

Green Groceries
Consumers, Product Labels and the Environment

Julian Morris

IEA Environment Unit Studies on the Environment No. 7

'The more alternatives, the more difficult the choice.'
Abbé d'Allainval

Introduction

Over the course of the past decade, a significant niche market has emerged for green products. Stores such as the Body Shop and Wellspring Grocery have grown into major concerns by selling organic potatoes and vivisection-free moisturizer, whilst Ben and Jerry's 'Rainforest Crunch' has enabled environmentally concerned consumers to satisfy their ice cream addiction secure in the belief that they are helping to preserve biodiversity.

The experience of these ventures shows that commitment to improving the environment need be no barrier to business success. Indeed, the threat of competition and the desire to attract green consumers (or, at least to avoid being labeled as 'environmentally challenged') has led even the most hard-nosed consumer-driven chains, such as Wal-Mart and Waitrose, to adopt green lines.

Consumer Attitudes

Despite these successes, demand for green products has generally failed to match expectations. For example, a 1990 survey carried out for Tesco, a British supermarket chain, found that about 50% of consumers said that they were willing to pay extra for environment friendly products; however, Tesco store receipts suggest that, of the total spent on products in categories for which green goods were available, only about 10% went on those green goods (Environment Committee, 1991, p. xi). And this was at the peak of the most recent wave of 'green consumerism'. Since then, demand for such products has fallen, a fact confirmed by a recent survey carried out by the British National Consumer Council, which found that, for 'ordinary shoppers', "the environment was not a big consideration" (NCC, 1996, p. 45).

As a result of problems created by differing state product information laws and following negative publicity from an ABC 'Nightline' expose regarding another of their shelf-labelling programs, Wal-Mart ended their ecolabelling program in 1992 (EPA, 1993, p. 122)

There are many problems with the terms 'green' and 'environment friendly' (see discussion *infra* note 6 concerning the environment). Here they are used simply to modify words such as 'goods' or 'products', so as to denote the fact that such items are being presented to the consumer as having some attributes which relate to the environment.

Recent surveys suggest that concern for the environment has been superseded by more pressing concerns, such as the

In the US, the situation is similar. For example, in a 1993 survey carried out by Cambridge Reports-Research International, over 30% of consumers said that they were willing to pay a 10% or higher price premium for certain green products (including: cars, gasoline, detergents, household cleaners, and recycled paper) but "manufacturers for mainstream distribution outlets generally report that "consumers are not willing to pay a premium, period" (Scarlett, 1994, p. 17).

A number of possible explanations for this mismatch between what consumers say and what they do have been offered. One of the most frequently cited of these is that consumers are confused by the plethora of different schemes for labeling products with environmental information. For example, since most supermarket chains each have their own environmental labeling scheme, the consumer can not be sure that what is considered green in Safeway is the same as what is considered green in Sainsbury's or Giant.

A second explanation frequently offered is that many people are skeptical of environmental claims in general. In support of this assertion, a 1990 survey of 1,400 shoppers in Britain found that 56% of those surveyed were suspicious of claims that products are 'environment friendly'. ('Friendly to Whom?', Economist, 7 April 1990). Two factors are said to underlie this problem:

First, consumers may not fully understand the implications of complex environmental information when it is provided. So some environmentally concerned consumers may inadvertently purchase products which, in the circumstances, cause more damage to the environment than if one of the alternatives under consideration had been purchased, whilst others, unwilling to take this risk, may simply avoid purchasing green products altogether.

threat of unemployment. As a result, demand for green goods is now so low that supermarkets are loathe to keep such products on their shelves. (Telephone interviews with Jo Bailey, head of marketing, Tesco Stores Ltd, 11 March 1996 and Peter Bracher, consumer safety controller, Tesco Stores Ltd, 27 February 1996)

Telephone interview with Jo Bailey, Head of Market Research, Tesco Stores, 11 March 1996

The crux of the matter, of course, is that the environmental impact of a product is contingent on a whole host of factors, so it is not immediately clear what kind of information should be provided. This issue is dealt with more fully in Chapter 3.

Second, some products have been labeled in a way which could be construed as deceptive. For example: some companies have sold as 'biodegradable' bin liners which, in the dark, anaerobic conditions of a landfill may take 50 years to decompose, whilst others have sold as 'recyclable' containers which would cause less environmental damage if disposed in an incinerator or landfill than if recycled. Here, the problem is that oversimplified information concerning the expected environmental impact of a product is being provided in a way that is not only unhelpful but may sometimes even be counterproductive. For example, when consumers purchase goods spuriously labeled 'environmentally superior' at inflated prices, the amount of money that they can spend on goods which may actually benefit the environment is reduced. Again, rather than risk making such mistakes, some environmentally concerned consumers may simply avoid buying green products altogether.

In response to these problems, governments and private companies around the world have developed seal of approval type environmental labels (hereinafter, 'ecolabels'). These are simple, readily identifiable marks which are ostensibly intended to indicate that a product has a lower overall environmental impact than other products in a specified product category. (Several examples of ecolabels are given in the appendix.) Such a label would, it is claimed, improve the information upon which consumers base their choices. (OECD, 1991, p.13; EPA, 1993, p.6).

The Ecolabel: An Economic Instrument for environmental Protection?

Proponents have argued that, by improving the quality of information regarding the impact of a good on 'the environment', ecolabels would increase consumer confidence in green claims and thereby stimulate demand for goods which have less impact on the environment. Assuming that the information conveyed by ecolabels is accurate and assuming that it is correctly perceived by consumers, this increase in demand for green goods should, proponents claim, lead to an improvement in environmental quality. As a result, ecolabels have been hailed by many as a voluntary economic instrument for environmental improvement (OECD, 1991, p. 11; EPA, 1993, p. 1)

Here we assume that it is possible to compare products (that is, that perfect substitutes exist) and to compare the environmental impacts of these products. These assumptions (which are common in the eco-labelling literature) are clearly unrealistic, a problem addressed in Chapter 3

The Shorter Oxford English Dictionary offers the following

definition of the environment: 'the set of circumstances or conditions, especially physical, in which a person or community lives, works, develops, etc., or a thing exists or operates'. This definition encompasses several alternative conceptions of the environment. In particular, under this definition, one person may be speaking of the set of conditions in which an individual lives, whilst another may be speaking of the set of conditions in which a community lives, and yet another person might be speaking of the set of conditions in which all vital matter lives. Furthermore, the conception of what constitutes 'the set of conditions' may vary from person to person - for example, one person may be primarily concerned with the proximal environment (the current state of the atmosphere, the watercourse and the land), whilst another may be concerned with a more distal environment (the state of the atmosphere in 20 years time, for example). As a result, it is not necessarily clear what is meant when people refer to the environment or to environmental quality. Speech marks are thus used to denote this ambiguity. Later in the paper, the implications of the ambiguity are discussed in more detail.

Of course, environmental quality, environmental impact, environmental improvement all suffer from the same ambiguity that plagues the term the environment (see *supra* note 6)

However, critics caution that ecolabels may not actually improve the information available to the consumer and, at worst, may have the opposite effect (e.g. Wynne, 1991, Shimp, 1995).

Summary and Conclusions

There appears to be a disparity between what people say they are willing to pay for environment friendly products and what they actually do pay. One explanation for this disparity which has been offered is that it results from consumer skepticism generated by unverified and/or misleading environmental claims. Numerous organizations, both private and public, have developed ecolabelling schemes, the ostensive aim of which is to mitigate such skepticism by providing consumers with better information about the environmental impact of products.

In the following chapters, the merits and drawbacks of ecolabels as a means of providing consumers with information about the environmental impacts of a product are considered. In particular, attention is drawn to the fact that the one dimensional ecolabel provides the consumer with only the barest minimum of information concerning the environmental impact of a product; and that even this information may be of dubious validity. In addition, alternative mechanisms for providing consumers with environmental information are considered.

1. Product Differentiation through Labeling

This chapter discusses the rôle that labels play in a consumer's decision making process, in order to provide the reader with a context in which to view the subsequent discussion of the rôle that environmental information on labels (and ecolabels in particular) may play in this decision making process.

Selecting a Product

The human mind has but a limited capacity to process information (to see this, try simultaneously watching TV, listening to a CD, and taking part in a discussion about quantum field theory), so no consumer can know everything about every product which could possibly be purchased. Nevertheless, most of us manage to avoid the cognitive overload which would result if we attempted to acquire every piece of potentially relevant information before making any decision. This section discusses how.

Choice by Rules of Thumb

One widely used means of avoiding avoid cognitive overload is to invoke rules of thumb which enable them to filter out the vast quantity of barely relevant information they encounter and focus only on those items that are of direct relevance to the particular choice being made. To see how this might work, consider the case of a consumer who wishes to purchase a product of a kind with which she is unfamiliar. In such a case, the process of choosing a product might be broken down into two steps: first, the consumer searches for products within the particular category that she is interested in, then she chooses from among those products. This process is now described in more detail.

Selecting the Product Category

The actual process by which a consumer chooses a product may be different, and is likely to be more complex, than that which is described here. But the point is to offer a schematic description of the kinds of information processing activities which individuals engage in, rather than an overview of the literature on consumer psychology (for which see, *inter alia*, Cohen and Chakravarti, 1990).

A product category denotes a class of goods which are readily substitutable for one another. That is, they provide a similar service to the consumer at a similar price. An example of such a category might be dog food, where an individual consumer might be willing to substitute one product (say, Bonzo's dog food) for another (say, Gonzo's dog food) if the price of Gonzo's increased relative to that of Bonzo's (or vice versa). Of course, the fact that a product is sold as 'dog food' does not mean that this is the purpose to which each consumer will put it: some consumers may give dog food to their cats, or even eat it themselves. Moreover, some consumers may consider products not typically sold as 'dog food', such as vegetable peelings or the left-overs from yesterday's dinner, to be substitutes. Nevertheless, it seems likely that most consumers do think in terms of product categories (whether consciously or unconsciously).

The consumer's search for a product category most probably begins with a mental representation of those attributes which are common to products within the category in which she is interested. This mental representation may include a variety of different dimensions (Johnson and Farnell, 1987), such as: the shape of the product package, the packaging material, the product label and the location of the product in the store. These are cues which would announce the product to the consumer - stating, for example, 'I am orange juice', or 'I am washing powder'. Once the representation has been formulated, the consumer then searches for products which conform to it. To see how this is done, consider a consumer who is interested in purchasing Parmesan cheese: initially, all she has to do is to focus on those perceptual cues which are telling her, 'I am cheese' (for example: a refrigerator containing mostly white and orange colored bricks covered in polythene and close to the yogurt section). By supplying cues in each the appropriate dimensions, the producer and retailer are able to speed up the product selection process, and thereby selling more goods in less time.

Selecting a Particular Product

Once a product within the general category has been found, the consumer then decides whether that product fulfills her requirements. To do this, she uses a mental representation of the particular features of the good she is interested in (which will depend on the product category). For example, features considered relevant to consumers of orange juice might include: whether the juice is fresh pressed, whether it has 'bits' of orange in it, how long it is likely to remain fresh, what volume of orange juice is contained in the package, and how much it costs.

The types of information utilized to make choices about which product to purchase within a category are likely to differ from consumer to consumer. For example, generally speaking, it is likely that a frequent purchaser of a product will focus more on salient items such as the price-differential between products which that consumer perceives to be close substitutes, whilst an inexperienced consumer may carry out a more extensive search in order better to establish which products might be close substitutes (see e.g. Alba and Hutchinson, 1987). But, in either case, most of the crucial information, with the possible exception of the price, is typically to be found on the product label.

Labels: the Consumer's Best Friend

If the above rule of thumb is essentially correct, then it is clear that the consumer relies heavily on product labels both to distinguish between separate categories of product and to distinguish between products within categories (see e.g. Hoyer, 1984; Smith and Houston, 1985). So, the more readily differentiable a product is made by its label, the easier the consumer's overall product selection task is made. Since most people probably prefer to spend the least time necessary searching for products which satisfy their wants, producers have a strong incentive to provide labels which clearly and strongly differentiate their products.' This may be done in a number of ways, including:

Category Labeling

First, the label may convey information regarding the product category. This is typically done through the use of certain symbols or colors. For example, orange juice containers may have pictures of oranges and a predominance of orange coloring on the label, whilst apple juice containers may have pictures of apples and a predominance of green coloring on the label.

Specific Product Information Labeling

In fact, the use of labels benefits all parties to the transaction: the producer sells more goods, the retailer has a more rapid turnover and the consumer has more free time and enjoys a greater likelihood of matching purchases with preferred product attributes.

Of course, some producers may benefit by making their labels appear similar to bigger selling brands but this would only be harmful if consumers were actually confused by the similarity. There is, clearly, a difference between product association and product simulation.

Second, the label may convey information regarding a variety of product-specific attributes. For example, the label on a packet of cheddar cheese may provide information regarding the quantity of protein, fat, sugar, and calcium that the cheese contains, whilst the label on a packet of washing powder may contain information regarding the quantity of powder required to wash 1Kg of clothes and the relative performance of the powder at different wash temperatures.

Brand Labeling

Third, the label is likely to convey information regarding the brand of the product. This is probably the most important part of the label (Robertson, 1987), because it provides the consumer with implicit information regarding several product attributes, including: the performance the consumer can expect from the product; the price which the consumer would expect to pay (relative to other brands in the product category) and other product attributes which the consumer has previously learnt to expect from the brand, either from past use or from advertising.

The importance of brands, both to consumers and to firms, cannot easily be overstated: brands enable firms to recoup investments in new or improved products by ensuring that potential consumers of these products are able readily and rapidly to identify them. As a result, brands enable consumers to benefit from these new or improved products, which would otherwise not be available.

For the moment, I leave aside the fact that in many countries the provision of such information is now compulsory.

The brand also signals to the consumer more abstract concepts which may be related to the way in which the product has been advertised, or may be related to the consumers respect for others who consume the product or his beliefs about such products, in particular, conformity with the consumer's self-image (Mahlotra, 1988). This aspect of the product brand is particularly important for marketing of products with environmental attributes (see Chapter. 7).

As an exercise, it is worth briefly considering what might happen if product brands were banned, so that only very basic product information could be given on a product label. First, consumers would spend more time and money attempting to differentiate those products most likely to satisfy their wants (one likely consequence is that wealthier consumers would employ agents to make these choices for them, whilst poorer consumers would rely on the retailer's advice). Second, because it would be more difficult to remember the exact nature of the product purchased, feedback from past consumption would be less

Certification Labeling

Finally, and most importantly for the purposes of this study, the label might convey information regarding certification of the product by an independent authority. Such certification schemes are intended to enhance the consumer's expectations regarding certain product attributes. Several certification schemes are described below, but first a brief explanation of their function is given.

Why Product Certification Schemes Exist

Consumers may formulate their expectations concerning the various product attributes which concern them in a variety of ways, including: past purchases; the advice of friend(s); advertising (in particular, the use of 'opinion leaders' - that is, people whose opinions are accorded a great deal of respect); 'commercial sources' (including surveys and reviews published in journals and newspapers) and product certification labels (Schiffman and Kanuk, 1994; Ohanian, 1991).

Experience gained from past purchases of a product is usually a reliable source of information, since it enables the consumer to establish very precisely how a product performs relative to her expectations and/or the performance of other products. However, in certain circumstances, such experience might be a poor guide to the consumer (see e.g. Klein and Leffler, 1981; Meiners and Staaf, 1990), for instance:-

(i) The product may be an item which is purchased on a very infrequent basis (for example, durable goods such as a washing machines and cars). Experience is of little value in such circumstances because by the time the item is replaced the particular model previously purchased is unlikely still to be in production.

(ii) Particular examples of the product may vary significantly from one another (this is certainly the case for items such as second hand washing machines and automobiles - see below), so experience of one example is a poor guide to what one may expect from another example.

important to the product choice, so consumers would tend to purchase the cheaper products and quality would tend to spiral downwards as producers stopped producing unprofitable high-cost high-quality lines (see also discussion of information asymmetries below).

(iii) The particular qualities associated with a product may not be verifiable by experience during the period of consumption (for example, nutritional items which may or may not have long-term benefits or costs, and environmental impacts which the consumer is unable to observe).

The following section explains why the inability to test a product's performance through experience may lead to problems and offers some initial insights into how these problems may be overcome. The automobile market is used as an example.

Information Asymmetries and Market Signaling

Why is the price of an almost new car typically so much lower than the price of a brand new car? Akerloff (1970) has offered an explanation of this phenomenon based on the fact that the owner of a car and the potential purchaser of that car have different sets of information about it. In particular, the owner is typically better informed about the car's quality than any potential purchaser. To see how this creates a disparity between the price of new and nearly new cars, assume that the purchaser bases the amount that he is willing to pay for the car on an estimate of the average quality of such cars. Now, if the owner believes his car to be of above average quality, then he is unlikely to be willing to accept the amount that a purchaser would be willing to pay for a car of only average quality. So, owners of above-average quality cars do not put their cars on the market. However, most potential purchasers should realize that very few above-average quality cars will be put on the market and so will revise their estimate of the 'average' quality downwards. But some of the cars which were previously of 'below average' quality are now of above average quality, so their owners will be unwilling to sell them at the new price. Of course, this process will continue (in the minds of potential purchasers and sellers of nearly new cars) until potential purchasers realize that the only cars which potential sellers will be willing to sell are those of the very lowest quality. Thus, in a market in which the seller has significantly more information about the quality of the product than the buyer, we might expect that bad products will crowd out good.

On the face of it, the existence of such informational asymmetries appears to pose a serious problem for the efficient functioning of any market. However, this problem is not so intractable as it first appears. This is because a number of non-price 'market signaling' mechanisms exist by which information can be passed from one market participant to another. These include: reputation, expert advice, accreditation and warranties (see, *inter alia*: Akerloff, 1970, pp. 499-500; Spence, 1973, p. 355-6) and are discussed below:

Reputation

The reputation of the seller to some extent constrains him to making truthful statements about the product which he is selling. The importance of reputation will depend on a number of factors, in particular: (1) the size of the company which the seller represents - the larger the company, the higher the potential cost in terms of adverse publicity arising from false or misleading statements about the product being sold; (2) the probability of future interaction between the buyer and the seller - the higher the probability of future interaction, the less incentive the seller has to lie, since he may, in the future, wish for the buyer either to purchase another product from him or to reciprocate his kindness in some other way (Axelrod, 1984; Ellickson, 1991).

Expert Advice

The buyer may purchase, or otherwise avail himself of the advice of an expert, whose opinion then supplements or over-rules that of the seller (Sterthal et al., 1978). However, the validity of this expert advice is, in turn, open to question. Aside from reputation, one potential solution to this secondary problem would be for a group of such experts to form a trade association which would only accredit persons believed to be adequately qualified to provide advice (and who are willing to pay the membership fee).

Accreditation

The seller may purchase the services of an expert offering third party accreditation. For example, the Association of Used Car Dealers may allow members to apply a seal to any car which they have tested and found to conform to certain standards (see below).

Warranties

Of course, the seller may himself join an association of experts, such as 'the Used-Car-Dealer Association', but the price he charged for the used cars would then rise commensurably.

Fourth, the seller may offer a warranty on the product - specifying, for example, that any parts which fail within a certain time period (say, one year) will be replaced free of charge. Of course, the credibility of the warranty will depend on the reputation of the seller (a one year warranty is of less value if the seller is likely to go out of business in six months time).

Since this paper is primarily concerned with accreditation (in particular, product certification), the remainder of this chapter is devoted to this concept.

Product Certification Symbols

A product certification symbol is a mark which producers of certain goods may incorporate into their product label if they have been authorized to do so by the owner of the mark. Examples of such symbols include the British Standards Institute's 'Kitemark', the International Wool Secretariat's 'Woolmark', and the Hallmarks on Gold and Silver. The general purpose of these marks is to signal to the consumer that the product has been accredited by the specified authority for the specified purpose. In the hypothetical example above, the Association of Second Hand Car Dealers was the authority and the certification mark indicated that the car had met certain standards.

There are two main types of product certification: those which certify manufacturer's claims and those which certify more general concepts. These are now considered in more detail.

General Concept Certification

General concepts, such as 'safety' and 'overall product quality' are hard to define because they rely so much on individual responses to products. (As the old saying goes, 'one man's meat is another man's poison'.) In spite of these difficulties, several organizations have developed certification schemes for safety or product quality, some of which seem to provide consumers with useful information. Two of the more successful examples of these are discussed below.

Other types of signal are considered further in Chapter 6. In particular, marks which certify product safety suffer from what might be called the illusion of objectivity. That is to say, the mere fact that a product satisfies the criteria for assessing product safety does not render the product safe under all circumstances, nor does it necessarily mean that the product is always safer than other products which do not meet the particular set of criteria. This is because no objective criteria for adjudging the safety of a product exist: it is no more possible to define 'safe' in a scientific manner than it is

(1) Product Safety

Underwriters Laboratories (UL), a private US organization, offers certification marks for product safety. In order to qualify for a UL certification mark, a product must fulfill the product safety criteria in the appropriate product category. These criteria are developed in consultation with producers and are updated regularly in order to incorporate technological innovations.

The UL program provides some useful basic safety information, enabling consumers to make more informed decisions both when they are purchasing and when they are using a product. Moreover, at a minimum, BSI or UL certification offers verification that a product does, in fact, meet the performance or other standards asserted by the manufacturer.

(2) Product Quality

Good Housekeeping (GH) offer a product quality seal. This is effectively a warranty extended by GH to readers of its magazine: GH (not the manufacturer of the product) promises to replace any product which has been awarded the seal (or to refund the value of the purchase) if the consumer is not satisfied (Kerwin, 1994). Legally, the GH seal has been interpreted as implying that products are 'good ones' and that advertising claims are 'truthful' (see *Journal of Public Policy and Marketing*, vol. 11, No. 1, Spring 1992). So, the seal acts both as a source of general product quality certification and as a certification of manufacturers' claims.

Manufacturer's Claims Certification

so to define 'beauty', since both are subjective concepts: the risk to an individual of using a particular product depends upon the way that individual uses the product, which, in turn, depends upon that individual's subjective assessment of the risk posed by his utilisation of the product - just as the beauty an individual perceives in an object or idea depends upon that individual's subjective notion of beauty. There is a risk, therefore, that by suggesting to the consumer that a product is safe, the real hazards of the product will be obscured and, as a result, more reckless use of the product will be encouraged (Adams, 1995).

There are many examples of seals certifying manufacturers' claims. As noted above, this is a primary function of both the UL and the GH seals. However, there are many other more specific examples of such certification, such as: the Woolmark, which is owned by the International Wool Secretariat and indicates that a garment is made from 100% virgin wool, and the Vegetarian Society emblem, which is owned by the Vegetarian Society in the UK and signifies that a products contains no meat products.

The Impact of Product Certification on Consumer Behavior

Anecdotal evidence suggests that some seals of approval may have a very significant impact on consumer purchasing habits. For Example:-

In the two months following the award of a seal of approval by the American Dental Association (ADA) in August 1960, the market share of Procter and Gamble's 'Crest' toothpaste rose from ten percent to twelve per cent, and within two years it had become the top selling brand, with a 30 per cent share of the market (Bennet and McCrohan, 1993).

A 1988 survey carried out by Good Housekeeping found that, of 18 brands carrying the GH seal for the first time, 16 showed an increase in sales (Kerwin, 1994). In addition, a survey carried out by the Roper corporation, in 1990, found that 84% of those surveyed thought that the 'Good Housekeeping' seal signified that the product was of 'superior' or 'fairly good' quality, (Schiffman and Kanuk, 1994, p.191).

Moreover, in what has been described as 'the most comprehensive investigation to date' (Beltrami and Stafford, 1993), Parkinson (1975) [Parkinson, T. L. (1975) "The Rôle of Seals and Certifications of Approval in Consumer Decision-Making," Journal of Consumer Affairs, vol. 9, pp. 1-14] found consumers ranked 'seals of approval' highest, above 'friends', 'salespersons', and 'advertisements', in terms of their 'expertise' and 'impartiality' and second highest, behind friends, on 'trustworthiness'.

Which, by the way, is greater than the number who had a similar opinion of a 'Made in Germany' or a 'Made in Japan' symbol (75% and 69%, respectively) but less than the number who had a similar opinion of 'Made in the U.S.A.' (93%).

However, Parkinson also found that consumers tended to misinterpret seals of approval, a finding confirmed by several subsequent surveys (Beltrami and Stafford, 1993; Laric and Sarel, 1981). One of the main reasons for this is that, with the possible exceptions of Good Housekeeping (which publishes an explanation of its seal in each issue of Good Housekeeping magazine) and NSF International (an independent testing organization which has advertised the meaning of its seal in such publications as Business Week), the sponsors of seals of approval have not typically taken sufficient action to inform the public about the meaning of their seals (Beltrami and Stafford, 1993).

In addition, some researchers have suggested that consumers do not differentiate between certification marks - assuming them all to have equal value (see e.g. Wynne, 1993, p. 110). Empirical evidence is not clear cut on this point. A survey commissioned by Better Homes and Gardens (BH&G) found that whilst 87 % of consumers were aware of the Good Housekeeping seal, 68% claimed to be aware of a non-existent 'BH&G seal' (Kerwin, 1994). However, a survey conducted by Beltrami and Stafford (1993) found that, of twelve certification marks examined (including the Good Housekeeping seal), only the UL seal improved the believability of advertising claims - suggesting that consumers do, in fact, discriminate between certification marks. It is difficult to make any firm inferences from these data - aside from any other considerations many consumers may simply not be interested in providing truthful information. Moreover, it seems likely that some people do use the Good Housekeeping seal as a guide, just as it is likely that some people's decisions to purchase Crest were influenced by the ADA seal. However, given the multitude of different factors affecting purchasing decisions, it is not possible to say with any degree of precision how much impact certification marks have had, even for these relatively well documented cases.

Summary and Conclusion

Consumers rely heavily on the information provided on labels to make their product selection decisions. Product certification marks may help both consumers and producers by reducing information asymmetries. However, there is a considerable possibility that certification marks may be misinterpreted.

For example, if the cost of lying is insignificant and the benefit - in terms of amusement value - is positive, then many consumers may lie

In conclusion, this brief overview of the impact of product certification on consumer decision making cautions against giving an overenthusiastic welcome to any new certification scheme. The theoretical merits of each scheme must be weighed in proportion to the ability of the scheme to achieve its ostensive goals, both in theory and in practice, and against any negative consequences, intended or otherwise, which the scheme may have. In addition, the merits of alternative (perhaps mutually exclusive) schemes should also be considered. With this in mind, the discussion now turns to the problem of ecolabels.

2. The Promise of Eco-Labeling

In the introduction, evidence was presented which indicated that although many consumers have said that they would be willing to pay more for products if they are environment friendly, the quantity of such products bought remains a small proportion of the total. This chapter considers how ecolabel schemes might, in theory, reduce consumer skepticism towards products which claim to be environment friendly and, so, reduce the gap between what people say they are willing to spend on such goods and what they actually do spend.

Ecolabels: environmental Seals of Approval

Most extant environmental labeling programs are of the 'seal of approval', or 'ecolabel' type. These are certification marks awarded to those products in a particular category that have met certain predefined criteria. Several arguments have been made in favor of ecolabels as an aid to consumer purchasing decisions, of which the following seem the most persuasive (see, *inter alia*, Cohen, 1991, p. 259; Wynne, 1993, p.107):

first, most consumers are apt to invest little time discovering the likely environmental impact of a product - even if accurate information is provided - so a single comparable measure might reach a wider audience;

second, those consumers who are willing to spend time discovering the expected environmental impact of a product may find themselves attempting to compare incommensurables such as 'water pollution' and 'recyclability', so such consumers might prefer to rely on experts to carry out this task for them;

third, marks certifying environmental information may be misinterpreted by consumers as being seals of approval, so an actual 'seal of approval' certifying environmental superiority within a product category might be preferable.

The Benefits of Ecolabels

Aside from providing the consumer with accurate information concerning the relative environmental impact of a product, it has been suggested that ecolabels might accomplish a number of other goals, for instance:-

(1) An ecolabel might improve the sales or image of a labeled product. As an OECD report on ecolabelling points out: 'This goal is actually a necessity, for if the use of environmental labels does not increase sales or improve the product's or company's public image, then the labeling program is doomed to failure. As a voluntary market-based instrument, environmental labeling will only be effective if it is accepted and used by manufacturers as a marketing tool. And this will only occur if consumers accept the objectivity and goals of environmental labels.' (OECD, 1991, p. 12).

(2) An ecolabeling program might encourage manufacturers to account for the environmental impact of their products. This may be accomplished in one of two ways. First, by ensuring that the entire product lifecycle is taken into consideration in the ecolabel criteria, firms supplying companies who are seeking an ecolabel must provide evidence that their own environmental impacts conform to some standard (for example, by complying with ISO 9000 and ISO 14000 or carrying out an Eco-audit). Second, firms producing products without ecolabels may wish to compete with firms whose products do bear an ecolabel, so they too may wish to signal their environment friendly behavior to the market by carrying out an Eco-audit or complying with ISO 9000 and ISO 14000.

(3) Ecolabels might make consumers more aware of environmental issues (OECD, 1991, p. 13).

(4) Ecolabels might help to protect the environment. As the OECD report notes, 'This is, after all, the ultimate benefit of labeling programs,' (*ibid.*).

Ecolabeling In an Ideal World

With these objectives in mind, it is perhaps worth briefly considering - as a thought experiment - how an ecolabeling program might be designed for an ideal world.

First, experts would select those product categories for which ecolabels would make the most significant improvement to the environment. This would enable consumers better to allocate the limited resources they are willing to spend on environment friendly goods.

Some commentators have suggested that eventually there should be an ecolabel for every product category. This would be optimal only if those people who wished to spend money on the environment were willing to purchase environmentally superior goods regardless of the additional expense and regardless of the marginal impact of their

Second, product selection criteria for those categories would be established using an objective, scientific evaluation. To do this, a full product life cycle analysis (PLCA) of the product would be required, taking into consideration the relative environmental impacts at each stage in the product's life - from cradle to grave.

Third, products would be evaluated according to the established criteria and those which passed would be awarded the label. To ensure that all possible products were included in this process, the ecolabel and testing procedure would have to be inexpensive. (The failure to include a product which would have satisfied the performance criteria would, of course, present the consumer with a distorted picture of the market.)

Fourth, product selection criteria would be reviewed constantly to ensure that advances in technology are incorporated and to encourage improvement in environmental performance. Otherwise, innovation would be discouraged.

This ideal ecolabeling program is illustrated in figure 2.1, below.

figure 2.1: An Idealised Ecolabeling Program

Summary and Conclusions

purchase on the environment.

By providing an information surrogate in the form of an environmental 'seal of approval', with criteria based on expert opinion, ecolabels promise a means of overcoming the problem of consumer skepticism regarding claims of environmental superiority. Some of the hypothesized consequences (both direct and indirect) of such an ideal ecolabel scheme were adumbrated and an idealized ecolabeling scheme was presented. In the following chapters, the ability of ecolabel schemes to meet these goals are considered.

3. The Pitfalls of Ecolabeling

Chapter 2 briefly outlined some of the theoretical arguments in favor of ecolabeling. This chapter discusses these theoretical arguments in more detail and provides some criticisms.

Defining a Product Category

The first step for any organization seeking to establish an ecolabeling program is to decide the product categories for which ecolabels are to be developed. As noted in Chapter 2, in an ideal world product categories would be selected in such a way as to maximize the improvement in environmental quality which would result. However, in order to do this, the expert making the choice would need to know: (i) the future demand for all products (ecolabelled or otherwise) and (ii) the relative environmental impact of all the products in the world (including some which have not yet been created!). In the absence of such an omniscient, clairvoyant expert, the selection of product categories will inevitably be somewhat arbitrary - and, as Chapter 4 shows, is likely to be subject to politicking of various kinds.

Defining the Boundary of a Product Category

Once a general category has been selected (however sub-optimally), the boundaries of this category must be set (that is, it is necessary to decide which types product may and which may not be considered to be a member of the category). There are (at least) two problems with this process:

First, no two products are perfect substitutes for one another. For example, each brand of clothes washing detergent has a different mix of product attributes: physical state (solid or liquid), fragrance, low-temperature wash performance, presence of optical whiteners, and so on. These different mixtures of attributes appeal to different tastes. For example, some consumers may prefer to use solid detergent (powder) for cottons and synthetics but liquid for woollens, so they would not consider liquid and solid detergents to be in the same category. Other consumers may be indifferent to the physical state of the detergent but prefer to use biological detergent for some purposes and non-biological detergent for others, so they would not consider biological and non-biological detergents to be in the same category. Indeed, for many products, no matter where the product category boundary is drawn, there will always be some consumers for whom that category is too broad and others for whom it is too narrow.

Second, many products have multiple uses, so there may be products which could fit into several categories. For example, bleach could be considered to be a floor cleaner, a toilet cleaner, even a clothes cleaner. So the ecolabeling organization must either include the product in several categories, or make an arbitrary choice to include it in one category only. Both solutions are likely to mislead the consumer. In the first case, the presence of several ecolabels on a bottle may lead the consumer to the false conclusion that a product is especially environment friendly. In either case, it is possible that a consumer would purchase a product with an ecolabel, not realizing that the ecolabel was awarded for a use which is different to that for which the consumer purchased the product. For example, a consumer who wishes to buy an environment friendly floor cleaner may choose the first ecolabeled bleach that they see - not realizing that the ecolabel was awarded for the bleaches' toilet cleaning qualities.

At base, these problems rest on the fact that every individual has different desires and chooses different ways to fulfill those desires. As a result, people use products in idiosyncratic ways, many of which are simply not known by the expert attempting to define the product category. As the 'Groupe des Sages' noted in their second report, *Guidelines for the Application of Life-cycle Assessment in the EU Ecolabelling Program* (p. 8): 'If all secondary functions were included each product would constitute its own product group and no general groups could be formed.'

On the washing machine front: should washer-dryers have their own category, be included in the washing machine category, or be in the dryer category? The EU decided that they were in separate categories. But this was clearly an arbitrary choice - there was no sound theoretical or empirical justification.

The problem can perhaps be seen more clearly by considering an example. Thus, when the UK Eco-Labeling Board was considering the definition of the boundary for the 'washing machine' category, there was considerable debate over whether to include washer-dryers (machines which both wash and dry clothes). On the one hand, if washer-dryers had been included, consumers might have been misled into thinking that the ecolabel also applied to the drier. But, on the other hand, the failure to include such machines would have meant that some washing machines would have been excluded from the ecolabel solely on the grounds that they also performed some additional function. In the end, washer-dryers were excluded, but not because this was inherently the most rational way to proceed. This and several other examples are summarized in table 3.1, below.

Ecolabel

Table 3.1: The Problem with Product Category Boundaries

Product Category**Problem**

Germany: *Blue Angel*

Paints

Excludes water-based paints: may lead to misperception that such paints are environmentally inferior

European Eco-Label

Washing Machines

Excludes washer-dryers: may lead to misperception that washer-dryers are inherently environmentally inferior

Nordic Environmental Labelling Program

Disposable Diapers

Excludes washable (cloth) diapers (which have their own category), making comparison between these two products difficult.

Canada: Environmental Choice

Cloth Diapers

Excludes disposable diapers: may lead to misperception that disposable diapers are inherently environmentally inferior.

Germany: *Blue Angel*

'Recyclables', including: retreaded tires; returnable bottles; recycled paper; flower pots; reusable gas cartridges; wallpaper...

Excludes products which are not made from recycled material: may lead to misperception that recycled products are inherently environmentally superior.

Japan: Eco-Mark

Solar Heating Systems

Excludes non-solar heating systems: may lead to misperception that solar heating systems are inherently environmentally superior.

In sum: no means exists whereby an expert may decide rationally where to draw the boundary of a product category, so this boundary will inevitably be somewhat arbitrary - and, again, is likely to be the subject of much politicking (see Chapter 4).

Developing Product Selection Criteria: Product Life Cycle Analysis

We now come to the second stage in our ideal ecolabeling scheme: developing the product selection criteria. In an ideal world, this might involve a full product life cycle analysis (PLCA) - taking into account all the impacts of the product on the environment at each stage in its life, from the use of natural resources as inputs, through emissions during the production, distribution and use stages, to the use of natural resources and/or emissions during the disposal stage.

Life cycle analysis (LCA) was developed in the 1970s as a method for analyzing all the inputs and outputs to a production process, so that cost-minimizing processes could be identified and utilised. This commercial LCA is clearly

To see how this is done, consider the PLCA for paper products developed by the UK Ecolabeling Board, which is given in box 1.

INSERT BOX 1 near here [[LCA: paper products, from UK Ecolabelling Board Factsheet No. TP/KT/1]]

The type of PLCA which we are interested in should, in theory, comprise two stages: inventory and impact. The inventory stage involves cataloguing the physical consequences of each stage in the product lifecycle: basically, this means counting the emissions of certain chemicals to air and water and assessing the total solid waste produced during the production, distribution, use and disposal of a product. During the impact phase, these physical consequences are translated into estimates of the damage done to human health and to ecosystems by using dose-response relationships from epidemiology, animal or ecological toxicology, and clinical studies. (Portney, 1993, p. 70). However, as Scarlett (1993, p. 19) notes, 'So far, actual analyses have been largely constrained to inventory analysis because of the complexities and uncertainties of impact analysis.'

The advantage of PLCA over some simpler measures of the environmental impact of a product is that it takes account of some of the trade-offs which are inherent in any comparison of alternative technologies. For example, environmentalists have campaigned vigorously against the use of polystyrene cups, arguing that paper cups can be made of recycled material and thereby result in the production of less solid waste; however, two PLCA comparisons of the impact of different types of disposable cups both found that '[p]olystyrene cups result in less air and water pollution, are less energy intensive, and result in less post-consumer waste (by weight) than paper cups' (Portney, 1993, p. 71).

Whilst PLCA is clearly an improvement over simpler measures, it is by no means a well calibrated scientific instrument. Indeed, there remain many problems with PLCA, some of them altogether intractable, of which the following are a selection.

Defining the Boundary of the Life Cycle

very different from the from of PLCA which has been suggested for use as a guide to setting product selection criteria.

First, it is not clear where one should draw the boundary of the life cycle: should it be at the point where the primary materials are introduced into the production process, or should it include the environmental costs of extracting the raw materials themselves, or, going one stage further back, should it include the environmental costs associated with producing the machinery which was used to extract the raw materials? And what, then, of the environmental costs of extracting the raw materials which went into the machinery which was used to extract the raw materials for the production of the product? Moreover, ' [w]hat about the energy required to sustain the laborers involved in the respective production processes. Should these, too, be counted in the life cycle analysis? And what about the capital equipment required the landfills in which solid wastes are ultimately buried at the supposed end of the product lifecycle - in its grave, so to speak?' (Portney, 1993, p. 71; see also Wynne, 1993, p. 67 and Scarlett, 1994, p. 19).

There is, of course, no logical answer to this problem. One either accepts that there is no boundary to the life cycle of a product, in which case no PLCA may be carried out, or one draws an arbitrary boundary and accepts that the PLCA is flawed.

Inventory and Assessment

Second, the impact a product has on the environment at any particular stage in its life cycle is likely to be contingent on a number of factors, some of which may be available to the person carrying out the analysis, but many which will not. Paul Portney, vice president of Resources for the Future (the US-based environmental think-tank), explains the basic problem as follows:

'Suppose that the total emissions of every single pollutant associated with product A were less than those associated with product B, with which it competes, but that all of the former are discharged in densely populated, ecologically sensitive areas while the latter occur in remote, less sensitive regions. The adverse health and ecological effects associated with the production, use and disposal of A could be much more severe than those of B. Although this is the very thing that PLCA should alert us to, it would fail to do so if, as is generally the case, it is confined to the inventory stage.

However, extending PLCA to the realm of impacts introduces even more frustrating indeterminacies. One set of dose-response relationships, for example, might "prove" that exposures to ambient ozone are much more harmful than exposures to particulate matter. A different set of studies might lead to the opposite conclusion. The same will be true for virtually all the health effects of concern, making the impact phase of PLCA - the phase that really matters in comparing products or processes - almost impossible. (Portney, 1993, p. 72)

In addition to these fundamental difficulties, Portney (1993) notes several other problems. First, PLCAs cannot adequately deal with the fact that different products rarely provide exactly the same service to the consumer, for example, "Hot coffee in paper cups burns my fingers by the time I get back to my office, while coffee in polystyrene cups does not. As a consequence, I sometimes use two paper cups" (Portney, 1993, p. 72). Second, PLCAs do not usually take into account the non-environmental attributes of the product life cycle, such as the use of capital and labor and, so, could result in resource misallocation. For example, the failure to include the capital and labor 'consumed' during a product's life cycle in the PLCA - and, hence, in the ecolabel criteria - may result in resources being removed from research and development. As a result, products available in the future may require more resources and/or result in more emissions to the environment than if no such ecolabel criteria had been developed. (See also the discussion of lock-in in Chapter 6.)

Finally, there are particular problems associated with the inventory and impact assessments at the production, distribution, use, and disposal stages.

Production

An alternative method of comparison, developed by Swiss government researchers, assumes that discharge limits set by regulators are equivalent in terms of toxicity (Haddon, 1992). There are two problems with this approach: first, the assumption that regulators seek (or otherwise arrive at) regulations which equate risks is simply not valid (see e.g. Peacock, 1984; Helm, 1993); second, if regulators were acting in this super-efficient manner (which is impossible: Adams, 1995), then ecolabels would be unnecessary because individual exposure to risks would already be optimized - indeed, ecolabels would only distort this perfect regulatory structure.

At the production stage, it is not clear how an analyst could take into account differences in environmental impact arising from the fact that a single product may be produced at different plants, or the fact that the same product may be produced at the same plant but during production runs of different length or at different times (Scarlett, 1994). To see this, consider how important just the time of discharge can be: Portney (1993, p. 71) observes that, 'a rapidly moving stream may easily assimilate pollutants discharged into it. When the same stream is flowing slowly [during the dry season, for example], the discharges could do a great deal of damage.' Clearly, the very much more complex problem of comparing the impact of different chemicals in different physical states being emitted at different times under different conditions is quite intractable.

Distribution

At the distribution stage, relevant facts, such as the location of the wholesaler and/or retailer in relation to the manufacturer (which affects both the amount and the location of atmospheric emissions released during this stage) cannot be included in the impact assessment because the proportion of goods going to each wholesaler or retailer will vary from year to year and from day to day.

Use

Evaluation of the impact of a product during use is hampered by the fact that the person carrying out the inventory does not know when, where or for how long a particular consumer will use it. Consider, for example, two people, A and B, who have identical washing machines. Now suppose that A runs his washing machine once a day, whilst B runs his washing machine only once a week. Clearly, A's washing machine will be responsible for the consumption of more electricity and water as well as the emission of more effluent than will B's. However, if B obtains his electricity from a coal-fired power station and discharges his effluent into a slow moving stream which is full of trout and minnows, whilst A obtains his electricity from an hydro-electric power station and discharges his effluent into a fast-moving but sparsely populated river, then it seems quite possible that the damage resulting from A's 7 weekly washes would be less severe than the damage done by B's 1 weekly wash.

Disposal

As with use, disposal is carried out by the consumer, so the expert will not know when, where or how disposal occurs. As with use, the attendant problems are intractable.

Some insight into the magnitude of these problems can be gained by considering the attempts of five organizations (Franklin Associates, Arthur D. Little, Procter and Gamble (P&G), National Association of Diaper Services (NADS) and the Women's Environmental Network (WEN)) to develop life cycle inventories of reusable and disposable nappies (diapers). Table ??, below, shows the performance of reusable nappies relative to disposables (figures have been rebased so that in each case the performance of reusables is given as a multiple of that for disposables). The significant differences in the outcomes of these studies arose from:

1. Different PLCA boundaries. For example, the P&G study excluded the packaging and some minor components (such as elastics and adhesive tapes) of disposables; it also excluded the cotton growing and manufacturing of reusables. The Franklin study, on the other hand, included these factors (ENDS 198, July 1991, p. 25).
2. Different assumptions concerning product use. For example, the P&G study assumed that two nappies were used per change, whilst WEN assumed a figure of 1.25; the other studies made intermediate assumptions. This difference is significant because most of the releases to the environment generated by reusable nappies occur during this use phase (ibid.).

3. Differences in which 'pollutants' were included in the inventory. For example, in P&G's study water pollution was defined in terms of biological and chemical oxygen demand, whereas Franklin, A. D. Little and NADS also included suspended solids; in addition, Franklin included phosphate and acid emissions, NADS included oil and grease discharges, and A. D. Little included hydrocarbons phosphorus and nitrogen (ibid.).

Table ?? Comparing Life Cycle Inventories for Reusable vs. Disposable Nappies

Franklin	
Little	
P&G	
NADS	
WEN	
Energy	1.9
	3.4
	0.8
	0.6
	0.2
% Renewable	0.0
	1.2
	0.0
	-
	-
Raw materials	-
	0.1
	0.2
	0.3
	0.1
% Renewable	-
	0.1
	0.1
	0.0
	0.2
Solid waste	0.2
	0.1
	0.0
	0.1
	0.0
Air emissions	1.9
	9.2
	1.4
	0.7
	0.3
Water emissions	7.3
	9.7
	2.2
	2.0
	0.9
Water consumed	3.9
	6.1
	0.9
	1.6
	0.3

Source: Adapted from ENDS 198, July 1991, p. 25.

Note: for all criteria, impact given is for reusables as multiple of impact of disposables.

Clearly, none of these product life cycle inventories provides an objective description of the environmental effects of the different types of nappy (Hampden, 1992). A similar conclusion was reached by Dennis Postlethwaite, a member of the Society for Environmental Toxicology and Chemistry's (SETAC) task force on life cycle analysis, who noted that "In Scandinavia six [PLCA] studies on milk containers have been published, all of which came to different conclusions" (Quoted in ENDS 198, July 1991, p. 24). Indeed, as two members of Landbank Environmental Research and Consulting, the organization that carried out the PLCA for WEN, note, 'It is clear that it will be impossible to develop an entirely objective method for Life Cycle Assessment' (Charlton and Howel, 1993, p. 5).

Trade-offs and Environmental Quality

In addition to all the above-mentioned problems, PLCA has no means of addressing the fact that individuals value the environment in a subjective fashion. To see this, consider how people make tradeoffs between, for example, atmospheric pollution and the other factors which affect their lives: many people choose to live in smog-filled cities, despite the damage which might be done to their lungs. Why they choose to do this is known to the individual in question, but not, in general, to the expert carrying out the PLCA. Similarly, it is not possible for anyone to know how each and every person might be affected by the physical impacts of a product during its life cycle (even if every potentially affected person could be identified, it would still not be possible to establish truthfully what value they placed on particular impacts). So, even if it were possible to measure all the impacts which a particular good has on the environment (which it is not), it would still not be possible to know how each person valued (or ranked) different impacts.

A person might choose to live in a city for any number of reasons: perhaps because it is more convenient for her work, or perhaps because she prefers the social life, or perhaps simply because, being poor, she places a lower value on a smog-free environment than do others.

Whilst recent developments in Contingent Valuation Methodology suggest that people do make reasonable statements about how much they would be willing to pay (WTP) for particular environmental goods, it is not at all clear that stated WTP is anything close to actual WTP (which could only be discovered if a genuine free market existed in the good being valued). (See e.g. Coursey, 1995).

In sum, the attempt to pick environmental 'winners' by setting product criteria based on PLCA is doomed to failure. The expert setting the criteria does not have access to sufficient information about the relative environmental impacts of different products at different stages in the life cycle, nor is he able to make objective judgments about how best to make trade-offs between different environmental impacts.

A Cheap and Accurate Testing Procedure

The third phase in the ideal ecolabeling scheme involved developing a test for the product selection criteria which was sufficiently cheap to allow all eligible products to be tested. There is, however, a trade-off between comprehensiveness and cost: a set of product selection criteria can be developed which account for some of the environmental impacts of a product and require only a simple test (say, an estimate of the amount of virgin wood used in the production of the paper), but this is likely to ignore many other environmental impacts (such as those associated with the de-inking of recycled paper). A more extensive test, on the other hand, may pick up some of these other environmental impacts, but would probably be considerably more expensive and, so, would be likely to exclude some eligible products. Indeed, the cost of an extensive PLCA (upwards of £70,000) is likely to be beyond the scope of many smaller manufacturers. If ecolabelling becomes a requirement - either because of consumer demand or by mandate - then an expensive test could become a barrier to entry, driving out competition and granting incumbent firms the opportunity to reap oligopolistic profits (see e.g. Stigler, 1971; Williamson, 1985). This would militate against both the consumer, who would face higher prices, and the environment, because resources would be less efficiently allocated.

Updating Product Selection Criteria

The fourth phase of the ideal ecolabelling scheme involves continuously updating the product selection criteria in order to include advancements in technology and to stimulate improvements in the environmental performance of products over their lifecycles.

The main theoretical problem with attempting to update product selection criteria in this manner is that it assumes that firms would continue to innovate, despite the fact that their innovations might become redundant if not included by the ecolabel authority. Given the fact that the ecolabel authority is unable to distinguish which innovations have environmental benefits (see above), let alone to distinguish *a priori* what other benefits the innovations might provide to consumers, it seems likely that firms will be more cautious about investing in research and development on products which are ecolabelled. Of course, the less frequently that product selection criteria are updated, the worse this problem will be. Worse, the innovation-stifling effect of the ecolabel product selection criteria may, perversely, lead to the persistence of environmentally inferior technologies (see Chapter 6).

Ecolabeling and Trade

The proliferation of national ecolabeling programs over the course of the past decade has led to a concern that such programs may create a barrier to free trade. Indeed, in the past few years, the impact of ecolabels on trade has been discussed at the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO), at the United Nations Conference on Trade and Development (UNCTAD) and at the International Standards Organization (ISO) - which is contemplating an international technical standard for ecolabelling (The International Business Monitor, 27 April 1995, pp. 1-2). In addition, the two extant regional ecolabeling programs - the five-member Nordic Council scheme and the 15-member EU scheme - were developed, in part at least, because of concerns over the impact that a plethora of national schemes would have. These concerns include:

The concerns adumbrated here are those which are likely to result from the existence of national and regional ecolabeling schemes even if all the provisos in GATT are adhered to. For an overview of possible GATT objections to ecolabels see e.g. Subedis (1995) and Zarsky (1993).

First, the cost of ensuring that a product meets the different criteria necessitated by different schemes would most likely be higher than the cost of meeting only one set of criteria. Moreover, there may be (indeed, are) instances where the criteria of two or more schemes are mutually exclusive - so that it would simply not be possible to sell the same product in every country with an ecolabel from each. (Ironically, even the two ecolabeling authorities in Sweden, the state-run Nordic Swan and the private Swedish Nature Federation scheme, have product selection criteria for some detergents which are mutually exclusive.)

Second, even where several ecolabels could be applied to an individual product, this would require manufacturers either to package their goods differently for each country where an ecolabel had been awarded, or to include an array of ecolabels on the same package. The first option is clearly expensive, whilst the second may cause confusion amongst consumers.

Third, ecolabelling schemes are likely to reflect the concerns of pressure groups in the country where the label is developed. As a result, ecolabel criteria are likely to favor goods produced by locally and, so, discriminate against foreign produced goods. (see Chapter 4)

Fourth, if national governments include ecolabeling as a requirement in their procurement policies (for those categories of goods for which ecolabels apply), then, in the absence of an international ecolabel, the requirement may specify that only the ecolabel issued by the purchasing country's authority is acceptable. So this may be used as an excuse to procure from favored indigenous firms.

In sum, 'eco-labelling could serve, explicitly or inadvertently, to obstruct the "greening" of trade and to promote domestically-produced products - whether or not they are truly "best" for the the environment' (Zarsky, 1993, p. 2).

Interview, Chris Holmes of P&G (3 June 1996)
 Certainly this has been the experience with electrical standards, where government officials in certain countries have utilised the national standard as a means of discriminating against outside firms (personal communication, James Morris, Managing Director, Electrothermal Engineering Ltd).

Whilst perhaps overcoming some of these problems, an international ecolabel would be no more reliable as a source of environmental information than any other ecolabel. Indeed, it may be even less reliable, since locational differences in environmental impacts are likely to be more extreme. There are two main reasons for this. First, differences in climate, landscape and habitat mean that the ecological impact of any activity will vary significantly from country to country. For example, an emission of chlorine compounds to the watercourse during the production of paper is likely to have a more significant ecological impact on a slow-moving and already polluted European river than on a fast moving and relatively pristine Brazilian river. Second, perceptions of the seriousness of the environmental impact will vary from country to country. For example, many people in Britain might perceive a ten hectare landfill (waste disposal site) as an odorous, disease-ridden blot on the landscape, whilst many people in India might view a similar site as a source of employment and of raw materials. Furthermore, an international ecolabel is at least as likely to stifle innovation as is a national ecolabel (see Chapter 5).

Summary and Conclusions

Experts who are charged with the task of developing an ecolabeling scheme (ideal or otherwise) are likely to encounter a number of more-or-less intractable problems: they will not be able rationally to select product categories; they will not be able rationally to set product category boundaries; they will not be able to take into consideration all the physical effects which a product has on the environment during its life cycle; they will not be able accurately to estimate the impacts of these effects and they will not be able continuously to update the ecolabel product selection criteria. It should be stressed that these are not merely 'technical' problems: they cannot be resolved or avoided. So the claim that ecolabels might guide consumers to more environmentally sound purchases is spurious. Furthermore, a number of commentators have suggested that national ecolabels may become a barrier to trade, but an international ecolabel might not be any better.

Finally, a question: 'Are experts really better than consumers at making decisions about which products are most environment friendly?' In response, it is perhaps worth pointing out the one major advantage that consumers have over experts in processing environmental information: *many of the facts which the experts are unable to acquire are, in fact, known by the consumer*: she knows how much she uses of a product, how many times she reuses it and how she disposes of it. It seems reasonable to ask, therefore, whether this personal knowledge could not be harnessed more effectively than it is in an ecolabel. Some provisional answers to this problem are discussed in Chapter 7.

4. The Political Economy of Ecolabeling

In Chapter 3, it was shown that criteria for ecolabels could not be set through expert opinion alone, since objective data regarding the impact of a product on the environment are not obtainable. As a result, ecolabeling authorities have established procedures for setting criteria which, although incorporating the views of certain experts, rest in large part upon the decisions of the officials running the scheme. These decisions are, in turn, influenced by the various 'stakeholders', who make suggestions regarding what they see as a desirable set of criteria. This chapter discusses how this process typically occurs.

Stakeholders, Politics and Property Rights

The Current political discourse is replete with references to 'stakeholders'. Simply put, these are the individuals and organizations who are able to influence the outcome of a decision making process. Stakeholders may be divided into two categories: primary stakeholders, who have acquired a stake in an economic undertaking through the legitimate acquisition of the property upon which that activity is founded, and secondary stakeholders, who have been granted a stake in an economic undertaking on the grounds that they are, or may be, affected in some way by decisions made by the primary stakeholders (despite the fact that they have no formal rights to the property upon which the undertaking is founded). Examples of primary stakeholders include: owners of company stocks, owners of taxis, trains, buses, ferries and airplanes, and owners of land. Examples of secondary stakeholders include: workers in firms who are not owners of the firm's stock (but who might be affected by a decision to cut staff or to reduce wages), passengers on public transport systems who do not own stock in the system (but who might be affected by a decision to raise fares or eliminate services) and ramblers who walk along a footpath traversing someone else's land (and who might, therefore, be affected by a decision to charge for the use of the footpath or to turn it into part of a golfcourse). The effect of enfranchising the second group of stakeholders is to change the *de facto* rights to property: no longer do the *de jure* owners of property have exclusive rights to use, exchange and dispose of that property as they wish (within the confines of the operational legal system) because for many decisions regarding the use, exchange and disposal of the property, the primary stakeholders must first obtain the approval of the secondary stakeholders.

In most cases, secondary stakeholders both acquire and invoke their *de facto* rights to other peoples property through the political process. The reason for this is that secondary stakeholder rights are not usually granted to specific and identifiable groups, rather they are rights granted to the population at large (for example: the right to object to the erection of a building, landfill site or quarry; or the right to object to the closure of a factory). However, these rights are appropriated by specific groups through what is known as the 'consultation' process, which works approximately as follows. First, a decision by a primary stakeholder (such as a plan to convert a textile mill into offices and art galleries) is advertised (often to 'the public' but sometimes only to a select few) in accordance with applicable statutes (which were typically issued by politicians in response to the demands of certain stakeholders). The stakeholder groups then meet, usually in the presence of state officials (politicians and/or civil servants), and strike a compromise.

Stakeholders and Ecolabels

In the context of ecolabeling, the primary stakeholders are the owners of the ecolabel mark, whilst the secondary stakeholders include all those who produce products in categories to which the mark applies or might be applied, as well as a number of other groups, such as environmental and consumer organizations, who may gain useful publicity by being associated with the ecolabeling process.

As Chapter 3 showed, it is not possible to select either product categories or product selection criteria in an 'objective' manner, so at some stage in the process someone's subjective assessment must be invoked. Clearly, the various stakeholders affected by ecolabel schemes have an incentive to influence the nature of this subjective decision. Below we discuss the implications of this for both privately run and state run ecolabel schemes.

Ecolabeling by Private Sector Companies

There are currently two privately run ecolabeling schemes: *Green Seal* in the US and *Bra Miljöval* ('Good Environmental Choice') in Sweden. Both marks are run by non-profit organizations. At each stage in the criteria-setting process, the individuals running the schemes are likely to be subject to external influences.

Category Selection

The operators of *Green Seal* openly admit that, at the category selection stage, they accept proposals from both industry and the public. The board of *Bra Miljöval*, on the other hand, claim to select product categories independently. One explanation for this difference may lie in the administrative structure of the two organizations: *Green Seal* is an independent organization, whilst *Bra Miljöval* is run by the Swedish Society for the Conservation of Nature (SSCN). As a result, the product categories selected by the *Bra Miljöval* board may be dictated by the interests of SSCN as a whole (for example, if SSCN has campaigned against the use of a particular product, then it might seek to utilize *Bra Miljöval* to highlight this campaign), whilst the product categories chosen by the *Green Seal* board are more likely to reflect favored outside interests (for example, *Green Seal* categories may be chosen to coincide with campaigns by certain environmental organizations, by stores, or by producers).

Setting Product Selection Criteria

At the initial product selection criteria setting stage, those responsible for deciding the criteria to be applied will require a significant amount of production-process-specific information. Since this information can only be provided by those manufacturers making products in the category for which criteria are being developed, consultation with such firms is necessary at this stage. Certain manufacturers may gain competitive advantage if the product selection criteria are set in such a way that they can be met with ease by their product(s). Clearly, both manufacturers who are likely to gain and those who are likely to lose from a particular set of selection criteria will attempt to influence the criteria setting process and will utilize their access to production-process-specific information as a means to achieve this (for example, by carrying out PLCAs utilizing privately held information), thereby becoming secondary stakeholders in the ecolabel.

In addition, various other groups are likely to seek to influence the product selection criteria. In particular, environmental organizations and certain retailers may seek to ensure that selection criteria favor products or processes which they have promoted as being environment friendly (such as reusable diapers or reusable glass bottles). These groups are able to achieve stakeholder status by providing the ecolabeling organization with credibility enhancing support - for example, by including the ecolabel scheme in their own promotional material, or by endorsing the ecolabel.

The ecolabeling organization will, of course, be open to influence in a similar fashion when it upgrades the product

Ecolabeling by the State

In most cases, the owner of the ecolabel mark is an emanation of the state - typically a quasi-non-governmental-organization (QUANGO). The extent to which the ecolabeling quango is subject to external influence will be determined, in part, by the mandate under which it operates. But the setting of this mandate is itself open to external influence. This is because even politicians who attempt to act in the public interest have only a limited capacity to process information, so they tend to acquire information primarily from those stakeholders whom they perceive to be most important.

The operators of ecolabeling programs (including private organizations such as *Green Seal*) typically advertise the fact that external consultation occurs at each stage in the development of an ecolabel as a benefit - implying that the 'democratic' process of consultation with 'the public' actually improves the chances of product categories being chosen and criteria being set in an objective fashion. This is, of course, nonsense: 'consultation with the public' is simply the process by which secondary stakeholders influence the decisions regarding which product categories and which product selection criteria are chosen. A classic example of the way 'the public' is included in the debate can be seen in Article 6 of the EC Eco-Label, which states: "[w]ith a view to the definition of the products groups and the specific ecological criteria ... and before submitting a draft to the Committee ... the Commission shall consult the principle interest groups who shall meet for this purpose in a consultation forum ... [which] should involve ... representatives of ... industry, commerce, consumer organizations [and] environmental organizations" (OJ No. L 99, 11.4.92, p. 3)

Moreover, in many cases critical stakeholders are simply left out of the decisionmaking process, so that the product selection criteria become a means by which particular groups promote their own favored products. Two examples illustrate this point.

First, EU Eco-Labels have been developed in the absence of representatives of non-EU producers, so these producers have been unable to ensure that their particular circumstances are accorded due attention. Thus, Brazilian pulp and paper producers feel that the criteria for tissue paper unfairly discriminates against them (ABCECEL, 1995). This is understandable when one considers that one criterion puts strict limits on the atmospheric emission of sulfur dioxide (SO₂), whilst another puts a similarly strict limit on the emission of chlorinated organics (AOX) to water. The first criterion was included because of concern about the acid rain problem in Europe; but this is clearly irrelevant in Brazil, which has no acid rain problem. The second was included because of environmentalists' concern about the impact of AOX on aquatic life - again a concern which is more relevant to Europe's slow moving and already polluted rivers than to Brazil, whose faster moving and relatively pristine waters can dilute and disperse greater quantities of potential pollutants with ease. Moreover, since European producers already have to meet strict regulations concerning the emission of SO₂ and AOX, this Eco-Label may become a means of protecting indigenous producers.

Second, in both Sweden and Germany the criteria setting process has been dominated by environmentalists - often leaving industry right out of the picture. This has had some bizarre consequences. For example, the original *Blue Angel* for laundry detergents could only be applied to products in which ingredients were sold as 'building blocks' (separate chemicals which the consumer mixes in the appropriate quantities for the particular wash). Prior to the launch of the *Blue Angel*, building block detergents represented about 1% of the laundry detergent market. After its launch, this share went up to 1.5% ... and then promptly fell back to 1% again (presumably because those consumers who bought the product because it had been awarded the ecolabel rapidly became aware of its disadvantages). Here, the failure sufficiently to include manufacturers in the criteria setting process resulted in the criteria being set in such a way as to favor products which few consumers want to buy. More bizarre, perhaps, are the criteria for batteries set by *Bra Miljöval*. These require that the batteries contain less than 1 part per million (ppm) each of mercury, cadmium and lead; but the instruments specified by *Bra Miljöval* for measuring the quantities of these heavy metals are only accurate to 5 ppm. Here, the failure to include manufacturers in the criteria setting process has led to the imposition of a criterion which is impossible to verify.

Political Self-Interest

Complicating matters further, it is possible that the decisionmakers themselves may have some personal interest in outcomes - so that their decisions may be artificially biased towards a particular stakeholder group. This problem may be worse when ecolabels are set by the state because the primary stakeholders, the voters, have little incentive or ability to control such political self-interest: Politicians are likely to favor those stakeholders which seem most willing to offer them electoral support - be it through financial support for their party or through direct endorsement of a particular candidate (Niskanen, 1971; Tullock, 1977). Moreover, the fact that no objective criteria exist for category selection or product criteria selection makes it very difficult to detect such behavior (since there is no 'objective' set of output data with which to compare the actual set).

Lobbying in Action: the EU Eco-Label

The evolution of the EU Eco-label provides an excellent example of how the actions of various stakeholder groups determine the mandate under which the ecolabelling authorities operate, the product categories which are chosen for labelling and the product selection criteria which are set.

Demand for The Eco-Label

In the late 1980's, interest groups throughout Europe began to lobby for the introduction of ecolabels, arguing that consumers were being misled into buying what Friends of the Earth called 'frothy green' goods (ENDS 173, June 1989, p. 3) - that is, goods which are labeled with spurious claims of environmental superiority. In Britain, groups such as the Consumers Association and the Co-operative Wholesale Society were instrumental in encouraging the Department of the Environment (DoE) to push for the development of an ecolabel (ibid.).

At about the same time, several interest groups, including the Confederation of British Industry (CBI), the DoE, the German industry Federation, and the European Directorate General responsible for the Environment (DGXI), began to argue that the proliferation of national ecolabelling schemes might create a barrier to trade and, so, favored the creation of an EC-wide scheme (ENDS 174, July 1989, p. 3; International Environment Reporter, June 1990, p. 233).

(3/6/96).

Interview with Khush Marolia of Duracell (11/6/96).

Such as offers of future employment in the firms of certain stakeholders, or an implicit agreement to use a decisionmaker's law practice or consultancy.

Against the idea of an ecolabel (EC-wide or otherwise) - mostly on the grounds that it would create a barrier to trade or result in unnecessary costs - were: several overseas trade groups, representatives of some foreign governments, and many companies (mostly foreign). These groups were primarily concerned that they would not be party to the product selection criteria setting process and, so, could expect criteria to be set in a fashion which would not be favorable to them.

However, since most of the objectors were foreign, and since voter involvement in the issue was apparently not great, the Eco-Label became a reality - but not before many battles had been fought over how it should be structured.

Who Should Operate the Eco-Label?

It is also worth briefly noting the case of the German state officials, who were initially hostile to the creation of an EC-wide ecolabelling program - because it presented a threat to their Blue Angel scheme - but who changed their position in response to lobbying by German companies, which believed that they could benefit by selling the products they had developed for the Blue Angel program - if the Eco-Label criteria were sufficiently similar to those for the Blue Angel (ENDS 183, April 1990, p. 24).

I am not aware of any studies addressing this issue, but it seems unlikely that the EU Eco-Label would be a significant voter issue - compared, say, with the Social Chapter or the Single Currency.

In 1989, a battle began over who should be responsible for making the decisions regarding product categories and product selection criteria for the EC Eco-Label. Officials from several member states argued that most of the decisions, including the development of product selection criteria and decisions concerning which products fulfill these criteria, should be taken at a national level. For example, British officials argued that the Commission should only be involved at the criteria setting stage, whilst French officials suggested that each member state should develop its own scheme but that there should be mutual recognition of different national schemes. The European Commission, on the other hand, was in favor of a more centralized system, with control firmly in the hands of the Eurocrats. The primary reason for this difference of opinion seems clear: the greater the control any particular person has over the decisions made be the ecolabelling authority, the more likely that person is to benefit (either electorally or financially) from the decisions made - so national politicians and civil servants favored an ecolabelling authority on home turf, whilst Commissioners and Eurocrats favored an ecolabelling authority in Brussels.

After much wrangling, a draft proposal to establish the ecolabel scheme was issued by the Commission on 11 February 1991. This set out a highly centralized system, with the following five layers of bureaucracy (OJ No. C75, 20.3.91, pp. 23-28; ENDS 193, February 1991, pp. 23-24):

National Competent Bodies would have three principle functions: (1) To pass on suggestions of potential product categories to the *Advisory Committee* (see below); (2) to carry out initial assessments of products for which an ecolabel has been requested; (3) to act as contracting agent for successful applicants.

The European Environment Agency would (once established) carry out, at the request of the Commission, "preparatory work of a scientific and technical nature".

The Advisory Committee would decide which product categories were chosen and would take final decisions on the criteria to be applied for each product category.

The French subsequently launched their own ecolabelling scheme, NF-Environment, on 25 June 1992, as a fait accompli, with fifteen products in the paints and varnishes category already labeled (European Environment, 30 June 1992, p. 16)

The Ecolabelling Jury would consider applications for ecolabels which had been passed by national competent bodies.

The European Commission would have the final say in the product selection criteria and whether a label was awarded.

Politicians in several member states voiced their grievances at the centralization of power which this proposal represented. As a result, a compromise was reached in which two layers of the proposed bureaucracy were eliminated (namely: the Jury and the European Environment Agency) (OJ No. L 99, 11.4.92, pp. 1-7). As a result, the National Competent Bodies were granted significantly more power than would have been the case under the draft proposal.

However, disputes over the structure of the Eco-Labeling bureaucracy continued after the Regulation establishing the scheme had been passed. In August 1994, one official in the Industry Directorate said that his Directorate was, "being reproached [by industry] for not establishing criteria that are scientific" and suggested that, in order to redress this problem, "The Commission should take a more active rôle" (quoted in *Environment Watch Western Europe*, vol. 3 (15), 5 August 1994, p. 2). Apparently at the other extreme was an official in (then) Commission President Jacques Delors' office who, 'described the scheme's decisionmaking procedure ... as "completely mad", ... said he personally believed that ecolabelling should be left to private business, national ecolabelling agencies, or possibly the new European Environment Agency ... [and] made clear that Delors' office would continue to block the Commissions formal approval of the criteria for tissue products and soil improvers' (ibid.). Uniting these apparently disparate criticisms of the EC Eco-Label was an objection to the criteria proposed for tissue paper, which foreign paper and pulp producers had argued were unfairly biased against their products and had lobbied the Commission in an attempt to get them changed (see below and *Environment Watch Western Europe*, 16 September 1994, p. 8). The mechanism favored by the Commission for achieving this objective was to create a new European ecolabelling board which would comprise members of national ecolabelling boards and certain interest groups (*Environment Watch Western Europe*, 7 October 1994, p. 2).

In response, John Gummer, the UK environment secretary, harangued the European Commissioners for failing to implement the Eco-Labeling legislation. Speaking at the Prince of Wales Business Environment Program Seminar, Gummer stated that, "Fast track Britain has fought for a European-wide labelling scheme to give customers choice when they buy environment friendly goods. We are backed by industry and supported by the council of ministers and the European Parliament. Now the European Commission appear to have defied all of us." (Department of the Environment News Release, 15 September 1994, p. 1). Environment ministers from three other EC states - Denmark, the Netherlands and Luxembourg - then joined Gummer in calling for the Council of EU environment ministers to issue a statement urging the Commission "to get on with it" (diplomat quoted by Environment Watch Western Europe, 16 September 1994, p. 7). In addition, a number of British environmental pressure groups, acting under the auspices of the European Environment Bureau (EEB), launched a defense of the *status quo* (Press release, EEB/Council for the Protection of Rural England, 26.9.94).

At the 4 October meeting of the environment ministers, Svend Auken, the Danish minister, threatened the Commission with legal action for failing to comply with legislation if the criteria were not finalized by December, whilst John Gummer, "visibly angry, was reported as telling EU Environment Commissioner Yannis Paleokrassas that civil servants who do not carry out what the Council has decided should be sacked." (Environment Watch Western Europe, vol. 3(19), 7 October 1994, p. 1). In response, "Paleokrassas assured the Council that there would be speedy progress on the product groups awaiting a final decision." (*op. cit.*, p.2)

Following this meeting, the Commissioners' plans to change the administrative structure of the Eco-Label were dropped and, on 15 November 1994, the Commission approved the criteria for soil improvers and tissue paper (International Environmental Reporter, 30.11.94, p. 975). But all this political wrangling so held up the implementation of the Eco-Label that until the beginning of 1996 only one Eco-Label had been awarded - and even today only three have been awarded.

Who Should Develop the Criteria?

Even before the mechanism for developing the product selection criteria had been established, the distribution of responsibility for setting provisional product selection criteria was being agreed. In November 1990, the development of criteria for four product categories was decided: Germany got detergents, France got paints and varnishes, the UK got washing machines, and Denmark got paper products (ENDS 190, November 1990, p. 19).

This pilot study provided national ecolabeling authorities with an opportunity to influence the way in which future assessments would be carried out. For example, the ENDS report (*op. cit.*, p. 20) noted that 'Germany regards its study on detergents as an opportunity to press its own specification for assessments, developed during more than a decade of operating its own *Blue Angel* eco-labelling program, into the Multi-Partite Committee structure.'

In general, the responsibility for developing criteria has been distributed amongst authorities in member states according to the particular interests of those authorities, which, in turn, reflects the pattern of stakeholder lobbying in each country. In particular, industrial interests seem to be the most influential stakeholders at this stage: 'On the whole, there is a distinct correlation between a member states' manufacturing interests and the product criteria which they choose to study.' (IBM, 1995, p. 6).

How Should the Criteria be Set?

Prior to the publication of the European Commission's report into ecolabelling, the UK Department of the Environment set itself apart from other national environment agencies by suggesting that the ecolabel should not be based on product lifecycle analysis but should be awarded simply on the basis of a product's environmental performance when in use. In support of this suggestion, it was argued that, since manufacturers and disposers already met all relevant environmental regulations, it was not necessary, and would effectively be double counting, to include environmental impacts at the production and disposal stages (ENDS 175, August 1989, p. 24). By the same reasoning, however, it could be argued that consumers already pay for the environmental impacts of the electricity they consume, the water they use and the effluent they emit, since the companies providing these services are subject to similar regulations to those faced by the producers of other goods and services. In other words, if this argument were carried through to its logical conclusion, it is an argument against ecolabeling *per se*. It seems probable that, in arguing for selection criteria based only on the impact of a product in use, the DoE was acting in support of certain British firms which would benefit from an ecolabel which ignored environmental impacts at the production and disposal stages.

Of course, it suffices to say that environmental regulations probably do not internalize all the environmental costs of any activity, nor do they typically reduce environmental impacts in an efficient manner.

However, in January 1990, immediately prior to the publication of the EC discussion paper on ecolabelling - which argued in favor of a full PLCA - the DoE relented (probably primarily in order to strengthen its bargaining position in future negotiations over product selection criteria) (ENDS 180, January 1990, p. 22). As a result, there was now unanimous support for the use of PLCA in the Eco-Label and, after further disagreements over methodology were settled, it was subsequently embodied in the Regulation (see Article 5(4) of Council Regulation EEC 880/92).

As previous chapters have shown, PLCA does not provide an objective measure of the relative environmental impact of different products. Even taking into consideration the fact that no other methodology for assessing the relative environmental impact of different products exists, it seems reasonable to infer that the preference amongst policy makers for using PLCA as a basis for developing product selection criteria stems from the heavy promotion of PLCA by certain organizations, such as the Society for Environmental Toxicology and Chemistry (SETAC) and, latterly, the Society for the Promotion of Life-cycle Development (SPOLD). SETAC has its own Life Cycle Assessment Task Group, whose members stand to gain from increased use of PLCA, whilst SPOLD is an industry-funded organization (set up in 1992) with the sole aim of promoting PLCAs - both through funding of the SETAC Task Group and through direct lobbying (ENDS 204, January 1992, p. 24).

The Eco-Label for Paints

When the Eco-Label criteria for paints were being developed, a significant difference of opinion emerged between those representing countries in the South and those representing countries in the North of Europe. The cause of this disagreement centered on the fact that in Southern countries the warmer climate means that low-solvent paints dry more quickly and give poorer rates of cover than they do in the colder Northern climes. Moreover, Denmark, Sweden and Austria were demanding that the criteria prohibit volatile organic compounds (VOCs) altogether, claiming that these substances have been linked to brain damage (EWWE, 17.2.95, p. 2; IBM, 1995, p. 8), whilst at the other end of the spectrum the European paint industry federation, CEPE, was calling for uniform VOC limits of 250 grams per liter (ENDS, 202, November 1991, p. 26). Initially, a compromise solution was brokered in which ecolabeled emulsion paint sold in Southern Europe could contain 60g/l of VOCs, twice the level as those sold in Northern Europe. But the final Eco-Label criteria no longer allowed for such subsidiarity. Instead, the demands of the Northern states were acceded to, with permissible levels of VOCs set at 30g/l for emulsion paint and 200g/l for varnishes and gloss paints (EWWE, 17.2.95, p. 7).

No paint manufacturer has yet applied for an Eco-Label.

The Eco-Label for Detergents

In its pilot study, the German ecolabelling authority, the *Umweltbundesamt*, proposed criteria for detergents which would have barred any product containing phosphate from obtaining the label (ENDS 190, November 1990, p. 20). The principle reason for this is that certain individuals in the *Umweltbundesamt* (in particular, the then head of operations, Poremsky) had waged a campaign against phosphates in Germany, which had included a total ban on their inclusion in the *Blue Angel* criteria for detergents, and were keen to proselytize this anti-phosphate message across Europe. In the end, a compromise solution was brokered in which phosphates were allowed, but would be restricted through the application of a critical dilution volume for eutrophication (CDV_{eutroph}) hurdle.

In the mid-1980's, the German media The *Umweltbundesamt* Initially, this criteria was to be allowed only if the country issuing the ecolabel had wastewater treatment plants which could deal with phosphates (EWWE, 20/5/94, p.9; ENDS 232, 5/94, p.8). However, following more negotiations, the CDV_{eutroph} hurdle was adopted more generally, but an additional requirement that all hurdles be cleared was added (previously, products had been allowed to exceed one hurdle so long as the total number of 'points' scored by the product on all the labeling criteria is below the

No manufacturer has yet applied for an Eco-Label for detergents.

The Eco-Label for Washing Machines

The delays in implementing the EC Eco-Label (delays which, as was shown in Chapter 3, are largely inevitable) meant that the data used in the ecolabelling criteria for washing machines were at least two years out of date by the time the label was introduced. As Bernadette Valley, director of the Women's Environmental Network pointed out in June 1993, "one third of the market already meets the key criterion, that of energy efficiency ... [and] by the time the logo is appearing in the high street so many of [the manufacturers] will be able to meet the energy criteria by continuing normal efficiency upgrades that the logo will have little effect ("Bungled chance to help some shoppers buy green", Independent, 1 June 1993)

Despite the fact that many washing machines would probably pass the criteria, only Hoover has applied for the label - which now adorns its 'New Wave' range of washing machines.

The Eco-Label for Tissue Paper

The product selection criteria initially developed by the Danish ecolabeling authority for the Eco-Label on tissue paper included stringent restrictions on emissions of chlorinated organics (AOX), SO₂, and the volume of wood consumed. Pulp and paper producers from the US, Canada and Brazil objected to these criteria on a number of grounds, in particular: the AOX criterion was not seen to be applicable to countries with relatively fast-flowing and pristine waterways; the SO₂ criterion was not seen to be relevant to countries which have no acid rain problem; and the criterion for consumption of wood was not seen to be applicable to firms which sustainably manage their forests. But, under the terms of the Eco-Label Regulation, these groups were denied access to the criteria setting process, so their only recourse was to other parts of the Commission - in particular, the industry directorate.

maximum allowed.)

Despite fierce lobbying for 'transparency and direct participation by third-party interests in the development of EU ecolabel product sectors and award criteria,' the groups were still denied access to the criteria setting process (EWWE 1.7.94, p. 1) and, although the Commission delayed ratification, only minor changes were made to the criteria (EWWE 18.11.94, p. 7). However, the final criteria were still not acceptable either to the Brazilian paper organization, ABCECEL, or to the American Forest and Paper Association. As a result, the Brazilian government suggested that it might make a complaint to GATT on the grounds that the Eco-Label constitutes a *de facto* barrier to trade (ibid.), an argument which has some merit, since it has been estimated that almost all Danish paper firms could already meet the criteria when they were established (West, 1994?, pX+3) [this was one of the papers Lynn faxed to me - but it had no details about its origin]

To date, two manufacturers have applied for and received the EU Eco-Label for tissue paper.

The Future of the Eco-Label

To date, only three Eco-Labels have been awarded. This lack of response from manufacturers led environmental organizations such as Greenpeace and Friends of the Earth to become disillusioned with the prospects for environmental improvement through a voluntary ecolabelling scheme - they have decided instead to focus their efforts on tighter regulation and enforcement (Environment Information Bulletin 34, July 1994, p. 18). However, the bureaucracy operating the Eco-Label has become entrenched: with budgets at the UK Eco-Labeling Board (UKEB) contingent on a continuous supply of new and updated product selection criteria (rather than on a continuous stream of labels being awarded), employees at the UKEB have worked hard to ensure that Europe doesn't abandon the Eco-Label. This has entailed much 'horse-trading' between different national authorities, whereby acceptance of tighter or looser standards on one criterion (for example, acceptance of low VOC emissions for paint) by one authority (say, UKEB) are traded for acceptance of tighter or looser standards on another criterion (say, acceptance of phosphates in detergents) by another authority (say, the *Umweltbundesamt*). (See e.g. Environment Information Bulletin 34, July 1994, p. 18.)

One of the main reasons for this is that EU regulations on emissions of AOX and SO₂ are already far stricter than those in Brazil.

The EU Eco-Label was originally due for a major overhaul sometime between 1997 and 2000 but, in response to the lack of demand for labels, this has now been brought forward to the end of this year (1996). One possible change would be to outlaw existing national schemes. This is favored by a number of trade groups, such as the European Lighting Companies Federation which has complained that "labelling 'pollution' has reached such proportions that the lamp industry has to spend millions of Ecus to fight labelling inconsistencies all over Europe" (Europe Environment No. 417, September 28, 1993). Outlawing national schemes might have the advantage that national governments would no longer be able to use the national ecolabel as an excuse to procure from indigenous firms. But if national schemes are outlawed, so that the EU scheme becomes the 'harmonized' system for Europe, then it would be only a small step for the Commission to use ecolabel criteria as the basis for *Directives and Regulations*. Indeed, there are worrying signs that the Commission is already beginning to think in this way. A report prepared for the Commission in 1992 on strategies to reduce emissions of volatile organic compounds (VOCs) recommended that the Eco-Label criteria for paints become statutory limits four years after their introduction as Eco-Label criteria (ENDS 209, June 1992, p. 21). Moreover, this tendency seems inherent in the way the Eco-Label has been conceptualized - as an 'economic instrument' in the protection of the environment, rather than a means of providing consumers with information which might help them to make product choices which more nearly satisfy their tastes.

Summary and Conclusions

It has been shown that at every stage in the ecolabelling process, secondary stakeholders (manufacturers, environmentalists and others) are able to affect the outcome. This conforms well with Mazey and Richardson's (1993, p. 121) characterization of environmental policy in the EC as, 'the balancing of competing interests and the emergence of managed participation'. But criteria set by 'managed participation' of certain special interest groups is very far from the ideal criteria setting methodology envisaged by the proponents of ecolabels. In particular, dominance by environmental organizations (as in Sweden and Germany) tends to result in irrelevant or commercially unviable criteria which undermine the ostensive utility of the label, whilst dominance by industry (as seems to have occurred in the EU) tends to result in industrial protectionism rather than environmental protection.

In addition, the lack of voluntary uptake of the ecolabel by firms suggests that this managed participation has resulted in compromise solutions which are not actually desired by the manufacturers. Furthermore, this low uptake poses the ominous threat that the EU may soon use other suasive methods to ensure that firms begin to label their products - including the threat that ecolabel criteria may become regulatory norms. In the following Chapter some disturbing evidence is presented which suggests that such methods have already been adopted in Sweden.

Of course, this observation rather contradicts the claim that the Eco-Label criteria setting process is dominated by industry.

5. The Impact of Ecolabels

According to the proponents of ecolabels, the ostensive objective of any ecolabeling program is to improve the environment, so, clearly, the key measure of its effectiveness should be the impact it has on the environment. However, for two reasons, this impact cannot be directly estimated. First, no single measure of environmental quality can exist. This is because 'the environment' is a subjective construct: each individual has his or her own concept of what the environment is made up of and what would constitute environmental improvement. Second, if a measure of environmental quality were devised (and, despite the subjective nature of the environment, many people have attempted to do this), there are so many other factors affecting the state of the environment (such as changes in the regulatory framework, autonomous changes in productive processes and autonomous changes in the demand for particular products) that a simple correlation between the existence of an ecolabel and an overall improvement in environmental quality would not tell us whether the ecolabel had caused that improvement.

Since the introduction of an ecolabel can only be measured as a binary event (that is, either the ecolabel exists for a particular category at any moment in time, or it does not), any correlation, even in an apparently well specified model, would not indicate that the ecolabel had caused this improvement in the environment.

As an alternative, some analysts have suggested or implied that demand for ecolabelled products is itself a measure of the impact of an ecolabel. If the environment is indeed a subjective construct, then this is clearly nonsense (for the simple reason that we do not know how individuals value impacts on their own personal conceptions of the environment). However, even if one were to use some standard measure of environmental quality (for example, a weighted combination of variables such as atmospheric concentration of sulfur dioxide, nitrogen oxides and volatile organic compounds (VOCs), plus measures of the purity of watercourses such as biological or chemical oxygen demand), the impact of each product on environmental quality would be contingent on so many factors that it would not be possible to know which product had the lowest impact (see Chapter 3). Indeed, in many cases, a non-ecolabelled product may exist which has a lower impact on the environment. So, whilst purchases of products which fulfill the ecolabel criteria might result in less harm to the environment than the purchase of non-ecolabelled products, there is no guarantee that this would be the case. Moreover, the indirect impact of an ecolabelling program (stifling of investment, reduction in consumer choice) cannot be ignored (these issues are discussed in Chapter 7).

Since there is no way of measuring the impact of an ecolabel on the environment, the claims made by various individuals and groups that certain ecolabels have resulted in large environmental improvements should be taken with a pinch of sodium chloride. To illustrate this point, we now consider several such claims.

The Impact of the Blue Angel for Paints

One of the first *Blue Angel* product categories developed was for acrylic and 'high-solid' paints (these are the kinds of paint used for woodwork and metalwork). The product selection criteria for this category limited the proportion of volatile organic compounds (VOCs) to 10% for acrylic paints and 15% for high-solid paints. The first acrylic paint to display a *Blue Angel* was introduced by Glasurit in 1982; in 1987 ecolabeled paints represented approximately 16% of the total market for solvent-based paints (ENDS, 1989); and by 1995 this figure had risen to just under 25% (interview, Jerry Hodge, director, ICI paints).

The most frequently cited examples of this seem to be demand for low-solvent paints and recycled paper in Germany (see below).

However, nearly all of the demand for ecolabelled paint comes from the DIY market (which itself accounts for less than 50% of total market)

In 1990, the German government claimed that the *Blue Angel* for paints had reduced VOC emissions by 40,000 tons (OECD, 1991, p. 30). However, the environmental benefits resulting from this reduction should be viewed in light of the following.

First, any benefit (private or public) which has arisen from the shift towards low-VOC paints did not come without a cost. The paints which have a *Blue Angel* are more expensive to produce, which implies that scarce resources have been utilised in the production of these paints that might have been utilised more efficiently elsewhere.

Second, an alternative set of ecolabel criteria might have had a similar impact at a lower cost.

Third, it is possible that low-VOC paints would have come onto the market even without the ecolabel. (Such paints might, for example, have been advertised simply as 'low-solvent', with the purported health benefits, rather than the environmental benefits, given emphasis.

Fourth, according to a report on ecolabels carried out by Environmental Data Services (ENDS, 1989, p. 23), "Acrylic paints which carry the *Blue Angel* do not perform as well as more traditional products". Indeed, the report ascribes the poor sales of ecolabelled paint in the professional market to this poor performance, noting that "[w]hat counts for the professional decorator are aspects of product quality such as ease of application, color and durability, and "environment-friendliness" ranks low on this list of purchasing criteria".

Fifth, since no ecolabel was applied to emulsion paints (which are by far the largest sector of the paint market), it is possible that some consumers bought ecolabelled acrylic paints for use on walls and ceilings because they thought that such paints would have a lower environmental impact. In fact, emulsion paints typically have much lower concentrations of VOCs than even the ecolabeled acrylic paints, so such purchasing habits would have been perverse indeed (ENDS 202, November 1991, p. 26).

Finally, it is possible that some of the demand for low-solvent paint was the result of concern over the direct health impacts (rather than the environmental impacts) of solvent-based paints. Clearly, any reduction in emissions of VOCs which resulted from the use of low-VOC paint purchased primarily for its perceived health benefits should not be counted as a consequence of the ecolabel, but rather as a by-product of health-conscious paint purchases.

The Impact of the Blue Angel for Recycled Paper

A *Blue Angel* for recycled paper was introduced in 1981. Since then, the percentage of recycled material in paper sold on the German market has steadily increased (OECD, 1991, p. 30). However, the size of the market for recycled paper has increased likewise in many other countries (where the fact that the paper is recycled is typically denoted by a triangle of arrows together with a statement regarding the percentage of recycled material used). In fact, by 1989, demand for recycled tissue paper was greater in Finland (where market penetration was 25% for kitchen towels and 23% for toilet tissue) and Austria (16% and 14%) than in Germany (7.2% and 10.2%) according to a survey commissioned by Fort Sterling (ENDS 183, April 1990, p. 25). Moreover, a recent survey of shoppers in Britain, carried out by the Government-funded National Consumer Council, found that "claims on paper products were ... praised for their clarity ... Claims such as '100 per cent recycled' were felt to be clear and unambiguous" (NCC, 1996, p. 47). Thus, it seems likely that the *Blue Angel* for recycled paper was primarily acting as an expensive substitute for this alternative means of providing information.

In support of this suggestion, it is worth pointing out that when the first low-solvent high-solid paint was launched in the UK, the perceived health benefits were given as much space on the product label as the perceived environmental benefits

Two versions of this triangle are commonly used. The first is a 3-D-effect symbol (a 'Mobius loop') which is registered with the International Standards Organization (ISO); the European rights to use this symbol were originally owned by Continental Can but are now owned by the European Portable Battery Manufacturers Association. The second is a 2-D effect symbol is a registered mark of the German standards association (DIN). One problem with both these symbols is that they are frequently used to imply that a product can be recycled (which is a fatuous claim, since almost anything can be recycled given sufficient resources). As a result, the symbol may give rise to consumer confusion. (NCC, 1996). However, if the specific percentage of recycled material is also given, then it seems less likely to cause such confusion.

[ADD Lynn's MATERIAL HERE]

The Bizarre case of the Blue Angel for Birdhouses

On the principle that the use of recycled material is good *per se*, the *Umweltbundesamt* has been responsible for labelling many bizarre items (including reusable gas cartridges for whipped cream and soda siphons and building materials made from recycled gypsum) but none, perhaps, more bizarre than *birdhouses*. If product categories were selected on the basis of the relative impact on the environment, it seems unlikely that birdhouses would receive priority billing (nor would zinc-air batteries for use only in hearing aids, or hot-air techniques for control of wood infesting insects, but that is another matter). Worse, however, the criteria that birdhouses should be built using recycled material has meant that plastic (a non-renewable resource) has been used in place of the more traditional wood (a renewable resource). Moreover, some birdhouses which had been awarded the ecolabel were found to contain dioxin levels five times higher than permitted by German statutes (EWWE, 18 Feb., 1994, p. 8).

Summary and Conclusions

It is not possible to measure the impact of any ecolabelling program on the environment. Ecolabels tend to obscure relevant product information and may mislead consumers into purchasing products which, under the circumstances, result in the consumption of more resources and the emission of more chemicals into the atmosphere and into water courses, than other, non-ecolabelled, products. Despite this fact, it is not possible to say that the purchase of such products is harmful to the environment *per se*, since such impacts depend on the types of resources consumed, the location of the emissions, and the subjective (and, hence, unmeasurable) impact of these changes to the natural environment on particular individuals.

However, the demand for many of the product categories for which ecolabels have been awarded is so low that the marginal impact of the ecolabel on the environment (good or bad) is likely to be small. In addition, uptake by manufacturers in several *Blue Angel* categories and all EU *Eco-Label* categories has been zero or close to zero. Moreover, even those ecolabels that proponents have claimed have had a significant impact on the environment (such as the *Blue Angels* for paint and paper) may have achieved these benefits only at a disproportionately high cost, both economic and environmental.

Furthermore, as the following chapter discusses, the indirect impacts of ecolabels are almost certainly harmful to the environment.

6. The Unintended Consequences of Ecolabels

This chapter discusses the unintended consequences of ecolabels, both on the environment and on society more generally. Some authors have suggested that ecolabels may have beneficial side-effects - for example, that they may create demand for environment friendly products and, consequently, stimulate firms to develop such products. Aside from the problems with establishing which products are environment friendly (see Chapter 3), there is, in fact, no sound theoretical reason why an ecolabel *per se* should have such beneficial side effects. In most cases, labels merely help consumers to act upon their pre-existing desires; they do not typically influence a consumer's attitudes or her subjective norms (Wynne, 1993, pp. 103-7). This chapter focuses on the negative side-effects of ecolabelling, paying particular attention to the problem of technological 'lock-in': the stifling of innovation.

Efficient Markets, Lock-in and Ecolabelling

Economic theorists have, for some time, been concerned about the problem of 'lock-in' to inferior technologies, that is: the continued dominance of a particular technology despite the existence, or possibility, of more efficient alternatives. Examples of such 'lock-in' which have been given include: the dominance of the VHS video recording format (which is often perceived to be of inherently lower quality than Betamax) and the persistence of the 'QWERTY' keyboard (the layout of which may be less ergonomic than some alternative designs, such as 'DVORAK'). The reasons for lock-in are many and varied and it is not clear that all examples of apparent lock-in are, in fact, inefficient. Consider the first example above.

The Video War

Despite the common perception that Beta was technically superior to VHS, the two formats were, in fact, technically very similar - the main difference between them being that VHS is slightly larger than Beta. Thus, at the time of its launch in 1977, the longest VHS tapes could hold four hours of material (long enough to record a long film or a game of American football), whilst Beta could hold only two hours (Liebowitz and Margolis, 1995).

This is because, as Chapter 2 showed, consumers use labels as a cue for identifying certain product characteristics, not as a cue for what to believe or desire - in other words, labels may enable consumers to act on their attitudes and subjective norms but do not (usually) change them.

Betamax went on sale in the US in 1975, fully two years before VHS was launched. It seems likely that this head start which Beta had over its rival would have resulted in the creation of a network of interdependent consumers (that is, consumers who rely upon the fact that their friends have the same video recording technology and are, therefore, able to lend each other cassettes). Such interdependencies are a form of 'externality' (called a 'network externality'), since individual consumers benefit from other consumers owning the same technology but do not pay for the privilege. Regardless of any network externality which might have existed, however, VHS began to outsell Beta within two months of its launch (Liebowitz and Margolis, 1995).

Liebowitz and Margolis (1995, p. 231) conclude that, 'The market's referendum on playing time versus tape compactness was decisive and immediate, not just in the United States, but in Europe and Japan as well. By mid-1979, VHS was outselling Beta by more than two to one in the US. By 1983, Beta's world share was down to 12 percent. By 1984, every VCR manufacturer except Sony had adopted VHS.'

Despite the declamations of its detractors, the market is actually rather a good mechanism for ensuring that the most efficient technology is used for any particular job. As the video cassette example illustrates, network externalities are unlikely to militate against what consumers really want. However, where there are distortions to the market process, inefficient lock-in may occur and it is possible, nay likely, that ecolabels create just such a distortion. To see why, consider the following scenario.

Lock-in by Ecolabelling

Some economists have suggested that the mere fact that a technology is first to arrive may result in network externalities which prevent any alternative, superior, technologies from penetrating the market

Imagine that a product category has been chosen for an ecolabel, so that product selection criteria must be developed. During the time that the criteria are being developed, the various firms which are considering applying for an ecolabel on their product are placed in a state of uncertainty with regard to the technology which they might use for their new product, since they do not know precisely what the final criteria will be. As a result, the incentive to invest in the development of new technologies is diminished. So, at this initial stage, the mere possibility of an ecolabel has the effect of locking certain firms into the current technologies. And, of course, the longer that this process takes, the more serious the lock-in problem becomes.

Once product selection criteria have been agreed, those firms which choose to ecolabel their product(s) lock themselves into a set of technologies (or a path of technologies) which conform to the ecolabel criteria. These criteria are likely to be set in such a way that some extant product(s) will pass, since they can only be based on current technologies and will encourage product development only along this technologically determined path. As a result, new technologies which may be environmentally superior in some respects but do not conform to the current product selection criteria will be locked out of the system until such time as new criteria are developed. Moreover, when new criteria are being developed, the lock-in effect means that producers of ecolabeled products will try to ensure that criteria favour the current technology path. (See Box 6.1 for an example of this perverse effect.)

This problem is made worse by the fact that some potential entrants to the market will delay entry until uncertainty over the product selection criteria is resolved.

The time taken to develop an ecolabel for any product category would be contingent on several factors, including: the number and heterogeneity of stakeholders involved in the criteria development process (the larger the number of stakeholders and the more heterogeneous, the longer the process is likely to take, since the competition for influence will be greater), the objectives of the bureaucrats responsible for setting the criteria (the more closely the objectives of the bureaucrats are aligned to one group of stakeholders, the more quickly a compromise solution will be developed because the bureaucrats are less likely to take into consideration the interests of those stakeholders whose demands conflict with their own objectives). (Stigler, 1971; Peltzman, 1976; Spiller, 1990)

In addition, the threat that criteria might change presents a further source of uncertainty to firms, so that the ecolabeling authority is faced with something of a Catch 22 situation: either they can review the ecolabeling criteria frequently and thereby ensure that at least some of the potential product improvements are included, but risk creating an uncertain environment for firms which do acquire the label, or they can review the product selection criteria less frequently and thereby risk the possibility that the ecolabeled products on the market are less environmentally sound than they might be. Most ecolabeling authorities have chosen the second path, typically stating that criteria will be valid for at least two years (the EC Eco-Label, for example, is valid for a minimum of 3 years, whilst the International Chamber of Commerce has stated that an international ecolabel should be valid for five years (ICC, 1995)). One reason for this may be that by ensuring greater stability of criteria, the proportion of ecolabelled products in any category is increased, so the revenue of the ecolabeling bureau is increased.

Ecolabelling Mandates and Other Coercive Behavior

Where ecolabels are voluntary, the problems described above may not be so great, since firms can simply choose not to apply for an ecolabel for their product. However, wherever the government or some other organization is able effectively to coerce firms into applying for an ecolabel, product development will be stifled. To see this, consider the following example.

The Demand for Ecolabeling in Sweden

In the early 1990's, Eca, one of Sweden's largest retailers, put pressure on certain major producers of consumer goods to obtain ecolabels for their products - singling out, in particular, producers in the detergent and battery industries. Most of the targeted manufacturers initially refused to comply, so Eca responded by decreasing the shelf space devoted to their brands and increasing the space devoted to ecolabeled brands. Still, many manufacturers refused to budge. Members of the Swedish Nature Federation then initiated a public campaign against products not bearing ecolabels, sticking labels saying "I'm not ecolabeled, don't buy me" on the product wrappers. In response, Swedish consumers, ever wary of being seen to be unfriendly towards the environment, reduced their consumption of these products. At this point, the targeted producers caved in and applied for ecolabels.

Ironically, in at least two instances, producers did not need to change the formulation of their brands in order to comply with the ecolabel criteria. Thus, Procter and Gamble's (P&G) 'Yes' brand of dish washing detergent, which has approximately 70% of the Swedish market, was simply repackaged with an ecolabel; Duracell did the same with its range of products. In both cases, it is likely that some consumers were misled into believing that they were buying a more environment friendly product than that previously sold under the same brand name.

Lock-In to Laundry Detergents and the Perils of an International Ecolabel

Where product reformulations were necessary, the impact on the environment of these ecolabels has been, at best, equivocal, whilst the impact on the consumer has almost certainly been negative. For example, P&G points out that it was unable to introduce three new chemicals into its ecolabelled laundry detergent in Sweden, despite the fact that these chemicals would have brought improvements in performance and would have had a lower environmental impact than the chemicals they were to replace (Shimp, 1995).

Overall, ecolabelling in Sweden seems to have been an impoverishing experience. However, most of those companies which produce products bearing ecolabels in Sweden also sell non-ecolabeled products elsewhere, so they still have an incentive to invest in new technologies. But what would happen if the Swedish drama was repeated on a global scale (perhaps with a global ecolabel, or through ISO 14000 harmonization)? To get some idea of just how serious the lock-in problem could be, let's consider what might have happened if all laundry detergents had been ecolabelled twenty years ago:-

Product development would have been directed towards conforming with actual and expected ecolabel criteria, which could only have been based on the technology available at the time. In addition, detergent manufacturers are likely to have shifted investment in R&D away from laundry detergents and onto less risky products. Under such circumstances, it seems unlikely that today's detergents would be much different from those available twenty years ago: bulky powders, which, lacking enzymes, required high-temperatures (60C or more) for most washes.

Now, compare this scenario with what actually happened.

The introduction of laundry detergents containing enzymes has enabled better cleaning at lower temperatures. As a result, consumers use less electricity - thereby saving them money, consuming fewer natural resources and emitting fewer chemicals into the atmosphere and watercourses. Indeed, this single innovation, which might well not have occurred had an ecolabel been in place (either because of fears concerning the environmental impact of enzymes or simply because of lack of investment in R&D), has reduced electricity consumption in Europe so much that without it approximately six new power stations would have been required (estimate by scientists at P&G Europe).

Of course, the introduction of enzymes into washing powders was only one of a long list of environmentally beneficial improvements which detergent manufacturers have made to their products. Within the past decade, a new breed of compact detergent has been introduced, which use considerably fewer chemicals and require less packaging than conventional detergents. In addition, the introduction of the Granulette direct dosing device has reduced waste by as much as 40% (by ensuring that all the detergent goes into the wash, rather than down the waste pipe), whilst the introduction of biodegradable chelants has reduced the impact of spent detergent on the watercourse or sewage treatment system.

To accomplish changes such as these, detergent manufacturers spend billions of dollars per year on research and development. However, if ecolabels were introduced on a large scale, it is likely that this investment would fall dramatically. To see why, just consider how much an ecolabel actually costs: P&G has calculated that the total cost of the Nordic Swan ecolabel on its 'Yes' brand of detergent is in the region of 15% of net receipts from the product. One of the most significant factors in this cost is the time and money spent reapplying for the label each time the formulation of the product is changed - which happens two to three times per year.

Ecolabels and Trade

As the discussion of the EU Eco-Label in chapter 5 implied, an international ecolabel is likely suffer more severely from stakeholder disagreement than a national label, since there would be many more potential stakeholders and these stakeholders would be less homogeneous. As a result, the delays before product selection criteria were decided would be considerably longer, inducing an even more severe lock-in problem. Indeed, as the above hypothetical discussion of detertgents suggests, the global barrier to innovation would create a devastating lock-in problem.

Furthermore, an international ecolabel would be less able to account for the differences in environmental impact which result from the differential geographical incidence of pollution, both because of differences in the natural environment and because of differences in perception of the problems associated with pollution. This is particularly true for developing countries, where people are likely to be willing to accept pollution at a much lower price than would people in more developed countries.

Conservation of Resources through Self-Interest

Over time, products tend to be made using less resources. This is not because producers care for the environment (although it is possible that they might) but because they seek ways to reduce their costs (and, hence, to increase their profits). This process, which Scarlett (1994, p. 23) calls "dematerialization", occurs as a result of a 'reduction in the energy and raw material inputs needed to manufacture a unit of output,'. Dematerialization comes from many sources, for example: new manufacturing processes enable the production of metal beverage cans which weigh about one fifth the amount their predecessors did in 1960 (thereby reducing both the cost of the can and the amount of solid waste produced); the development of new compounds has enabled the production of more compact detergents, which require fewer natural resources and less packaging; the development of fiber cable has meant that 1000 times as much information can now be transmitted over a cable made from 65 pounds of silica as can be transmitted over a cable made from 1 ton of copper; the development of the aseptic drink carton has meant that orange juice, which previously was frozen to keep it fresh, can now be kept without refrigeration for long periods, so that the energy required to deliver 1000 US gallons of orange juice has gone from an average of over 100 million BTUs to only 30 million BTUs. (Scarlett, 1994, pp. 20 - 24)

In addition, consumers often favor products which are more energy efficient in use - not because these consumers care for the environment, but because such products save them money. So, for example, they buy laundry detergent which enables them to wash their clothes at 30-40C rather than 60C or more.

Summary and Conclusions

The lock-in problem created by ecolabels clearly harms the consumer: it reduces the number of new products which come to the market and ensures that the products which are available are less efficient than they would be otherwise (that is to say, the performance of any particular product is lower than a comparably priced product would be in a world with no ecolabels).

Moreover, ecolabels may actually harm the environment. By distorting prices and other information utilised by consumers in selecting products, ecolabels ensure that resources will not be allocated to their most efficient use. This is clearly bad news for conservation (or, to use the buzz word of the moment 'sustainable development'), which requires that all resources be used as efficiently as possible. Indeed, in the long-run, ecolabels almost certainly would harm the environment because producers would have less incentive to invest in new technologies and, so, are unlikely to discover more efficient ways of supplying the consumer with the products they want.

7. Alternatives to Ecolabelling

In the *Politics*, Aristotle noted that "Each man thinks chiefly of his own, hardly at all of the common interest". This principle - that Homo Sapiens is essentially a self interested creature - is echoed in the findings of a recent survey of consumer responses to environmental claims which noted that, "The only factor which might encourage people in the main groups to buy more 'green products' was if the products also offered some additional personal benefit. For example, Ecover [a brand of washing powder which carries environmental claims] was mentioned favorably by someone who suffered from dermatitis, and organic chickens were mentioned as tasting better." (NCC, 1996, p. 47) Indeed, for most consumers, "Price, quality, brand names and habit were much more important factors [than the environment] in determining which products to buy" (NCC, 1996, p. 45).

If, as seems likely, man is primarily motivated by self interest, then labels should reflect this fact. As Chapter 1 discussed, labels do, in the main, obey this rule - presenting information in ways which enable consumers to make choices consonant with their desires. However, as Chapters 3 to 5 showed, ecolabels present highly distorted information, so that, even if they enable consumers to make choices which are nominally consonant with their self-image as green shoppers, they do not enable them to purchase products which are actually more environment friendly.

How, then, might consumers be enabled to make choices which are more environment friendly? To answer this question, it is first necessary to ask why it is that consumers currently make choices that are not as environment friendly as they themselves might.

It is not being argued here that man is exclusively selfish. Indeed, the author accepts the proposition that, 'How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except for the pleasure of seeing it.' (Smith, 1759/1974, p. 9) However, selfishness does seem to be the overriding principle upon which most people function (and necessarily so - since without the motivation of self-interest to what end would a person be driven?).

First, in many cases, consumers are not charged per unit for goods such as water, effluent treatment and solid waste disposal. Often, these services are provided by municipalities, who charge a flat yearly fee. As a result, such consumers have little incentive to constrain their use or their production of waste. When consumers are charged per unit for the water they use and the waste they dispose of, however, they tend to reduce their consumption of these goods (REF). So, one way to enable consumers to make more environment friendly purchases is to ensure that consumers are charged (ideally, something close to the marginal cost of production) for each unit of water and waste services that they consume. Ultimately, it would be desirable if the prices charged for these goods were true market prices by removing control from the hands of municipalities and put into the private sector. (Of course, some private water and waste companies may prefer to offer a flat-rate charge for their services - but at least the consumer will have the choice).

Providing Environmental Information

It is possible that some relevant information concerning the use of resources can be provided on product labels. For example, if consumers are charged per unit for the water and electricity that they consume, then they may well look for products which consume less of these inputs for any given level of performance. In addition, if consumers were charged per unit for the solid waste they produce, then they might look for products which produce less waste - for example, those which have less packaging or have packaging which can be reused, recycled or composted at a lower cost than alternative disposal routes. So, labels might also contain information about such things as the type of material used and the weight of the packaging.

In many cases, however, the reason that less material has been used is that this reduces the manufacturer's costs and enables him to charge less for his product. Given that price is usually of greater concern to the consumer than environmental impact, information about the weight of packaging will have little or no impact in such circumstances.

Some products, such as certain brands of light bulb and washing machine, already provide such information.

Of course, it is unlikely that consumers would be interested in such information for very small purchases. But if a consumer purchases items in bulk, or on a regular basis, then the cost of disposal may figure as one of the attributes in their product choice set

Furthermore, even if the consumer is charged the marginal cost of disposal, she has little incentive to make purchasing decisions based on the type of packaging material used, since the cost to her of sorting each item into appropriate piles is likely to be great relative to the reward in terms of reduced cost of disposal.

Third Party Verification of Claims

As earlier chapters discussed, one of the primary (if not the primary) justification for ecolabeling programs has been the assertion that consumers are confused by the plethora of different environmental labelling schemes. But if that were the case, then the rôle of the ecolabel need be no more than a third-party verifier of claims. However, this is not the rôle which ecolabeling authorities have chosen; they have preferred to opt for the grander (and more bureaucratically demanding) 'seal of approval' (*infra* Chapters 2-6).

In fact, third party verification would be a far superior means of eradicating spurious environmental claims and ensuring that, to the greatest extent possible, consumers were not misinformed. As the experience of Good Housekeeping and Underwriters Laboratories demonstrates (see Chapter 3), such an accreditation scheme can provide valuable information to the consumer.

In the context of environmental labels, a scheme might verify claims regarding such things as the percentage of recycled material used in the product, or the origin of the product - such as 'dolphin friendly' tuna fishing, or 'sustainably' produced timber. Indeed, certification marks for both these product attributes already exist: the 'Flipper Seal of Approval', an international certification program run by Earthtrust and endorsed by 23 environmental organizations around the world, is awarded to companies which actively promote dolphin conservation (EPA, 1993, p. 114); under its Forest Conservation Program, Scientific Certification Systems (SCS) awards a certification mark to timber producers which show that their timber resources are managed sustainably, that they adequately maintain the surrounding forest ecosystem and that socio-economic benefits are passed on to the surrounding community (EPA, 1993, p. 118).

Of course, it could be argued that even these schemes lack objectivity: what, after all, does it mean to 'actively promote' dolphin conservation; and how does one define 'sustainability', or equitable distribution of benefits?

In addition, such single-issue certification schemes might encourage consumers to overlook trade-offs. For example, a label stating that a garbage bag contains 50% recycled material might mislead the consumer into believing that the bag is more environment friendly. But, having said that, this is surely not as bad as claiming, as the Canadian Ecologo does, that the bag is actually environment friendly. Moreover, the manufacturers of light weight garbage bags can advertise the fact that their bags contain less virgin material than the 'recycled' bags, thereby providing the consumer with relevant information upon which to make their decision.

However, attempts to provide multi-attribute certification, such as the SCS Environmental Report Card, typically suffer from the data poverty which affects other product life cycle inventories (see e.g. Wynne, 1993). For such schemes to be at all useful, they would have to shed the patina of inclusiveness and simply provide information which the consumer can readily comprehend and act upon - in other words, they would simply be aggregations of single issue certificates, telling the consumer, for example, that the outer product wrap, weighing 5g, is made of low density polyethene, 50% of which is recycled, whilst the inner product wrap, weighing 40g, is made from aluminum, 70% of which is recycled, and the contents are derived from tuna fish caught by a rod and line.

Statutory Definitions of Words

An alternative means of reducing the incidence of misleading claims is to ensure that the wording of manufacturers' claims conforms to strict and generally understood guidelines. This is the approach which has been taken in both the US and the UK with regard to most product claims, with the state providing the general guidelines.

In the US, green advertising is controlled by the deceptive advertising clause of the Federal Trade Commission Act (FTC Act) of 1937, combined with FTC guidelines on the definition of certain words and phrases [INFO from Lynn, please]

In the UK, all sales are covered by the Trade Descriptions Act and the Fair Trading Act, but there is no specific attempt to deal with green claims in either of these. As a result, many environmental claims are potentially misleading and 'a few are downright dishonest' (NCC, 1996, p. 2). The preferred solution of the National Consumer Council to this problem is either to extend the 'existing, largely self-regulatory, system of controls on advertising' to cover green claims, or to amend part III of the Fair Trading Act, in order to create a statutory code of practice for environmental claims (NCC, 1996, pp. 5-6). Given the tendency for stakeholders to distort and distend any political process, the first of these options, which would most likely entail encouraging the Advertising Standards Council to adopt a code of practice for green claims, seems to be the better solution.

However, the attempt to regulate the provision of information in a similar manner in other areas does not bode well for the success of the regulation of environmental information. For example, the attempt by the Food and Drug Administration (FDA) in the US to regulate the provision of nutritional information, through the Nutrition Labeling and Education Act, seems to have backfired because the rules, designed to stop false claims and to standardize claims, 'are so restrictive and complex that few food labels feature nutrient content claims today, even fewer health claims' (Greenberg, 1995). This problem most likely stems from the political process through which the rules were established, wherein many stakeholders agree to a compromise system which is, in fact, desired by none.

Mandatory Provision of Information

Many states have mandated that certain kinds of information be supplied with products. For example, under the EU Regulation on Energy Efficiency Labeling, all new washing machines and fridges sold in the EU after April 1996 must carry energy efficiency information. Similarly, under the Energy Policy Act 1992, all lightbulbs sold in the US after May 1995 have had to show not only the energy consumption (in Watts) but its brightness (in Lumens) and its (expected) life (Epatko, 1995).

However, it is not clear why such mandates were considered to be necessary. Perhaps it was thought that entrepreneurs, left to their own devices, would not have chosen to label products in this way. This is not a convincing explanation. Entrepreneurs typically respond to the perceived demands of consumers, so if they are not providing energy efficiency information, it must be because they do not perceive a consumer demand for it. Of course, it is possible that the entrepreneurs are wrong. But this seems unlikely, since the profits that accrue to the first manufacturer to add a desired new attribute to a product provide sufficient incentive in most areas, so why not energy efficiency labeling? Moreover, it would only require one enterprising individual to sell products bearing energy efficiency information, and thereby to steal a lead on his competitors, in order for all manufacturers to be stimulated into action. This leads to the conclusion that, in mandating the provision of energy efficiency information, the state is acting in an arrogant fashion, attempting to dictate what consumers should think, in spite of their reluctance to do so. Indeed, as Whirlpool, the refrigerator manufacturer, found to its cost, consumers do not generally perceive the value of added energy efficiency (Willis, 1994).

However, some manufacturers provide energy efficiency information voluntarily. Indeed, there are already several private schemes which certify energy efficiency information on products, for example, the Waterheater Manufacturers Association began such a scheme last year and the Energy Saving Trust plans a scheme in the near future (DoE, 1996)

Ecolabels, Experts and Individuals

Finally, let us return to the question posed in Chapter 3: are experts really better than consumers at making decisions about which products are most environment friendly? The answer to this question is, clearly, no. Neither the expert nor the consumer is in a position to decide which product has the least overall impact on the environment. However, most of the relevant information concerning the impact of a product during the pre-consumer phases of its life cycle is embedded in the price of that product: the cost of natural resources is included simply by dint of the fact that manufacturers must purchase these from the owners of the resource, whilst the cost of pollution caused during production and distribution is included to the extent that the producer and distributor must conform to regulations and other legal restrictions on emissions. So the consumer need not worry about the use of resources or the emission of chemicals into the atmosphere and watercourses: it is merely necessary that she find the product which best fits her purpose(s) at the lowest price. In addition, the consumer makes decisions concerning how much electricity or water she will consume and how much waste she will produce - facts which the expert can only dream about - and, as has been argued above, if she pays the appropriate unit price for these goods and is provided with information about the amount of them that the product is likely to consume/produce, then she will be able to factor these attributes into her product choice and so make a better choice than the expert about which product is best for her and for the environment.

Of course this cost reflects an equilibrium between supply and demand and so cannot be taken as the true opportunity cost of the resource. Moreover, some natural resources, such as timber from Indonesia, may not be harvested in a sustainable way because of the lack of an appropriate system of property rights

Of course, these restrictions on emissions may not be the best mechanism for reducing the external costs, but that is not the issue here.

Summary and Conclusions

In the Introduction, evidence was presented which suggested that there is a disparity between what people say they are willing to pay for environment friendly products and what they actually do pay. Some commentators have argued that this disparity is the result of 'consumer skepticism' generated by unverified and/or misleading environmental claims. In response, numerous organizations, both private and public, have developed ecolabelling schemes, the ostensive aim of which is to mitigate such skepticism by providing consumers with better information about the environmental impact of products.

In Chapter 1 it was argued that consumers rely heavily on the information provided on labels to make their product selection decisions and that information asymmetries between buyer and seller can drive a wedge between the amount that a consumer is willing to pay for a product and the amount that the owner of the product is willing to accept in payment. It was shown that product certification marks may help consumers and producers reduce these information asymmetries but that there is also a considerable possibility that certification marks may be misinterpreted, especially if these act as a 'seal of approval'.

In Chapter 2, the arguments in favor of ecolabels were presented, whilst, in Chapter 3, some of the arguments against them were presented. It was noted that experts who are charged with the task of developing an ecolabeling scheme (ideal or otherwise) are likely to encounter a number of more-or-less intractable problems: they will not be able rationally to select product categories; they will not be able rationally to set product category boundaries; they will not be able to take into consideration all the physical effects which a product has on the environment during its life cycle, nor will they be able accurately to estimate the impacts of these effects, so they will not be able rationally to set product selection criteria; nor will they be able continuously to update these criteria.

In Chapter 4, the problem of influence by pressure groups was discussed and it was shown that, at every stage in the ecolabelling process, secondary stakeholders (manufacturers, environmentalists and others) are able to affect the outcome.

In Chapter 5, the problems with measuring the impact of an ecolabelling program on the environment were discussed. It was argued that ecolabels tend to obscure relevant product information and may mislead consumers into purchasing products which, under the circumstances, result in the consumption of more resources and the emission of more chemicals into the atmosphere and into water courses, than other non-ecolabelled products.

In Chapter 6, it was shown that ecolabels can lock firms and industries into particular technologies, distorting the prices and other information which consumers utilize to make product selection decisions, and thereby ensuring that resources are not allocated to their most efficient uses.

In Chapter 7, it was suggested that information relating to the use of resources and production of post-consumer waste during the use and disposal phases could be presented to the consumer in a manner which might enable her to make better purchasing decisions. These decisions would be further improved if she paid the market price for all the inputs to and outputs from the product whilst it was in her possession.

In conclusion, ecolabelling schemes result in the distortion of information, the distortion of prices and the distortion of trade flows. They inhibit product development and result in the consumption of more scarce natural resources and more harmful emissions to the environment than would be the case if they were absent. Indeed, as Shimp (1995) notes, 'Eco-Labels provide no information that helps the consumer understand what improves the environment or what the consumer can do to help'. Moreover, other, more efficient, means exist by which information concerning the use of resources and emissions to the environment may be conveyed to the consumer in a meaningful way. As a result, this author concludes that all ecolabeling schemes should be scrapped.