

Article submitted to Social Responsibility Journal:

## **Rising Externality Costs and Corporate Social Responsibility**

Case: EU legislation on Electric and Electronic Equipment

### **Abstract**

**Purpose** – *The purpose of this article is to study how we may identify the link between rising externality costs and Corporate Social Responsibility (CSR) by using a market centric approach to CSR.*

**Design/methodology/approach** – *We use indicators measuring CSR performances triggered by rising externality costs due to the EU legislation on electric and electronic equipment (EEE). The case study includes three leading companies in the global electric appliances industry.*

**Findings** – *The EU legislation on EEE has increased the externality costs of the electric appliances industry. Some companies only meet the minimum requirements of the legislation, while others go beyond what is required and engage in CSR. We find that the strongest CSR impact is related to output externalities in our sample in the EEE sector, while the strongest CSR impact in the clothing sector, in an earlier study, is related to input externalities.*

**Practical implications** – *The findings suggest that governments need to adapt their CSR policies not only to general sector specific features, but in addition to the potential for reducing negative externalities in different parts of the value chain in each sector.*

**Original value** – *This article contributes to a better understanding of how government policies raise the externality costs of industries which in turn lead these industries to strengthen their CSR performance. The study also demonstrates the usefulness of a market centric approach to CSR.*

**Key words** *Corporate social responsibility, externality costs, supply chain management, CSR potential*

**Paper type** *Research paper*

## **Introduction**

There are many studies of the impact of public regulations on corporate social responsibility (CSR) (e.g. Fox et al., 2002, Albareda et al., 2007, and Ruggie, 2008), but few of these studies concern the internal strategies of the agent – the corporation. The aim of this article is to contribute to a better understanding of how rising externality costs, due to government policies, affect corporate social responsibility (CSR). We take a market centric approach to CSR. First the market centric approach to CSR is presented. Then we show how we may distinguish between input, process and output externalities, between CSR performance and CSR impact, and between first and second order CSR impact. Our understanding of CSR as a corporate activity triggered by government incentives corresponds to the conception of CSR in the corporate environmental management field (see Berry & Rondinelli, 1998, Dyllick & Hockerts, 2002, and Khanna & Anton, 2002). While these contributions explain how environmental policy incentives encourage proactive environmental management at the corporate level, they do not provide a definition of CSR – or a similar concept – which relates corporate environmental management to business transactions. The market centric approach to CSR allow us to study how rising externality costs (linked to business transactions) contribute to a stronger CSR performance, and enable us to determine where in the value chain the CSR impact is likely to be strongest.

We use indicators of CSR performance in three global companies in the electric appliances industry to exemplify the relationship between CSR and rising externality costs. We focus on the rising externality costs due to the EU legislation on the electric and electronic equipment (EEE) sector. Finally, we compare the externality costs and CSR impact of our sample in the EEE sector with the externality costs of the clothing industry. The differences illustrate the importance of sector specific factors, and may have implications for public CSR policies.

### ***The market centric approach to CSR***

Relatively few definitions of CSR focus on the main objective of the firm in the market economy; to earn a surplus by exchanging products and services and to perform as well as, or preferably better than, their competitors (see Carroll, 1999 and Kakabadse et al., 2005). The market centric approach to CSR focuses on the corporation's market context. CSR is associated with corporations' externality recognition. This approach is based on Bowman (1973), Sethi (1979), and Crouch (2006) and presented in Laudal (2011a). CSR is here understood as *efforts to internalize and institutionalize externalities produced by business transactions, and prompted*

*by the corporation's own business strategies or by government incentives.* In case the effort is prompted by government incentives, these incentives should allow for some degree of corporate discretion. When corporations *comply* with specific regulatory requirements they do not display CSR *per se*, since their actions in this case are motivated by the *government's* externality recognition – not their own. There has to be an element of choice on the part of the firm to qualify as CSR.

An 'externality' is a fundamental property of all business transactions. When a business transaction has an impact on a third party that is not directly involved in the transaction, this constitutes an externality. Thus, CSR becomes a derivative of business transactions. Externalities produced by business transactions may be the pollution of a nearby river caused by the dyeing process in a garment factory, the diseases caused by breathing in dust particles in a coal mine, or the reduction in local unemployment and crime rates due to a new production facility. Identifying externalities does not necessarily involve normative judgments. However, it does if we identify 'negative' and 'positive' externalities<sup>1</sup>. CSR is associated with efforts to mitigate negative externalities and to enhance positive externalities in the pursuit of business opportunities. 'Internalizing an externality' indicates that a business entity bears all, or part, of the costs related to certain negative externalities, or obtains advantages related to certain positive externalities. 'Institutionalizing an externality' indicates that the firm's organizational structure and business model is adapted to ensure that the externality is internalized over time. If a business entity fully succeeds in internalizing and institutionalizing an externality, it is by definition no longer an externality because it is included as an ordinary business transaction. Thus, this area of activity is no longer characterized as CSR. CSR becomes a transitional process – not merely a corporate practice fulfilling certain criteria.

Based on this approach to CSR we will consider how CSR relates to different parts of the supply chain.

### ***Input, Process, and Output externalities***

When a corporation voluntarily decides to bear a larger burden of their externality costs, it needs to compensate this to stay competitive. This compensation could have many forms; it could be by increasing its market share (increasing advantages of scale), by influencing the overall cost structure by increasing profit margins (making customers pay), or by a combination of these two forms. The main theme here is how the corporation converts incentives in the form of

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<sup>1</sup> 'Negative' and 'positive' externalities may be determined with reference to international CSR standards. This could be the SA 8000, the UN Global Compact, or the ISO 26000 standard.

higher externality costs to beneficial impacts for the natural environment. This conversion process concerns the corporation’s ‘CSR performance’ which may be interpreted as a mediating variable between ‘externality costs’ and ‘CSR impact’.

At the corporate level we may distinguish between three externalities throughout the supply chain: input externalities, process externalities, and output externalities<sup>2</sup> (see Figure 1). ‘Input externalities’ are externalities related to business transactions in the supply chain. ‘Process externalities’ are externalities linked to the production, marketing or sales process controlled by the corporation. ‘Output externalities’ are externalities related to business transactions within the distribution network, or related to business to consumer transactions.

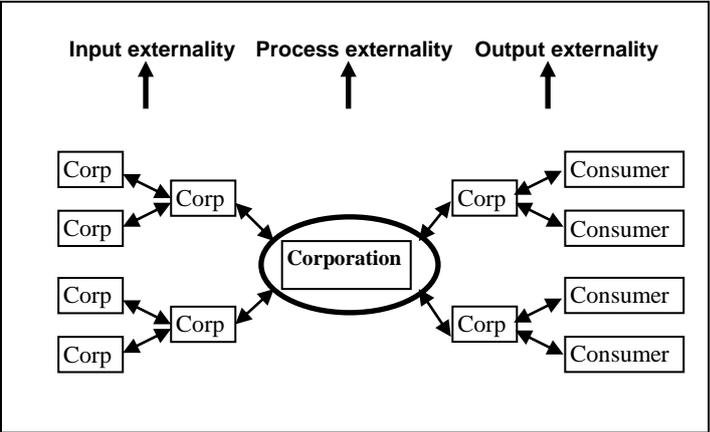


Figure 1. Input externalities, process externalities and output externalities

The issue here is how higher externality costs, and the subsequent change in cost structure of corporations, may influence their CSR performance. In the following we will study how corporations act in response to EU regulations which

- a) increase the costs of input externalities which influences sourcing costs
- b) increase the costs of process externalities which influences processing costs
- c) increase the costs of output externalities which influences estimated life time costs

<sup>2</sup> In economics it is common to refer to different categories of externalities. Contributions typically focus on how taxes and subsidies may be applied to minimize negative externalities. According to Bruce (2001:89) the distinction between ‘output externalities’ and ‘input externalities’ concerns whether the external benefit or cost is directly related to the output of the firm, or to the firm’s use of particular factors of production (inputs). In this paper I also choose to distinguish between externalities linked to external factors of production (input externalities) and externalities linked to internal factors of production (process externalities).

### ***The Distinction between CSR Performance and CSR Impact***

We may distinguish between CSR *performance* and CSR *impact* (Figure 2).

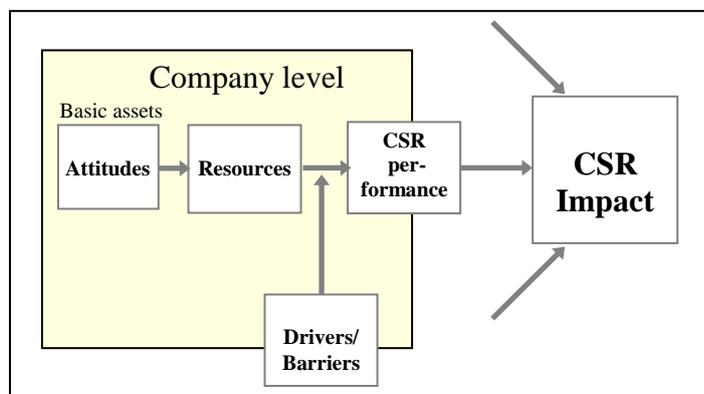


Figure 2. Conceptual model of CSR impact and determinants within a company

CSR performance is determined by basic corporate assets which may be conceived of as 'attitudes' and 'resources'. 'Drivers' and 'barriers' are variables, external to corporate decision-makers that influence the level of CSR performance within a given amount of resources, and a given set of attitudes. However, CSR performance is not the only determinant of CSR impact. Other interfering factors may include the state of the local environment or the configuration of institutions influencing the effect of the CSR performance. Empirical studies, using an institutional perspective (e.g. Meyer and Rowan, 1977 and DiMaggio and Powell, 1983), show that the spread of governance trends and policy trends among organizations may be partly explained by cultural convergence and the tendency to imitate popular conceptions and models in their institutional environment. For example, when companies start displaying similar attitudes and performances, mimetic and coercive institutional pressures often increase the popularity of CSR beyond what one would expect on the basis of the sum of individual firm strategies (see Jones, 1999 and Delmas and Toffel, 2004).

### ***The Distinction between First and Second Order CSR Impacts***

We may define 'first order' and 'second order' CSR impacts by referring to first and second order externalities produced by business transactions. Figure 3 illustrates how first and second order CSR impact may be associated with externalities of business transactions.

A first order CSR impact concerns the quantity impact on social and natural environments. This is an externality derived directly from the exchange of goods and services (business transactions). It is measured by

- quantitative measures of the extraction of natural resources’ and of the utilization of human resources (inward red arrows)
- quantitative measures of how by-products of the exchange of goods and services affect the social and natural environment (outward red arrows).

A second order CSR impact concerns the systemic impact on the interdependent natural and social systems. The extraction of natural resources and the utilization of human resources influence the conditions for sustainable development. It is measured by

- indicators of increasing entropy through the refinement and production of goods and services (inward green arrows) and
- how first order CSR impact influences indicators of sustainable development (outward green arrows).

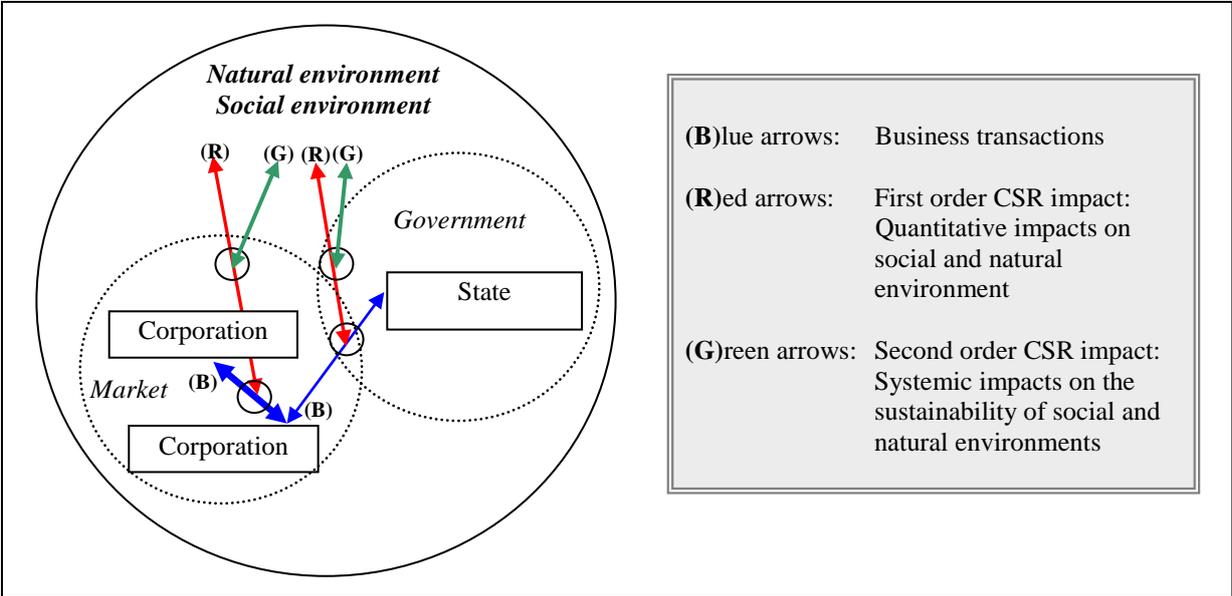


Figure 3. First and second order CSR impact depicted as externalities

We assume that second order CSR impact, in the long run, is more important than first order CSR impact. The reason for this is that meeting the systemic conditions for sustainable development will not only reduce the amount of extraction of natural resources and the amount

of pollution, but will also reduce the *need* for extraction and pollution by increasing the rate of recycling and reuse of materials in the production process.

***Research proposition and research question***

Whenever corporations internalize externalities they attach a value to their externalities. A negative externality – for example hazardous waste – represents a potential cost. A positive externality – for example surplus heat from a production process – may represent a potential source of revenue. The corporation may recognize an externality as a business expense or revenue in order to enhance its social or natural environment *and* to increase its efficiency or market share. Public authorities recognize business externalities when they attempt to influence corporate practices. The corporation attaches a value to its externalities when

- it determines that markets which affect their business would react favourably if they internalized an externality,
- it adapts to public policies affecting the costs of externalities produced by the business

The focus in this article is limited to instances where businesses adapts to public policies affecting the costs of externalities, and more specifically; where businesses adapt to new environmental legislation from the EU which raises the costs of externalities produced by its transactions. Environmental policies which raise externality costs and at the same time allow for corporate discretion, is often referred to as New Environmental Policy Instruments (NEPI), in contrast to traditional command and control regulation (Tews et al., 2003, Sterner, 2003, Jordan et al., 2005)<sup>3</sup>.

Building on this understanding of a market centric approach to CSR we arrive at the following proposition and research questions:

P1: *Rising externality costs contribute to a stronger CSR performance.*

Q1: In which part of the value chain is it likely that the CSR performance will have the strongest impact? In ‘input’, ‘process’ or ‘output’?

Q2: What kind of CSR impact (first or second order) should we expect in which part of the supply chain?

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<sup>3</sup> Jordan et al. (2005) refer to four ”main subtypes of NEPI”: market-based instruments, eco-labels, environmental management systems, and voluntary agreements.

By examining this proposition and these questions in a case study we exemplify the effects associated with the market centric approach to CSR.

## **Introducing the case**

### *Selection of sector for the case study*

The market centric approach to CSR does not cover corporate actions that fulfil clearly defined obligations in national legislation, international treaties etc. There must be room for alternative adaptation strategies if an act is to qualify as CSR. To avoid forced adaptations we would prefer to use a case where new regulation defines a framework where there is room for manoeuvre. As we seek to identify business actions that are only related to externality costs, it would also be preferable to select a case where the functionality of the product, and the technology involved in producing the product, is relatively stable during and after the introduction of incentives influencing the costs of externalities.

The EU legislation on electric and electronic equipment (EEE) fulfils these two criteria. This legislation covers restrictions of the use of certain hazardous substances (RoHS)<sup>4</sup>, labelling of household appliances, and the collection and treatment of waste electric and electronic equipment (WEEE).

WEEE is one of the fastest growing product categories in the western world measured in tonnes. Expanding markets and shorter innovation cycles contributes to an accelerating rate of replacement. In the EU it is estimated a total of 9 million tonnes of WEEE generated each year (2008). In 2020 the annual amount of WEEE is expected to be 12 million tonnes (European Commission 2008b). The aim of the EEE regulation is to tackle this growing environmental challenge.

The expectation that rising externality costs contribute to a stronger CSR performance, and in this case to stronger efforts to mitigate the negative environmental impact of EEE beyond clearly defined obligations of EU legislation, rests on the assumption that these efforts are

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<sup>4</sup> The six substances are lead (found in electrical solder, connectors ends, and electrical boards), mercury (found in electrical relays and sensors), hexavalent chromium (found in the plating of metals and in corrosion prevention coatings), cadmium (found in metal plated products, relays and switches, specialty solders, and colour pigments), PBB (fire retardant), and PBDE (fire retardant).

perceived by business to be profitable in the long run. Knowing that the costs which the EEE regulation forces companies to internalize are passed on to customers and could reduce their demand, it may be few incentives for actions beyond those required by the legislation. Hence, we would expect little CSR. However, with the exception of the RoHS directive, the requirements of the EEE regulations are minimum standards. It follows that the public's expectation in light of the legal requirements is difficult to predict. A strong CSR performance becomes an element of corporate risk management. Rising externality costs lead companies to internalize costs and fulfil demands beyond what they perceive as their obligation, because the standard incorporated in the regulation in the long run contributes to rising public expectations. To *not* over-fulfil the targets in the regulation becomes a reputational risk. Thus, we expect a strong CSR performance to mitigate these risks. This effect was found in Gottberg et al., (2005) in a study of the WEEE and product design in the European lighting sector.

We will now consider whether rising externality costs contribute to stronger voluntary measures to reduce the negative environmental impact within the EEE sector, utilizing the market centric approach to CSR.

### ***The main instruments of the EEE regulation***

The regulation of electric and electronic equipment covers three main areas:

First, it covers restrictions with regard to hazardous substances (RoHS) in EEE. The main EU instrument of regulation here is Directive 2002/95/EC<sup>5</sup> (the RoHS directive). Article 4 prohibits six specific substances<sup>6</sup> in EEE products which are marketed in the EU. This part of the EEE regulation increases costs related to the *input externality* of the EEE sector in the EU (see Figure 1 and Table 5).

Second, the EEE regulation covers requirements that household EEE are labelled with regard to energy efficiency and drying performance. This labelling is mandatory and is financed by producers. But the level of efficiency is not specified in mandatory legislation. There is only a (low) minimum requirement. The main EU instrument of regulation in this area is Council Directive 92/75/EEC (the labelling directive). This directive does not specify how prominent

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<sup>5</sup> This directive is to be replaced by a new directive proposed by the Commission; COM(2008) 809 final.

<sup>6</sup> These six substances are; 1) lead, 2) mercury, 3) cadmium, 4) hexavalent chromium, 5) polybrominated biphenyls (PBB) and 6) polybrominated diphenyl ethers (PBDE).

the information on energy efficiency should be on the corporate websites. Promoting energy efficiency on their website should therefore qualify as CSR performance. This CSR performance should in the long run – everything else equal – strengthen energy efficiency as a criterion when consumers select their product, which in turn represents an incentive for producers to increase their percentage of EEE models fulfilling the strictest labelling requirements. The labelling requirements were phased in gradually for different EEE products between 1994 and 2004. Manufacturers placing new EEE products on the European market shall provide labels and fiches, according to detailed specifications. The information provided in the fiche shall be contained in all publications targeting potential customers. Manufacturers shall supply the labels and fiches to dealers free of charge. The part of the EEE legislation concerning the fulfilment of labelling requirements represents a cost increase related to *process externality* (see Figure 1 and Table 5).

Third, the EEE regulation demands a system for the collection and treatment of waste electric and electronic equipment (WEEE). The main EU instrument of regulation is Directive 2002/96/EC<sup>7</sup> (the WEEE directive). This directive requires that all member states should establish a system allowing consumers and distributors to return WEEE free of charge<sup>8</sup>. Design features of EEE should be adapted to enhance waste treatment. The waste treatment should be ‘the best available treatment, recovery and recycling techniques’, and is to be financed by the manufacturers. However, the WEEE directive does not require companies to establish their own waste treatment systems, and develop new treatment systems. These kinds of initiatives therefore qualify as CSR performance. This regulation causes a cost increase related to the *output externality* of the EEE sector in the EU (see Figure 1 and Table 5).

### **Design of the case study**

To exemplify the market centric approach to CSR we need to study specific companies. We also need a group of indicators which enable us to differentiate between “strong” and “weak” CSR performance.

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<sup>7</sup> This directive is to be replaced by a new directive proposed by the Commission; COM(2008) 810 final.

<sup>8</sup> The cost of the collection and treatment of WEEE is in the end paid for by the consumers. Thus, in the end the consumers finance the collection and treatment systems though they are offered free of charge. The system is organized different in different countries. In some countries it is organized as a public scheme, in others it is a scheme operated by concessionaires, and in a third group of countries it is operated directly by the retailers receiving the waste products.

### *Selection of case companies*

The three global market leaders in the electric appliance industry were selected as case companies. These are

- the US company Whirlpool Corporation
- the Swedish company AB Electrolux
- the German company Bosch und Siemens Hausgeräte GmbH (BSH)

All of these companies have a global presence. They market their products worldwide, and all have manufacturing facilities in Europe, North America, and Asia. BSH has the lowest global sales figure, but the highest European sales figure. Table 1 presents basic facts of these companies:

Name	Global head-quarters	Annual sales in mill. euro (in Europe)	Listed on stock exchange & Ownership	Employees (Global operations)	Number of manufacturing countries (No. of facilities)	Number of sales countries	Brand names in Europe*
<b>Whirlpool</b>	Benton Harbor, Michigan, USA	13 290 (2 530)	New York and Chicago stock exchanges. Dispersed ownership.	67 000	12 (n.a.)	120	Whirlpool, Maytag, Amana, Bauknecht, Ignis, Laden, Polar
<b>Electrolux</b>	Stockholm, Sweden	11 590 (4 510)	Nasdaq OMX Stockholm. Majority owners: Swedish institutions and mutual funds.	61 000	17 (50)	150	Electrolux, AEG, Electrolux, Zanussi
<b>BSH</b>	Munich, Germany	8 760 (7 010)	Not listed. Owners: Bosch and Siemens 50% each.	40 300	14 (43)	40	Bosch, Siemens

*Table 1: Basic facts of case companies. Sources: Annual reports 2009 (Annual report 2008 for BSH).*

*\* Brands for refrigerators/freezers and washing machines.*

We consider these three corporations in an effort to *exemplify* how rising externality costs contribute to a stronger CSR impact by using a market centric approach to CSR. This sample/data is not adequate to *verify* any specific relationship – this would require a larger sample of corporations.

### ***Indicators of a stronger CSR performance related to rising externality costs***

We focus on the elements of the EU legislation that allows for a room for manoeuvre. A ‘stronger CSR performance’ will in this article be associated with indicators of actions beyond the requirements of the EEE legislation. We choose indicators of CSR which are grouped according to their position in the value chain:

- Input externalities:
  - If the case companies ban the six substances listed in the RoHS regulation globally, and not only for supplies to the European market, it is an indication of CSR performance.
- Process externalities:
  - When the case companies publish their energy efficiency scores on their websites it is an indication of CSR performance.
  - When the distributor and retailers of EEE products publish their energy efficiency scores on their websites it is an indication of CSR performance.
- Output externalities:
  - When a high portion of products fulfils the strictest labelling mark it is an indication of CSR performance.
  - When the case companies take initiative to facilitate the establishment of a system for handling WEEE it is an indication of CSR performance.

The CSR performance is probably also influenced by sector specific drivers. These may be understood as the “CSR potential” of the EEE sector and interpreted as a sector level indicator of CSR performance (Laudal, 2011b). Below we will consider whether the CSR performance of the EEE industry, and especially the first and second order CSR impact, may be explained by a high CSR potential in the EEE industry.

### ***Sources of data***

The main sources of data in this article are the websites of DG environment in the European Commission, the website of the three case companies, CSR reports and annual reports of these and other companies, studies commissioned by international agencies, and academic studies of the EEE sector.

**The CSR performance of the case companies**

In this section we consider whether an increase of (perceived) externality costs seems to cause companies to engage in CSR related activities. The CSR performance of the three case companies is determined with reference to the five indicators (listed above) of actions beyond the requirements of the EEE legislation.

*CSR performance linked to input externalities*

The EU legislation aim to reduce harmful input externalities (see Figure 1) related to hazardous substances. The objective is to minimize the environmental damage of WEEE (RoHS directive). The indicator of CSR performance linked to this requirement is how the case companies implement the RoHS requirements with regard to their global supply policies (Table 2):

Indicator of CSR performance (input externalities) (April 2010)	<i>Electrolux</i>	<i>BSH</i>	<i>Whirlpool</i>
<b>1.1. Enforcement area of requirements concerning banned substances in the RoHS directive*</b>	4 substances: Effective globally (some exemptions). 2 substances: Only effective for the European market.	All six substances: The ban is only effective for the European market.	All six substances: The ban is only effective for the European market.

*Table 2: Indicator of CSR performance linked to input externalities*  
 \*Sources: Publicized on corporate websites: ‘Electrolux Restricted Materials List 2009’, BSH ‘conditions for purchase (02/2010)’, and Whirlpool note ‘What are the general requirements to do business with Whirlpool?’

According to the RoHS directive, six substances are banned in EEE on the European market. However, companies on the European market selling their products globally are not required to ban these substances in products destined for non-European markets. Table 2 shows that Electrolux is the only company which bans RoHS substances globally. In BSH the restrictions on lead are stricter in Europe than in the United States (Herold, 2007). According to a document published on the Whirlpool corporate website (‘What are the general requirements to do business with Whirlpool?’) the company does not ban the RoHS substances in products destined for the Latin American region or for India.

Banning RoHS substances reduces the environmental impact of WEEE and the costs related to WEEE treatment. Making this a global requirement reduced the environmental impact

throughout the world and therefore qualifies as CSR performance. We conclude that Electrolux seems to have the strongest CSR performance based on this indicator.

**CSR performance linked to process externalities**

Producers of white goods are by EU regulations required to include information on energy efficiency in all their product related information, including all their product related brochures. To what extent do companies refer to these labelling requirements on their websites and on websites of their distributors and retailers? This communication effort affects processing costs (costs related to handling and distribution)

Table 3 shows that BSH is the company which give energy efficiency and labelling requirements the most prominent position on their websites.

Indicator of CSR performance (process externalities)	<i>Electrolux</i>	<i>BSH</i>	<i>Whirlpool</i>
<b>2.1. Websites of case companies: Number of web pages among the website front page and the pages directly linked to the front page referring to labelling of energy efficiency. (April 2010)</b>	Corp. website = 2 Electrolux = 1 AEG = 0 Zanussi = 0	Corp. website = 0 Bosch = 9 Siemens = 5	Corp. website = 0 Whirlpool = 3 Maytag = 0 Amana = 0
<b>2.2. Websites of distributors/retailers: Number of hits on Google Products sites with reference to energy efficiency of refrigerators. <a href="http://www.google.co.uk/products">http://www.google.co.uk/products</a> (April 2010) (Requires sellers to submit product information to Google Products.)</b>	446 Electrolux = 70 AEG = 304 Zanussi = 72	240 Bosch = 27 Siemens = 213	174 Whirlpool = 120 Maytag = 53 Amana = 1

*Table 3: Indicator of CSR performance linked to process externalities*  
*Indicator 2.1: All websites, except the main corporate websites, are sites with UK addresses (See Websites below.)*  
*Indicator 2.2: This result is based on the search criteria: [<brand name> and “refrigerator” and (“A+” or “A++”)].*

Indicator 2.1 shows that energy efficiency is least prominent on the websites of Whirlpool and Electrolux. Indicator 2.2 shows that there are more shopping sites (retailers and distributors) displaying the rate of energy efficiency of Electrolux than there are for BSH and Whirlpool.

There are a significant number of web searches worldwide for the case companies. Figure 4 shows the relative frequency of Google searches. There are now more Google searches for “Whirlpool” and “Electrolux” than for instance the “United Nations”. This indicates that the contents of their websites is viewed by a considerable number of consumers and may influence purchasing preferences.

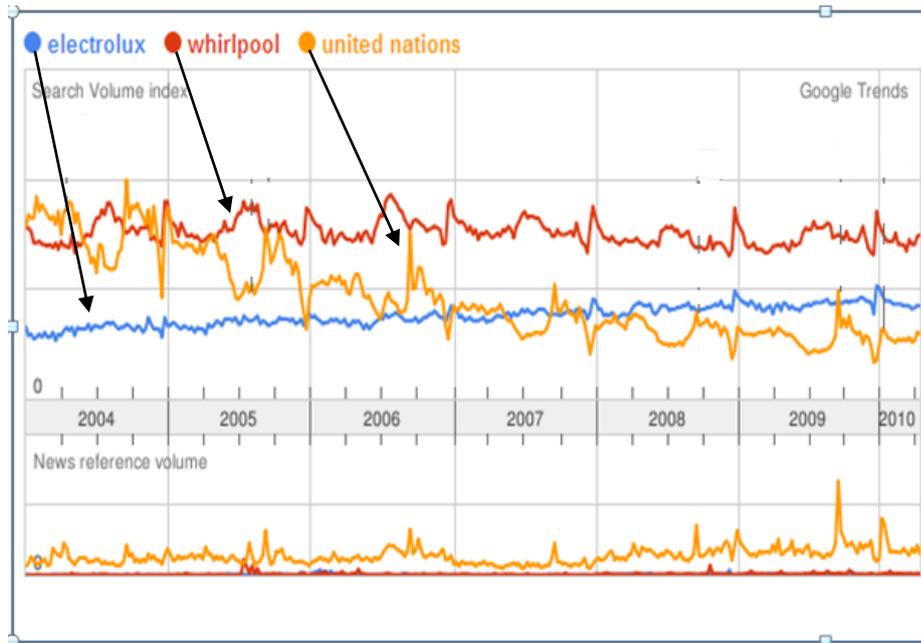


Figure:4. Search trends for ‘Electrolux’ and ‘Whirlpool’. ‘United Nations’ is included for comparison.  
 Source: Search result from <http://www.google.co.uk/trends> (‘Bosch’ and ‘Siemens’ were not included because they cover multiple brands where some have no relation to white goods.)

Based on Table 3 we conclude that Whirlpool has the weakest CSR performance based on the indicators linked to process externalities,

**CSR performance linked to output externalities**

The EU legislation includes labelling requirements that is supposed to contribute to greater energy efficiency, and drying performance (labelling directive). These labels may encourage companies to produce more energy efficient models and thereby reducing the energy and water consumption during the lifespan of home appliances.

An indicator of CSR performance linked to output externalities is the portion of product models fulfilling the strictest labelling requirements (see Table 4).

Indicator of CSR performance (output externalities) (April 2010)	Electrolux	BSH	Whirlpool
3.1. Portion of washing machine models fulfilling the strictest labelling requirements (AAA)*	39 percent	20 percent	18 percent
Portion of refrigerator/freezer models fulfilling strictest labelling requirements (A++ or A+)*	36 percent	68 percent	29 percent
3.2. Major initiatives to facilitate WEEE treatment	yes	no	no

Table 4: Indicators of CSR performance linked to output externalities

\*Sources: Based on models presented on their corporate websites and brand websites (see Websites below) in March 2010.

Refrigerators/freezers and washing machines have the highest proportion of revenue among large appliances in the white goods sector. The percentage of models fulfilling the strictest requirements in the European market has increased substantially the last years without any mandatory requirements. The voluntary labels for washing machines went into force in April 1996. In 2005 only 12 percent of the washing machine models in Europe fulfilled the demands for mark 'A' for drying performance (AEA, 2009). Today 18-39 percent of the case companies' models fulfil this demand. The A+ and A++ labelling marks for refrigerators were adopted in July 2003 and went into force in January 2005. In 2005 only 19 percent of the refrigerator models on the European market fulfilled the demands for A+, or A++ (UNCTAD, 2009). Today 29-69 percent of the refrigerator models among the case companies fulfil the demands for A+/A++.

Higher energy efficiency and washing performance is particularly important for large appliances in the white goods sector because 90 percent of their environmental impact occurs during use (Herold, 2007), and 93 percent of life-cycle GHG emissions of white goods in general come from in home use (Whirlpool, 2009). Being proactive in this area by introducing more models which fulfil the strictest requirements than competitors therefore qualifies as CSR performance.

There are in addition indicators of CSR performance linked to WEEE: Member states of the EU have, within the framework of the EU legislation, put in place a range of different systems for collection and treatment of WEEE. According to the WEEE Directive, producers are now collectively responsible for historical waste and individually responsible for future waste. However, in the current WEEE laws within the EU member states, producers are responsible for the financing of a mixed share of e-waste, not only their own branded products (Herold, 2007). The WEEE directive specifies minimum recovery rate targets for different categories of WEEE which many of the member states fail to meet.

The producers' extra costs related to requirements for collection and treatment of WEEE is compensated by an increase in retail prices. In 2000 it was estimated that the average increase in retail prices due to requirements of the WEEE directive was 1% for most electrical and electronic equipment, and 2-3% for refrigerators, TV sets and monitors (EC, 2006b).

Despite having a substantial part of their revenue in North America and Asia the three case companies were only involved in the ‘end-of-life management’ of white goods in Europe, with one exception: a limited third party operated system for WEEE treatment in Japan put in place by Electrolux (Herold, 2007). The most prominent EU wide system for WEEE treatment is the European Recycling Platform (ERP). Electrolux was one of four founding members of this platform together with Braun, HP, and Sony. It contracts two operators to design, operate and manage all aspects of the collection process (EC, 2006a). The mission of ERP is to operate a cost-efficient and competitive solution for the collection and recycling of WEEE as set out in the WEEE Directive. In April 2010 ERP has more than 1200 members. ERP is based on an ‘individual producer responsibility’ system. This is in contrast with the system which the two other case companies prefer; public compliance systems. Individual responsibility means that producers are responsible for the end-of-life management of their own products as opposed to collective producer responsibility, where producers share this responsibility with other producers. The position of Electrolux may be explained by their significant amount of revenue related to the B2B market. Business customers usually do not use their appliances to the point of being worn out and these products are typically leased. Leasing and remanufacturing B2B products is easier than collecting and treating WEEE from consumers (Herold, 2007).

We conclude that Whirlpool, with the lowest revenue in the European market among our case companies, has the weakest CSR performance linked to the labelling requirements (see Table 4). Electrolux is the only case company that has taken a major initiative to facilitate WEEE treatment on a European wide scale, and with a high proportion of products fulfilling the strictest labelling requirements, it has the strongest CSR performance according to this indicator.

### ***Summing up and considering the CSR potential of the white goods sector***

In the introduction to this article it was distinguished between first and second order CSR impact. Our related research question is; what kind of CSR impact should we expect in what part of the supply chain. What kind of CSR impact do we find at different parts of the supply chain in our sample of corporations in the EEE sector? It is a reasonable assumption that:

1. The CSR performance linked to *input externalities* (enforcing the RoHS directive globally – see Table 2), may be categorized as first order CSR impact because its

success is measured by the amount of (banned) hazardous substances in home appliances. But it will also facilitate waste treatment which is related to the output externalities, and thereby also have a second order CSR impact (see point “3”).

2. The CSR performance linked to *process externalities* (the communication of energy efficiency on websites of case companies and their distributors/retailers – see Table 3) concerns the consumption of energy and is vital for the CSR performance linked to output externalities and will therefore also have a second order CSR impact (see point “3”).
3. The CSR performance linked to *output externalities* (being proactive with regard to energy efficiency and taking initiatives to facilitate WEEE treatment – Table 4) is most related to systemic impact of WEEE on the environment: the goal is to maximize energy efficiency and recycling. Thus, the CSR performance linked to output externalities has a second order CSR impact.

The instruments of the EEE regulations are examples of extended producer responsibilities (EPR) where the end is to ‘promote total life cycle environment improvement to product systems by extending the responsibility of the manufacturer of the product to various parts of the entire life cycle of the product.’ (Røine, 2006:52-53) One may distinguish between three groups of EPR policy instruments, according to Røine (2006):

- Those targeting producers within their core business area
- Those targeting producers outside their core business area
- Those targeting consumers and end-of-life phases through market mechanisms

The rising externality costs due to the EEE regulation encompass all three of these policy instruments (see Table 5).

	<i>EPR instruments within core business area</i>	<i>EPR instruments outside core business area</i>	<i>EPR instruments targeting consumers / end-of-life</i>
<b>Input externalities</b>	Sourcing materials (RoHS dir. / 1.1.)		
<b>Process externalities</b>			Communicating energy efficiency. (Labelling dir. / 2.1. and 2.2.)
<b>Output externalities</b>	Energy efficiency (Labelling dir. / 3.1.)	Collection / treatment of waste. (WEEE dir. / 3.2.)	

Table 5. Sources of CSR performance related to externalities and EPR instrument categories. The numbers refer to items in tables 2, 3, and 4 above. Fulfilling the RoHS requirements facilitates waste treatment. And communicating the product’s energy efficiency may increase the real energy efficiency of the products on the market.

It is clear, based on the indicators of CSR performance above, that it is the CSR performance linked to *output externalities* which seems to have the strongest CSR impact in our sample of corporations in the EEE sector.

We may ask if the CSR impact *in general* is more linked to output externalities. To answer this question it may be helpful to consider the ‘CSR potential’ of the EEE sector and compare it with the CSR potential of the clothing sector (Laudal, 2011b). The CSR potential is a sector level indicator of the potential for a positive impact through CSR related actions. There is a high CSR potential when sector specific features indicate that the risk of violating international CSR standards is high. In Laudal (2011b) the CSR potential of the clothing sector was found to be very high. Sector specific features indicate a high CSR potential of the EEE sector as well:

- Large difference in cost level between source region and recipient region.
- A considerable environmental impact during life span of the product due to the power consumption.
- EEE requires heavy metals. To avoid damaging the environment WEEE must undergo a cumbersome treatment process using a significant amount of energy.

The considerable environmental impact caused during the lifespan of EEE products, and the heavy metals contained in most products, seems to be the main reason why CSR performance linked to *output externalities* contribute to a strong CSR impact based on our sample of corporations in the EEE sector. We do not find these elements in the clothing sector. The most significant CSR impact of international clothing retailers seems to be related to *input externalities* (sourcing strategies and production – see Laudal, 2011b). This suggests that the link between CSR impact and output externality in the EEE sector is contingent on the presence of sector specific features. One important implication of this is that public policies intended to maximize the effects of CSR on sustainable development must be adapted to sector specific features, and in particular to the sector specific potential for second order CSR impact.

## Conclusion

In this article we use a market centric approach to CSR to exemplify the relationship between externality costs and CSR performance. By associating CSR with externality recognition, and distinguishing between different positions in the value chain, and quantitative and systemic impacts, we better understand the relationship between government incentives and CSR impact. This demonstrates the usefulness of the market centric approach to CSR.

This case study is based on a very limited sample of corporations and needs to be corroborated by a larger empirical study. Given this reservation, the findings suggest certain relationships between externalities and CSR impact. The strongest CSR impact found in the sample of corporations in the EEE sector was related to *output externalities*. An earlier study shows that the strongest CSR impact from the clothing sector is linked to *input externalities*. Thus, this indicates that the strength of the CSR impact is contingent not only on general sector specific features, but on the potential for reducing negative externalities in different parts of the value chain in each sector. An implication of this is that public policies intended to maximize the effects of CSR should be adapted to the sector specific potential for reducing negative externalities in different parts of the value chain.

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## **Websites of the case companies**

### Electrolux:

Corporate website and website for the Electrolux brand: <http://www.electrolux.com>.

UK website for the AEG brand: <http://www.aeg-electrolux.co.uk>.

UK website for the Zanussi brand: <http://www.zanussi.co.uk>.

### BSH:

Corporate website: <http://www.bsh-group.com>.

UK website for the Bosch brand: <http://www.bosch-home.co.uk>.

UK website for the Siemens brand: <http://www.siemens-home.co.uk>.

### Whirlpool:

Corporate website: <http://www.whirlpoolcorp.com>.

UK website for the whirlpool brand: <http://www.whirlpool.co.uk>.

UK website for the Maytag brand: <http://www.maytag.co.uk>.

UK website for the Amana brand: <http://www.amana.co.uk>

## **EU legislation in the EEE area**

### Labeling:

- Council Directive 92/75/EEC of 22 September 1992. ‘On the indication by labelling and standard product information of the consumption of energy and other resources by household appliances.’ There are 12 Commission directives implementing 92/75/EEC in different product segments.

### RoHS:

- Directive 2002/95/EC of the European Parliament and of the Council 27 January 2003. ‘On the restriction of the use of certain hazardous substances in electrical and electronic equipment.’
- Proposal for a Directive of the European Parliament and of the Council ‘On the restriction of the use of certain hazardous substances in electrical and electronic equipment.’ COM(2008) 809 final.

### WEEE:

- Directive 2002/96/EC of the European Parliament and of the Council 27 January 2003. ‘On waste electric and electronic equipment (WEEE).’
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