



## **Environmental reporting protocols for the cosmetics industry: a comparative analysis of Japanese and UK on-line publications**

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### Abstract

*The turnover of the cosmetics industry is circa 200 billion Euros worldwide and it accounts for around 7 per cent of the chemicals sector. A life cycle assessment of typical products in this sector show impacts with respect to aerosol use, packaging waste, Volatile Organic Compounds and environmental hormones. However, the focus to date in terms of voluntary reporting in the EC has been on animal protection and rights as opposed to impacts on the natural environment.*

*Part of the aim of socio-environmental reporting is to address the concerns of consumers as stakeholders. These concerns in turn are determined by socio-cultural norms and attitudes which are likely to differ across regions, countries and sub-sections of the population. The hypothesis that we test in this study is that the voluntary reporting of socio-environmental performance differs in content based on the cultural dimensions of the target audience. In order to test this hypothesis, this paper reports the findings of a detailed study of socio-environmental reporting in the cosmetics industry in both Japan and the UK.*

*The findings of this study are that there are significant variations in the on-line environmental reporting protocols between the UK and Japanese sample sub-sets, despite the fact that the majority of the firms in the sample have an international client base. We present policy suggestions for harmonisation in light of these findings.*



## Introduction

Public interest in environmental reporting started in 1989 when Norsk Hydro published their first environmental report (Brophy *et al.*, 1998). This report – and many that have followed from other firms in a variety of industry sectors – was prompted in part by the criticisms of the Norwegian firm's environmental performance by environmental campaigners. The motivations for environmental reporting are multi-fold, as are the formats/media/disclosure protocols for their publication. One of these motivations is to address stakeholder concerns – environmental lobbyists being one, as in the case of Norsk Hydro. Freeman (1984:46) provides a definition of stakeholders: “any group or individual who can affect or is affected by the achievement of the organisation's objectives”. We apply this as a working definition of ‘stakeholders’ but would append the fact that it is not only achievement but also (partial or complete) *failure* to meet the organisation's objectives that affects others, all of whom are then stakeholders.

There are groupings of intra-firm stakeholders (such as employees, trades unions *etc.*) and also extra-firm groups such as potential and on-going investors, regulators, suppliers and distributors, and final consumers. Azzone *et al.* (1996) categorise these stakeholder pressures as being governmental *versus* market forces. In this study, we focus primarily on the latter. What Azzone *et al.* (1997) find is that the needs of stakeholders vis-à-vis environmental reporting are diverse and thus the publication of a report may fail to meet expectations. Firms have been aware for quite some time of the fact that a single harmonised environmental report is likely to fail in terms of these conflicting needs and some have adapted their reports accordingly.

This need for adaptation has been heightened by the trend towards internet usage as a means of finding and assimilating information. This trend is common to all stakeholders, but we would contend that this is especially important with respect to consumers. There are always transactions costs incurred in information search, retrieval, assimilation and analysis. The proclivity of any stakeholder group to incur these transactions costs – financial and/or time – is in part determined by the extent to which the information is likely to affect their respective actions/behaviour. In general, downloading an environmental report is likely to have lower transactions costs than more conventional means. For environmental NGOs, since such information is a pre-requisite for successful campaigning, the potential reduction in transactions costs through the internet publication of environmental reports is unlikely to significantly modify behaviour – they would search out this information regardless. The same might apply to other stakeholder groups such as investors/shareholders – the transactions costs incurred are justified even if an internet downloadable version of such information is not available. But for consumers, we would argue that the availability of downloadable reports may indeed make a significant difference to behaviour: consumers who would not make the effort to request and read hard copies might choose to scan through downloads.



The key research themes of this paper are twofold. First, we investigate the economic theory underpinning the publication of on-line environmental reports on a voluntary, non-accredited basis. We demonstrate that the status quo in terms of environmental reporting may not in fact be serving society's interests, i.e. there is an economic case for regulatory intervention. Second, we report the findings of a survey of environmental reports for firms located in two distinct geographical and socio-cultural settings – cosmetics firms in Japan and the UK. Our hypothesis is that reporting differs owing to the needs and socio-cultural norms of the target population.

The paper has the following structure. Sections 2 and 3 outline the economic theories underpinning environmental reporting. Section 2 outlines 'green' consumerism – how consumers make decisions in the market and the influence of environmental information in this. Section 3 considers transactions costs and marketing/information provision under what is termed conditions of 'asymmetric information', i.e. consumers being provided information by firms that may or may not be 'greenwashing'. Section 4 sets out the underlying rationale for the study, and results and discussion are presented in section 5. Section 6 concludes.

## 2 'Green' consumerism and environmental information

'Green' consumerism might be defined as the purchase of a good or service that has a level of environmental/social impact that the consumer (rightly or wrongly) perceives to be low relative to competing goods/services in that product category. Williams (1982) breaks this process down into four sequential steps: problem perception; deliberation; solution; and post purchase review. These various steps are documented in the marketing literature (e.g. Howard and Sheth, 1969). Information-provision in the form of environmental reporting may be used in the deliberation phase to evaluate purchase alternatives.

The Lancaster-Rosen approach (Lancaster, 1966; Rosen, 1974) provides an analytical economic framework for consumer decision-making. This approach was constructed so as to, "simply carry over traditional preference theory applying it to collections of characteristics instead of to collections of goods" (Lancaster, 1971: 20). Thus, any given commodity within a commodity class can be described by a vector of characteristics,  $c_i(i=1\dots n)$ . For example, the commodity class might be 'cars', for which the characteristics might include: shape and style; engine specifications; reliability; options; safety features; storage capacity; warranty; insurance group *etc.* Environmental and social characteristics that the consumer might consider significant for cars include: fuel consumption; recyclability; airborne pollutants emission levels; pollution from production techniques (e.g. bodywork painting); expected durability (i.e. life cycle). The price at which the unit is sold is then linked with these characteristics that feed into the aggregate demand for the product/service. It is not the commodity itself *per se* but its characteristics that yield utility according to this approach (Lancaster, 1966).



These characteristics or attributes can be grouped into three categories based on the transactions costs that the consumer needs to expend in gaining information (Nelson, 1970). A *search* attribute is one that the consumer can check by sensory evaluation – feeling, touching, smelling and observing. For the example of car purchase, search attributes might include the visual condition, the service history *etc.* An *experience* attribute can only be checked *ex post*, i.e. after the purchase. For instance, a used car might be sold as being reliable but the consumer can only validate or reject this claim after purchase. The search attribute of service history does condition the consumer's expectations as to the probability of the car being reliable or not but the attribute itself is only experienced/consumed during ownership. The third type of attribute is a *credence* attribute. These are claims that cannot reasonably be validated at all, even *ex post*. For instance, the environmental impact of the painting process applied to the car might be the manufacturer as being relatively benign but the consumer cannot validate this.

Under Lancaster-Rosen, an individual consumer has a well-defined set of preferences that determine the weighting applied to each attribute. These preferences can be modified through marketing or alternatively the marketer can try to appeal to an individual's tastes, i.e. either a new set of preferences are 'created' by marketing or marketing simply appeals to a set of extant preferences. 'Green' consumerism generally falls into the latter category. If environmental reports are targeted at consumers then, in essence, they are a form of marketing. Although environmental reports can potentially reveal information that reduces a consumer's proclivity to purchase the product, the environmental report is likely to portray the actions of the firm in a good light – especially if the reporting is voluntary and not externally-accredited.

Soler (1996) suggests that environmentally friendly purchasing is shaped by consumers' experiences<sup>1</sup>. These can propagate an association between environmental issues and the consumer's own behaviour. Several studies support this contention (e.g. Baldassare and Katz, 1992; Black and Stern, 1985). However, this association might not be sufficient unto itself to elicit a change of habit if an individual perceives that his/her personal contributions to, say, ozone depletion is insignificant. This is in keeping with rational economic behaviour: every individual consumer is 'small' vis-à-vis his or her direct impact on global environmental problems such as ozone depletion; any unilateral 'ethical' consumption decision is then irrational. (This is the well known 'free riding' problem in public goods provision.)

However, there is considerable evidence that some sub-sets of consumers do make purchasing decisions based on ethical grounds, and thus do not 'free ride'. Murphy (1989) classifies UK 'green' consumers into four categories. The widest base category is 'generally concerned' which includes everyone who voices some measure of concern for the environment regardless of whether they have acted on this concern or not (80-95% of the total population). A subset of this is the 'green consumer base' (45-60% of the total population) that perceive that they have taken some form of action such as purchasing recycled paper. The next population subset in the Murphy hierarchy is 'green thinkers' (25-

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<sup>1</sup> Soler (1996) is not referring to experience attributes as per the Lancaster-Rosen approach, rather experiencing the natural environment first hand through roaming in the countryside *etc.*



30%) who actively seek out ‘green’ alternatives and might engage in time-consuming activities such as composting. The final subset and the top of the hierarchy is ‘green activists’ (5-15%) who are either members of or supporters of environmental organisations.

As stated above, ‘green’ consumerism can be (and indeed to an extent already is) a potent force in stimulating eco-reform in corporations. However, we argue that the status quo in terms of voluntary and often non externally-verified environmental reporting can be an obstacle (as opposed to a stimulus) to this eco-reform process. The economic rationale for this contention is set out in the next section.

### 3 Consumer decision-making under ‘asymmetric information’

As mentioned above, one type of attribute that the consumer might place a positive value on is a credence attribute. This type is of particular consequence to our analysis in that the information and performance reviews set out in environmental reports are, by and large, credence attributes. The existence of credence attributes under conditions where firms can *claim* high performance in such attribute categories in an unmonitored, unregulated way potentially can be a type of economic market failure.

<i>Agent</i>	<i>Strategy</i>
$F_{CSR}$	Only ever sends signal that it believes it to be legitimate and informative
$F_{LAW}$	Sends signal if it is profitable to do so <i>and</i> scientifically defensible
$F_{CHEAT}$	Sends signal if it is profitable
$C_{PROACTIVE}$	Actively searches for legitimate signal and might pay price premium
$C_{REACTIVE}$	Might respond to signal depending on preferences
$C_{IGNORE}$	Any signal sent has little or no effect on purchasing behaviour
<i>REGULATOR</i>	<i>Potential economically legitimate intervention to expend greater resources on monitoring self-certified signals or to require all signals to be externally accredited</i>

**Table 1** Strategic response by firms/consumers to credence attributes

Consider the populations of firms and of consumers. These populations should be treated as heterogeneous in terms of their behavioural characteristics, and it is this heterogeneity that can cause a market failure to occur with credence attributes. What we are referring to here is the firm’s behaviour with respect to sending signals to consumers about its ‘environmental credibility’ and the consumer’s



behaviour in terms of his or her response to such a signal being sent. We categorise the populations of firms and consumers into three sub-groups, and these are summarised in Table 1.

$F_{CSR}$  abides by the principles of corporate social responsibility (CSR). If there is a trade-off between profitability and sustainability performance, i.e. 'win-win' outcomes are not available, then a  $F_{CSR}$  may choose to forego some profitability. It takes actions to reduce the impacts placed on the natural environment and on society by its production processes. In terms of environmental reporting, such firms never publish false or misleading environmental information ('greenwashing').

$F_{LAW}$  is the firm type that is *responsive* as opposed to responsible vis-à-vis environmental sustainability. It sends signals in terms of voluntary environmental reports if and only if expected profitability rises through such actions. It stops short of making environmental claims that are indefensible/false (and therefore illegal) but may make claims in its reporting that are misleading.

Firms in  $F_{CHEAT}$  are motivated purely by responsiveness as opposed to responsibility. They go a step further than  $F_{LAW}$  in that their assessment of what to report in environmental documentation is based on their expectations of what they can 'get away with'. This may include false as well as misleading environmental claims. If the firm in  $F_{CHEAT}$  believes that the probability of being caught /associated penalties are sufficiently low relative to the expected benefits (including winning the 'green' consumer vote) then they choose to 'greenwash' in their environmental reports.

What is the response of consumers to the existence of these sub-populations of firms? All agents in this strategic game (firms, consumers, the regulator) are assumed to be perfectly aware of the *status quo*, i.e. the existence of environmental reports, some of which contain are genuine and others that are forms of 'greenwashing'. The environmental reports contain information that is, to some extent, associated with a credence attribute, i.e. the particular firm's socio-environmental impact. There is asymmetric information in that the firm itself knows what type it is ( $F_{CSR}$ ,  $F_{LAW}$  or  $F_{CHEAT}$ ) but the consumer cannot know with certainty what the firm type sending the message (i.e. the environmental report) is. All three types claim that they are  $F_{CSR}$ .

The responses of the sub-sets of the consumer population are set out in Table 1.  $C_{PROACTIVE}$  might attempt to validate environmental claims through third party comments/verification, e.g. NGO websites. This entails the highest level of transactions costs in terms of information search, retrieval, synthesis and response.  $C_{PROACTIVE}$  is likely to overlap with the 'green thinkers' in the Murphy (1989) typology.  $C_{REACTIVE}$  may be a 'green' consumer but one less inclined to expend significant transactions costs in either reading/validating the original environmental reporting material. – akin to the 'green consumer base' of Murphy (1989).  $C_{IGNORE}$  do not request/download any environmental marketing of any kind, including reporting.



What is the outcome of this strategic game with sub-populations? As discussed above, consumers find that trustworthy information is a key component to 'green' consumerism functioning. Firms expend resources both in terms of actually modifying their production processes to improve sustainability performance and in publicising these efforts, in part through environmental reporting. If the target audience for this publicity ( $C_{\text{PROACTIVE}}$  and  $C_{\text{REACTIVE}}$ ) cannot perfectly discriminate between firm types and thus the genuineness of the messages sent then they play what is termed a 'mixing strategy', i.e. they partially believe the publicity. Thus, if they are willing to pay an extra £1 for alternative that they know with certainty is more 'green', they might only pay a £0.60 premium (the mixing strategy) if they think that there is a 60 per cent chance that the environmental claim is genuine (and 40 per cent that it is 'greenwashing').  $F_{\text{CSR}}$  thus earns a lower premium owing to information asymmetry, and there may be then a case for government intervention.

If the extent of 'greenwashing' is low - and thus the reduction in the 'green' premium is also low - then regulatory intervention may not be justified in that any intervention has its own transaction costs, both for the regulator and for firms. But if it is high, then there might be a need for external third-party verification of environmental reports and/or greater monitoring and enforcement and/or stricter penalties for 'greenwashing'. As it stands, the status quo may well be economically sub-optimal.

#### **4 Socio-environmental reporting in the cosmetics sector**

The theoretical exposition in the previous sections was tested to some extent in a survey carried out in summer 2003 of the cosmetics sector in both Japan and the UK. Although it is not possible to determine whether or not 'greenwashing' is occurring through these environmental reports, the investigative study revealed interesting results with respect to differences between the two countries.

The choice of market sector, i.e. the cosmetics sector, was made based on certain attributes vis-à-vis environmental impact and reporting. First, in order to allow a useful analysis of findings, the firms in the chosen sector needed to be heterogeneous in terms of their propensity to report environmental performance. Industrial sectors that have a high real or perceived socio-environmental impact and are in the public eye are likely to be constituted by firms that *all* report on much the same issues: as such, for research purposes they are homogeneous. Examples might include the energy production, paper and pulp, petro-chemicals and chemicals industries. We do not of course argue that nothing useful can be gleaned from a rigorous analysis of reporting in these sectors, but they have each been explored at length and corporate reports are often similar in terms of tone/'spin', structure and content. The cosmetics sector by contrast is heterogeneous, a statement attested to by the fact that only 9/40 firms in the sample had on-line environmental reporting, and that there was diversity in the reports themselves.

A second reason for selecting cosmetics was its potential to explore the extent to which socio-cultural differences might determine the proclivity to report and the content of any report produced. CTPA (2003) sets out a comparison between the three main global sectors and cites US, Japanese and EU (in



billions of Euros) at 32.6, 15.7 and 31.7 respectively. Within the EU, the UK constitutes 16.1% share of this EU total (*ibid.*). Thus both the UK and Japan (the two study countries) are key players in this sector and the socio-cultural differences are likely to be stronger than, say, an inter-country comparison between the UK and the US.

A third reason for choosing the cosmetics sector is that there are various socio-environmental issues on the agenda that progressive, forward-looking firms might choose to address, i.e. there are significant impacts. These are outlined briefly below.

One of the main impacts is packaging waste generation. Whereas there has been a string impetus – driven by both legislation and consumer pressure – to reduce packaging waste in other sectors, the presentational impact of packaging is a key product attribute in cosmetics (Williams, 1996). In terms of the Lancaster-Rosen approach described above, it is likely that the product attribute of ‘extent of superfluous packaging and recycled/recyclable content’ is much weaker across the consumer base than ‘aesthetic form’. Although these two attributes need not necessarily be in conflict, they often are.

A second environmental issue is Volatile Organic Compounds (VOCs) content in cosmetics. Although there is an extant EC Directive on VOCs (1999/13/EC), this Directive regulates only petroleum and the coating, printing and paint industries. However, in the US, there are measures in place to regulate VOC emissions from cosmetics. For instance, the state of California have regulations stating the maximum permissible percent VOC content by weight (*ibid.*) There is then likely to be a global trend towards regulation of VOCs in cosmetics.

A third issue is the existence of environmental hormones in cosmetic products. Environmental hormones, also known as endocrine disrupter chemicals, are chemicals that interfere with the normal hormonal system in the body by blocking, stopping or mimicking hormonal activity. Medical consequences (cited in Harris, 2002) include infertility, breast cancer, mood changes *etc.* There are around 70 substances suspected of being environmental hormones, including dioxins, alkyphenol, surfactants, parabens and phthalates, and these are often contained in shampoos, hair colours, shaving creams, skin creams, hairspray, perfume and nail polishes (*ibid.*). Harris (2002) sampled 34 leading cosmetics products in Sweden and the UK and found that 27 out of the 34 contained phthalates. This is perhaps one issue that is on the wider agenda but one that firms may be reluctant to report on as the scientific evidence is equivocal, and as such reporting would only spotlight the issue.

The final major issue is an ethical as opposed to environmental one that perhaps sets Japan (and to an extent the US) apart from the EC – animal testing. The UK has already banned the use of animal testing from the domestic production of cosmetics, but animal testing still occurs in Japan (JAVA, 2003).



In summary, the Japan-UK cosmetic sectors were chosen as the sector is under-researched and yet has a strong impact on socio-environmental performance, and there are cultural differences between the countries that might result from the analysis.

## 5 Study of Japanese/UK cosmetics sectors

This section sets out the results of a survey carried out in summer 2003. The survey sample comprised 20 firms in the cosmetics sectors in the UK and 20 from Japan, all of which had some form of on-line corporate report. Of these 40 firms, only 9 firms had on-line corporate environmental reports [CERs]. A further 3 companies did not have environmental reports *per se* but had published environmental policies on the web. A breakdown of these three categories is given in Table 2.

The UK		Japan	
<u>Body Shop</u>	<u>Boots</u>	<u>Shiseido</u>	<u>Kanebo</u>
<i>Superdrug</i>	<i>Swallowfield</i>	<u>Kao</u>	<u>Pola</u>
Penhaligon's	Zena	<u>Yakult</u>	<u>Kose</u>
Woods of Windsor	Nelson	<u>Lion</u>	<i>Sunstar</i>
Virgin Vie	Hive of Beauty	Hoyu	Hollywood
PZ Cussons	Creightons Naturally	Oppen	Menard
Scottish fine soaps	Molton Brown	Noevir	Naris
Paul Murray	Corsair Toiletries	Cow Brand Soap	DHC
Keyline Brand	Crabtree&Evelyn	Aura	Saishunkan
Morgans Pomade	H. Bronnley	Ruben	Ivy

**Table 2** Summary of firms surveyed vis-à-vis environmental reporting. (Underlined firms have on-line CERs, and italicised firms have environmental policies on-line)

In summary, only 2/20 UK firms had on-line CERs whereas the figure was 7/20 for the Japanese sample. We calculated the average turnover of the firms with CERs *versus* those without and found the anticipated result, i.e. for the UK, the average turnover of the former was around £3000 million as compared with £34 million for the latter, the respective figures being 3912 million Yen and 458 million Yen. Bigger companies clearly have greater available resources to expend on CERs. The UK mean figures should be treated with caution in that the sub-sample of 2 is clearly very small and is constituted by one relatively small (but highly environmentally proactive) firm (Body Shop) and another (Boots) that has a turnover almost an order of magnitude bigger. In terms of information and targets set out in the 9 on-line CERs that were found in the sample, Table 3 provides a synopsis of findings. Two columns are provided for the Body Shop as the 2003 draws explicit links/makes references to the Body Shop 'Values Report' in 1998.

In terms of energy use, all 9 firms provided some general information, but not all of them comment on all sources of greenhouse gas emissions from all stages of the production process. Most stated



quantified energy reduction targets (7/9), 1/9 presented a non-quantified target and 1/9 omitted this environmental performance indicator altogether.

<i>Environmental and social performance</i>	<i>Information Type</i>	UK			Japan						
		Body Shop 2003	Body Shop 1998	Boots	Shiseido	Kao	Kanebo	Pola	Kose	Yakult	Lion
Energy use	General	X	X	X	X	X	X	X	X	X	X
	Site Specific		X				X			X	
	Goals and Targets	X	(X)	X	X	(X)	X	X	X		X
Water use	General		X	(X)	X	X				X	X
	Site Specific		X				X			X	
	Goals and Targets		(X)				X				
COB/BOD [Carbon/Bio Oxygen Demand]	General		X	X	X	X	(X)		(X)	X	X
	Site Specific		X			X				X	
	Goals and Targets										
Toxic substance use/release	General	(X)		(X)	X	X	X		(X)	X	X
	Site Specific					X	X				
	Goals and Targets	(X)									
GHG [Greenhouse gas] emissions	General	X	X	X	X	X	X	X	X	X	X
	Site Specific		X			X				X	
	Goals and Targets	X		X	X	(X)		X			
Air pollution releases	General				X	X	(X)		(X)	X	X
	Site Specific					X				X	
	Goals and Targets										
Waste emissions	General	X	X	X	X	X	X	X	X	X	X
	Site Specific	X	X		X	X	X			X	
	Goals and Targets	(X)	(X)	X	X	(X)	X	X	X		X
Packaging	General	(X)	(X)	X	X	X	(X)	(X)	X	X	X
	Goals and Targets			X							

X: reported with quantitative data

(X): reported with non-quantitative data

**Table 3** Summary of environmental information in Corporate Environmental Reports.



6/9 firms included information on water use (in terms of quantity used in production processes) and 8/9 stated water pollution levels in terms of Carbon Oxygen Demand (COD) or Biological Oxygen Demand (BOD). In terms of air pollution, 4/9 stated quantified air emission reduction targets and 2 further firms stated non-quantified targets. It is noteworthy that all 6/9 that had any performance evaluation vis-à-vis air pollution were Japanese firms.

**Table 3** Major environmental performance information provided in on-line CERs

On the controversial issue of the release of (legally permissible) toxic substances, 5/9 presented quantified data, all of them Japanese firms. Both UK firms only presented non-quantified statements. Only 2/9 firms mentioned the issue of environmental hormones (Body Shop and Lion) and the Body Shop stated that it strived to avoid using substances that may be classified as environmental hormones in the future.

The analysis of results pertaining to waste emissions did not reveal any trends per se in that all firm revealed some level of quantitative data on the issue, with 8/9 setting waste reduction goals. 6/7 Japanese firms set out aims to achieve zero landfill waste from the production sites. Such an aim was not stated by either UK firm.



Similarly, all 9/9 made some comment on packaging although only 6/9 provided quantitative data. Only 1/9 set targets for reductions in packaging waste (Boots) which supports our earlier proposition that this is low on the agenda of cosmetics firms in that packaging is a key determinant in final sales. However, the Japanese/UK split is again evident here to an extent in that all 7 Japanese firms refer to reducing waste generation as well as using more recycled content, whereas the 2 UK firms only refer to the latter.

In terms of non-environmental impacts, as anticipated both UK firms refer to policies and practices vis-à-vis animal testing, whereas none of the Japanese firms do so. The two UK firms that provided an environmental policy but no CER set out clear policies on animal testing.

## 6 Conclusions

As we have discussed above, there are always transactions costs (in terms of time and/or money) incurred by any stakeholder wishing to gain information vis-à-vis the socio-environmental characteristics/performance of the products that he or she is buying or choosing between. Whether or not a particular stakeholder chooses to incur these transactions depends on whether that stakeholder expects that expending these transactions costs is worthwhile. Access to downloadable environmental reports should, we argue, reduce these transaction costs. Further, we contend that this will be of higher significance to 'green' consumers as a stakeholder group than others in that other stakeholders (such as investors and NGOs) depend on the information much more, and thus would be willing to expend higher transaction costs than the average 'green' consumer.

What this contention implies is that environmental reporting could be quite a poignant stimulus for the 'greening' of industry – but only if 'green' consumerism were allowed to operate efficiently. We have argued in this paper that the status quo in terms of voluntary reporting that may or may not be third-party accredited may in fact be stifling 'green' consumerism. This is owing to the existence of different firm types and different consumer types, and asymmetric information. Information is asymmetric in that a firm is likely to be fully (or at least better) informed as to whether the statements and self-promotion in its environmental reports is genuine or 'greenwashing', i.e. misleading or false. Since a consumer is less sure, he or she may not find the information presented to be trustworthy and thus may not choose to spend extra on the 'green' attributes of competing commodities. This is an instance of market failure that may need to be addressed. Whether or not it is right for a regulator to intervene depends on the extent of the 'greenwashing' and the costs (to both the regulator and to firms) of any proposed legislative intervention. The model developed in this paper details the underpinning economic theory to this regulatory decision-making.

The empirical study reported in this paper is one carried out on on-line environmental reports in the cosmetics sectors in Japan and the UK. The first outcome in terms of our analysis of those producing corporate environmental reports (CERs) *versus* those firms that do not is the somewhat predictable



result that bigger firms tend to be more likely to provide on-line CERs. The analysis of the content of the CERs found that there is a lack of harmonisation with respect to what is reported and how, in particular the availability or otherwise of quantitative data on emissions/resource extraction *etc.* and also the setting of quantified targets with a documented timescale. Although the sample size was small, therein limiting the extent to which outcomes might be generalised, we found that the Japanese CERs scored more highly in terms of quantification and setting targets. Further, the proportion of Japanese firms with on-line CERs was higher. One exception to this is with respect to the issue of animal-testing for which there was a strong trend towards information disclosure and policies/targets for the UK firms but no mention of this issue whatsoever in the Japanese sample. This demonstrates the fact that, despite the fact that on-line reports are by their very nature 'international', their content is tempered by the expected target audience.

In order to promote 'green' consumerism, we suggest that environmental reports be harmonised to provide 'hard' data on the issues mentioned in our study, e.g. resource depletion, greenhouse gas emissions *etc.* Further, we suggest that regulators should consider the imposition of mandatory external verification of the content of on-line reports so as to stimulate 'green' consumerism, but that any legislation allow for socio-cultural differences between nations.



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