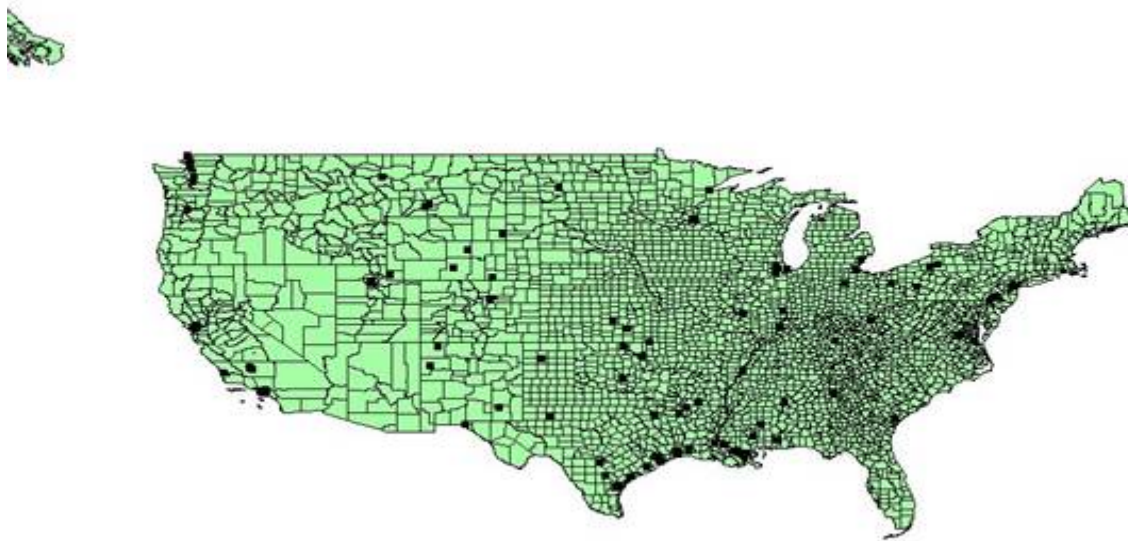


Figure 2: Locations of Oil Refineries in the US

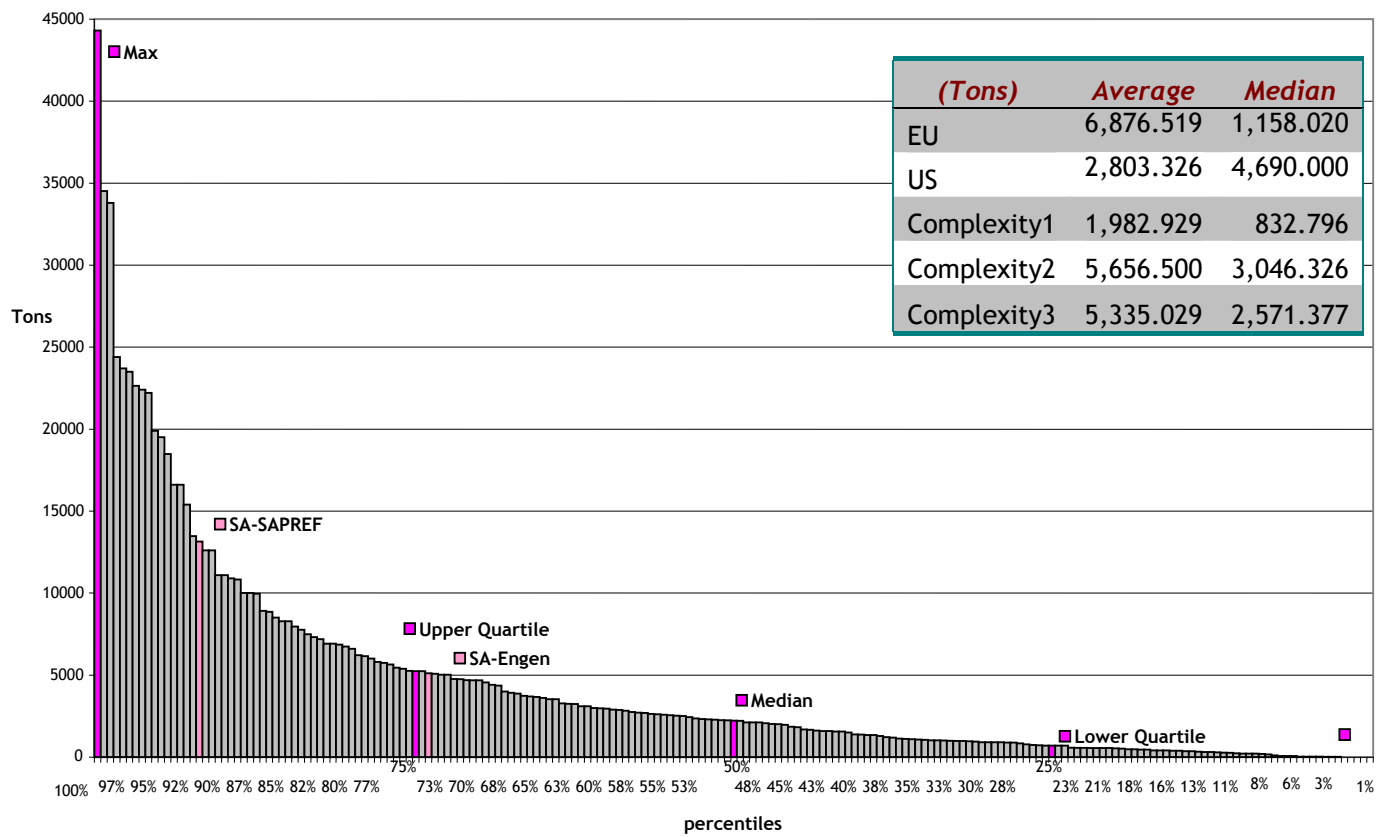


Figure 3: Emissions from Oil Refineries - Total SO<sub>x</sub> Emissions

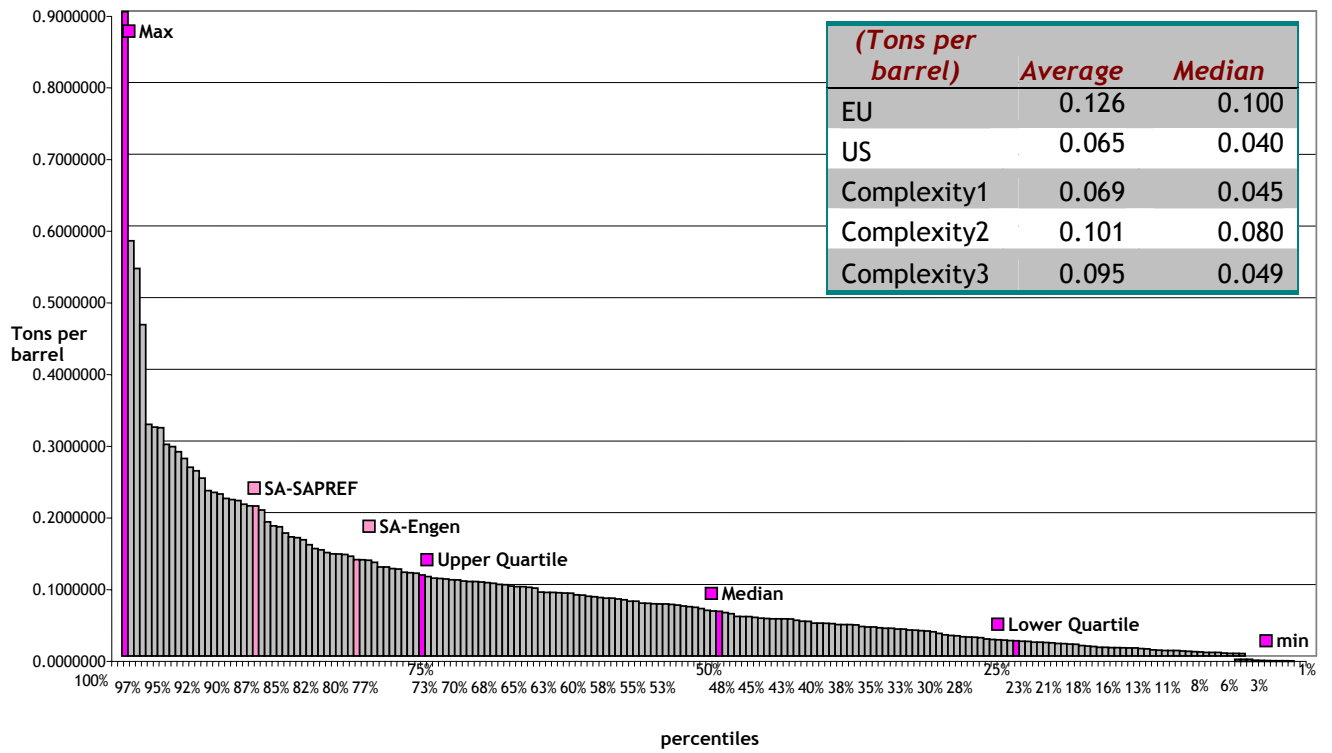


Figure 4: Eco-efficiency of Oil Refineries - SO<sub>x</sub>

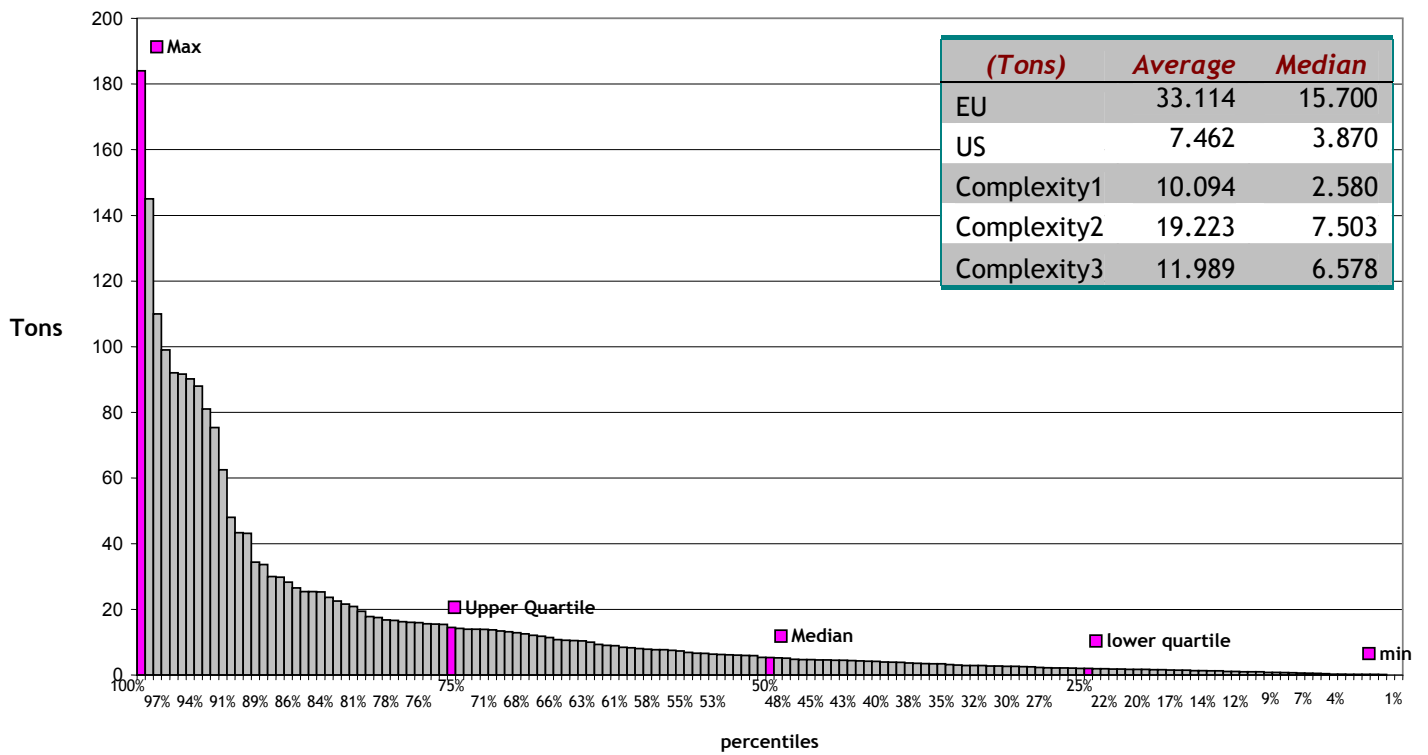


Figure 5: Emissions from Oil Refineries - Total Benzene Emissions

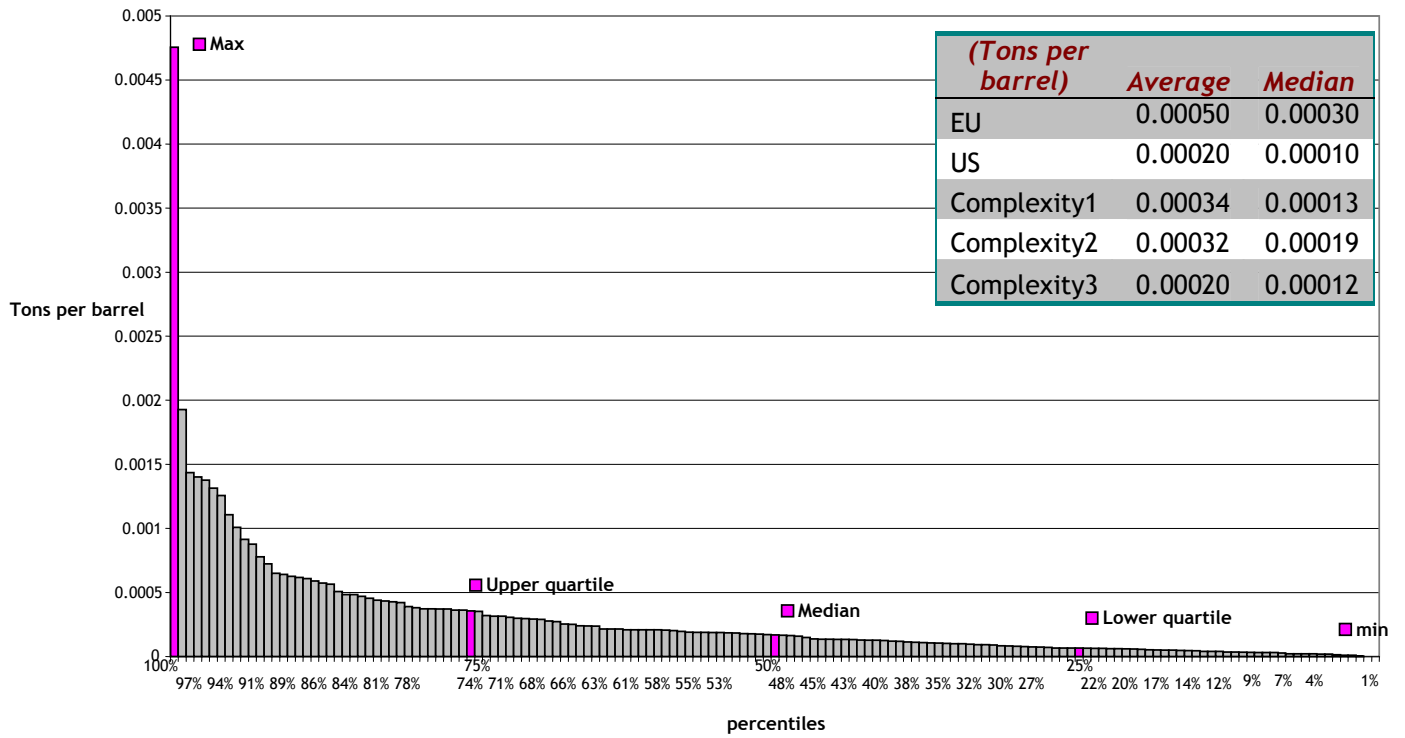


Figure 6: Eco-efficiency of Oil Refineries - Benzene