

CHAPTER 3

THE LOGIC OF SUSTAINABILITY LABELS: THEIR FUNCTIONS FOR STAKEHOLDERS AND THEIR ROLE IN MARKETS

Joop de Boer and Onno Kuik

3.1. Introduction

This chapterⁱ examines the role of labelling and certification schemes in the pursuit of making production and consumption processes more sustainable. This role can be seen in two ways, namely as a political force and as an economic instrument. In terms of political forces, labelling refers to the view that people should be enabled to make morally or ecologically motivated choices and take sides in political conflicts. As an economic instrument, labelling aims to affect the behaviour of market participants by disclosing information about products that is not directly observable to the buyer. In the following sections both roles are discussed.

Generally, labelling and certification schemes are closely connected with the rise of commercial economies in the nineteenth and twentieth century. Labels in the form of trademarks and brand names are part of a rich tradition of practices that sellers have developed to assure buyers of the authenticity of their products or services. In the past, many of these practices have given rise to governmental regulations to prevent misleading claims.ⁱⁱ Mainly in response to the increasing importance of international trade and multinational supply chains, much work has been done in the last decades to standardise quality control and quality assurance with regard to issues as technical reliability, safety and sanitation. In this context, environmental and social labelling schemes are relatively new and that applies even more to sustainability labelling in general. By their nature, these schemes refer to qualities of products, production processes or services that are not only relevant from a private perspective, such as human health issues, but also from a public perspective, such as issues of biodiversity and social justice. These qualities are neglected by the conventional labelling schemes, but are increasingly recognized by

all kinds of actors in the marketplace.ⁱⁱⁱ Apparently, there is a need for more comprehensive labelling and certification schemes that are still compatible with a free-market approach. However, the fact that the qualities in question are relatively new and involve both private and public concerns may preclude their smooth incorporation into the conventional quality assurance systems.

The following sections combine a logical analysis of labels with a behavioural analysis of their functions for stakeholders and their impacts on markets. Section 3.2 starts by specifying how information on issues of sustainability can be analysed as a claim put forward by sellers to inform buyers. This analysis is elaborated in Section 3.3, which discusses what labelling means from the perspective of the main stakeholders (i.e., companies, consumers, policy makers, NGOs). Based on insights derived from the study of information economics, Section 3.4 shows that disclosure of information through labelling can lead to various market strategies and interactions among market participants that may not always lead to the desired outcome in terms of the objective of the label. Finally, Section 3.5 draws together these discussions and emphasises that it is important to examine the conditions under which sustainability labels can be successful or can lead to unwanted or "perverse" effects.

3.2 Labels as claims

Given the choice of sustainability issues that are relevant for a category of products or services, the label is a claim that a particular product or service complies with the corresponding standards. In fact, even the instrument of labelling itself is a claim, as it refers to certain characteristics of the procedure under which the label is awarded. One of the ways to get a better understanding of such claims is to consider them from the perspective of logical theory. From this perspective, a claim is essentially a conclusion whose merits can be established by analysing the arguments on which it is based. Since the arguments will differ, depending on the content of the claim, it is the analysis of their layout or structure that counts.

A general framework for the analysis of arguments has been developed by the British philosopher Stephen Toulmin,^{iv} who took the discipline of jurisprudence as a

starting point to elaborate logical theory in a practical way. Many arguments fit the structure shown in Figure 3.1. This figure presents the set of statements that provide the rationale or plausibility^v for arguing that certain data (D) imply a claim (C). The plausibility of the relationship between data and claim is based on warrants (W), which are supported by backings (B). In contrast, its plausibility can be challenged by rebuttals (R). The next two examples illustrate how this particular layout can be used.

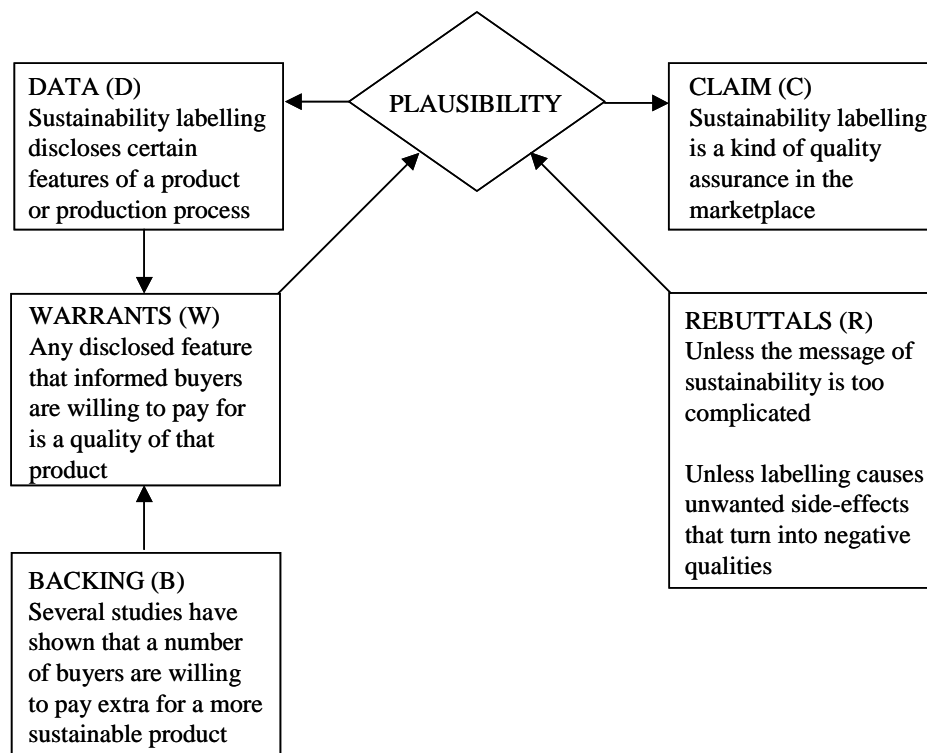


Figure 3.1 The elements of Toulmin's theory of arguments with an example of their use⁵.

The first example is the claim that "Sustainability labelling is a kind of quality assurance in the marketplace." In this case the datum is in the form of a description, namely "Sustainability labelling discloses certain features of a product or production process." In this description we chose the term "disclosure" because labelling will reveal differences between more sustainable and less sustainable practices, which buyers might have been aware of but which they could not identify in the market. Next, warrants or bridge-like statements are used to connect the datum

with the claim. In this example, the warrant is taken from the field of economics^{vi} and it can be stated as follows. Buyers will see a feature that is in their interests as a quality of the product. A relevant feature for buyers who are informed of certain unacceptable practices is the fact that a product comes from resources managed in a socially and environmentally acceptable manner. These buyers' interest in better management becomes clear from their willingness to pay for it. In short, the warrant is *"Any disclosed feature that informed buyers are willing to pay for is a quality of that product."* So, almost certainly, *"Sustainability labelling is a kind of quality assurance."*

As the warrants may not convince anyone who challenges the claim, there will normally be other logical arguments and assurances, without which the warrants themselves would possess no authority. This support comes in the form of backings, which represent some evident truths or categorical statements of fact, including the relevant sections in the books of law or the scientific literature. In the present example, the backing refers to the field of economics: *"Several studies have shown that at least a number of buyers are willing to pay extra for a product that has been created in a more sustainable manner".*^{vii} As a counterforce to the backing, however, there is always an opportunity for rebuttal, indicating circumstances in which the general authority of the warrant would have to be set aside. Rebuttals to the present argument are that the message of sustainability is often too complicated for a straightforward quality disclosure and that labelling causes unwanted side-effects in the market, which will turn into negative qualities sooner or later (e.g., accusations of unfair trading). These rebuttals can lead to a qualified conclusion, such as *"Sustainability labelling is a kind of quality assurance in the marketplace, unless its organisers have disregarded the rules of good communication and fair competition."*

The above is not very specific about the nature of sustainability labelling. A major difference with other quality assurance systems is that sustainability refers not only to private but also to public concerns. How can a private party claim that these concerns are addressed in an appropriate way? Focussing on a hypothetical sustainability label the layout of arguments in the second example might be as follows (e.g., Figure 3.2).

In support of the claim that a certain product has been created in a sustainable manner, its producer can appeal to the datum that a special label has been attributed to it, bundling information about the production process. The warrant is that producers who use such a label do comply with a set of standards for sustainable production processes. Since, however, questions of sustainability are always subject to qualifications and conditions, the conclusion may be rebutted, for example, because the production process is only relatively more sustainable than others and complies only with current standards for sustainability.

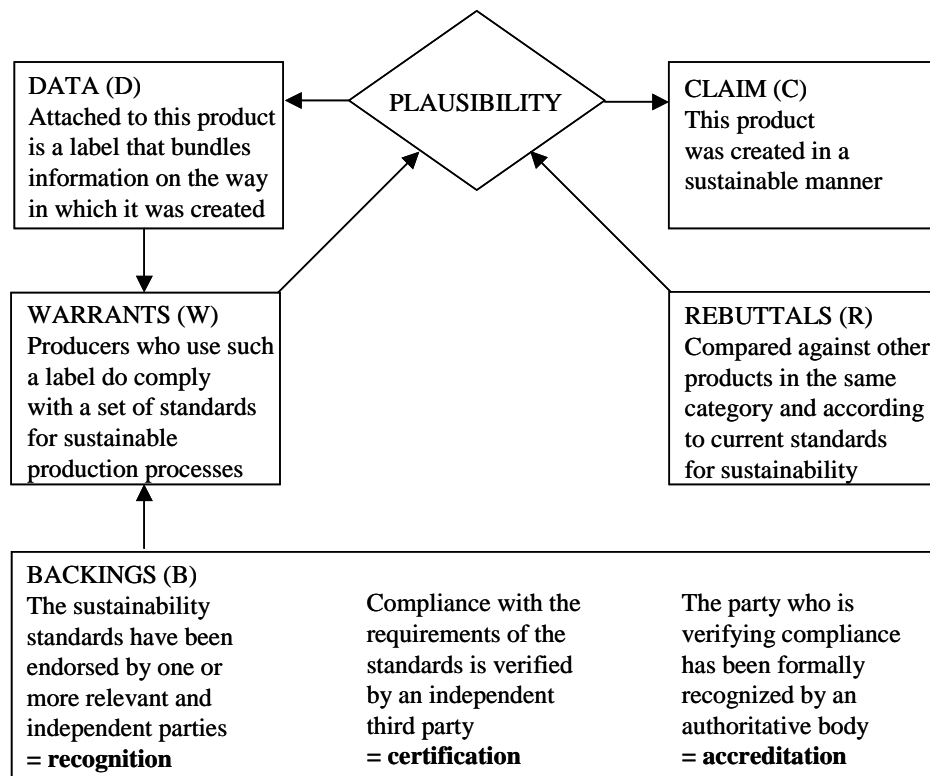


Figure 3.2 The label on a product is a claim that can be analysed in terms of arguments leading to a conclusion.

In case the warrant is challenged, it can make an important difference whether and how the claim is regulated. To support the strength of arguments, therefore, the backing might be derived from knowledge about successful quality assurance systems. A strong case would imply that:

- (1) the selected sustainability standards have been endorsed by one or more relevant and independent parties (i.e. *recognition*),
- (2) compliance with the accepted set of standards is verified by an independent third party (i.e. *certification*), and
- (3) the party who is verifying compliance has been formally recognized by an authoritative body (i.e. *accreditation*).

This layout of arguments can be used to describe many different labels. The analysis of the layout can reveal which kinds of knowledge and value judgements are used to make a claim plausible. In addition, it can show how the initial warrants or backings are challenged and how the claim has to be qualified from a logical point of view. Some straightforward questions are what exactly is being claimed, by whom, and with what kind of warrants and backings? This requires a further analysis of sustainability to identify single issues in the form of "ideals" or "ills," and to assess how the single issues might be combined into a more comprehensive multi-issue label. In view of this, there appears to be a marked difference between environmental labels and social labels. The difference refers to the following.

- Environmental labels, especially the multi-issue eco-labels, are often designed as a benchmark of excellence; the eco-label claims to disclose the top 5% to 30% of the products in a certain category from the perspective of environmental performance.
- Social labels are often designed to become the bottom-line in the market; the label claims to disclose those products or services that have at least been created in a socially acceptable manner.

This difference in strategy has several implications. It means that sustainability labelling cannot simply replace the existing environmental and social labels, as there may be good reasons to keep these instruments. Whether it is relevant to disclose both environmental and social performance will depend, among other things, on the economic sector and the products or services in question. In addition, the companies involved may have their own strategic preferences. Depending on their position in the market and their ambitions, some companies may want to

disclose their top-ranking, whereas others may want to disclose their compliance with a proper bottom-line.

An additional strategic point is the difference between multi-sector and sector-specific labels. Multi-sector labels, such as eco-labels, are intended to identify comparable levels of performance, regardless of the product category. It has been argued that multi-sector labels are suitable for product sectors where standards can be easily defined and where no controversial political issues exist.^{viii} For more complex products or products that avoid particular ills (e.g., canned tuna caught in a dolphin safe way), sector-specific labels have been developed that are tailor-made for the specific problem at hand. This means that there are at least four categories of labels, as specified in Table 3.1.

Table 3.1 Examples of labels in the various categories.

	Label as a benchmark to achieve ideals	Label as a bottom line to avoid ills
Multi-sector labels	EU eco-label	Organic label Fair trade label
Sector-specific labels	Energy consumption label	Dolphin Safe label No Sweat label Green electricity label

The position of eco-labels as multi-sector labels meant to achieve "ideals" has been seriously criticised. For example, a major argument of business representatives^{ix} is the lack of accepted methodology to clearly distinguish individual products across an entire product category. Moreover, the label's claim to identify an "ideal" has been challenged, because the standards involved are based on an evaluation of products as they exist in the marketplace today, and on publicly known technologies. Thus, the standards cannot anticipate what will develop tomorrow and, instead, can create barriers to innovation. This criticism seems to confirm Lindblom's^x observation that it is often harder to agree on the specification of "ideals" than of "ills."

A final point for the present discussion is the question which conclusion can be drawn in the absence of a label. Whether the presence or absence of a label makes a difference will obviously depend on the degree to which environmental and social issues are part of the competition in the marketing of the products or services

involved. If these issues are part of the competition, the label's presence or absence can be highly diagnostic for a buyer. In other cases, however, the absence of a label will not be informative at all. It can mean that there are no significant sustainability-related differences between the products or services in a certain category. It can also mean that producers have decided not to compete with each other on a sustainability issue to protect their industry's image and avoid additional costs.^{xi} Hence, the logical analysis of a claim is one thing; it is another to find out how that claim is perceived by the actors in the marketplace, such as producers, retailers, purchasers and regulators.

3.3 Functions for stakeholders

3.3.1 What labelling means for sellers

Based on literature on the behaviour of the main stakeholders, this Section discusses what labelling – as an economic instrument and as a political force – means for sellers, buyers, policymakers and other groups in society. We start off by examining the behaviour of companies. Labelling is one of the ways in which a company can attempt to improve its competitive position in the market and in its wider environment. The reasons to choose this option instead of others might be quite diverse, but they can always be translated into traditional business criteria, aimed at short-term and long-term profits. Notably, these criteria do not necessarily encourage strong competition. For any company there are circumstances in which it is more advantageous to opt for collaboration with other companies or organizations than to proceed on its own. This is particularly relevant for a company's decision on labelling and certification, because these options will often imply both competitive and co-operative aspects.

Before we turn to decisions on labelling, it is necessary to specify how a company might become interested in sustainability issues (i.e. ideals to approach or ills to escape). One obvious reason is that some companies were already free from certain ills, such as farming in a way that is heavily dependent on pesticides, because they did not wish to use this practice (e.g. organic farmers) or simply could not afford it (e.g. small farmers). Other reasons refer to the incentives that can stimulate

a company to improve its environmental and social performance. These incentives depend on various kinds of societal pressure, showing the interests of government agencies, shareholders, customers, business associations, environmental or social nongovernmental organizations, and the media.^{xii} In varying degrees these actors have the ability to raise and to sustain pressure on certain companies and to turn environmental or social issues into economic ones that affect the companies' profitability. Such pressures are not the same in all sectors and industries. Industries where environmental performance seems to play an important role in the public's perception include chemicals, pharmaceuticals, energy, construction, food and retail.^{xiii}

Companies that are in a position to claim voluntarily that their environmental and social performance is fully compatible with societal demands can do so in different ways. When this performance is achieved by all their business units and also by their business partners in the supply chain, they may adopt a "code of conduct" to articulate their commitments to particular principles and practices.^{xiv} Other ways to disclose their position include the publication of corporate reports upon progress against sustainability principles, although it appears that the social dimension of reporting is still a new area.^{xv} In the field of marketing, a company may invest in its brand or store name to make the relevant sustainability issues consistent with other signals that it is sending to its customers. When their sustainability performance only refers to certain products or services, companies may use more specific signals to bundle sustainability issues with product quality information and to gain attention from quality-sensitive customers. Such signals include quality assurance labels certified by the company itself (first-party), by industry-related associations or the country of origin (second-party), or by an independent third party.

A company's decision on sustainability labelling and certification will be governed by strategic and political circumstances, such as the ripeness of certain issues, at the time the options are contemplated. These circumstances, in turn, will generally depend on its own capabilities, its position in the industry in which it competes, the economic situation of this industry and the industry's public image. Whether an issue is ripe will be influenced on the one hand by technological innovations related to sustainability ideals and on the other hand by public

campaigns that emphasize the ills of an industry. For example, in response to societal concern about the harvesting of certain natural resources, such as fish stocks and forests, several collective initiatives are under way to provide companies a market-based incentive to maintain sustainable resources and to counter the common perception by the general public that most fisheries and forest practices do irreversible damage to the natural environment.^{xvi}

The latter example shows that a company's decision on labelling and certification might involve a mixture of competitive and collaborative strategies. Depending on its size, a company may have different reasons for a collaborative approach, but joint problem solving, cost savings and risk reductions will always be important. The development of a certification scheme means that the companies involved are prepared to share knowledge "from the kitchen" and want to learn about a particular activity, such as sustainable resource management.^{xvii}

A collaborative approach can be necessary to overcome barriers to the dissemination of credible information about sustainability issues. The assurance by a distinctive label, indicating collective membership of an organization or certification by an independent third party, may serve this purpose at lower costs than other marketing strategies that can differentiate a product. However, companies may also collectively decide not to compete with each other on a sustainability issue to protect their industry's image and avoid additional costs. Accordingly, much will depend on the pressure of other actors who might emphasize the relevance of the issue.

Closely connected to this latter consideration is the market form in which companies are operating. Section 3.4 takes a closer look at the interaction between market form and companies' strategies with respect to labelling.

3.3.2 What labelling means for buyers

Labels belong to the cues that a buyer can use in the marketplace to learn about certain features of products, production processes or services. In the case of sustainability, the buyer can learn to differentiate between conventional products and products with distinctive environmental and moral advantages. Regarding the way

these cues are used, it is important to distinguish industrial markets from consumer markets. In industrial markets, customers have commercial incentives to invest in information about the differentiated products or services, as these might affect their own operations and costs to a very high degree. This businesslike approach to gathering information can also be expected of governments and large institutions seeking to incorporate sustainability considerations into their procurement processes. In contrast, the information needs of consumers are much less determined by a businesslike approach, as they are more sensitive to symbols and emotional appeals. Accordingly, this section focuses on consumer markets.

Because consumers often have limited incentives to invest in information, the idea behind labelling seems to be very straightforward. A label is a distinctive symbol that reveals differences between more sustainable and less sustainable practices, which consumers might have been aware of but which they could not identify in the market. By enabling consumers to identify these differences, it is expected that they will become motivated to buy the labelled products instead of the others. This line of thought might be too simple, however. What happens in practice seems to be that consumers often say to be very concerned about sustainability issues, but that their actual purchases are something of a disappointment to many companies that have tried to create "green" market segments.^{xviii} An obvious cause of this discrepancy is the level of the premium price that is often charged for the "green" product. A more general explanation might be that consumers and producers do not recognize or trust each other's intentions and that they need more time to adapt themselves to the changing circumstances in the marketplace. It is usually assumed that the credibility of a company's claim is enhanced if it is backed by an independent accredited third-party. Consumers' trust in a label can also grow over time — if no evidence of cheating is discovered.^{xix}

Whether it is the premium price that can explain the behaviour of consumers or some other factor requires a closer look at their motives and lifestyles. There are large differences between consumers in the strength of their motivation to include pro-environmental or moral considerations into their purchasing decisions.^{xx} Moreover, many consumers who make an ecologically or ethically motivated choice in the context of a certain product class may not do so in the context of another. The

following examples show that consumers are often dealing with mixed motives, which may or may not be consistent:

- Consumers who buy foods produced in an ecologically sound manner may primarily be motivated by considerations related to their personal health, which happen to be consistent with ecological considerations.^{xxi}
- Consumers who are well aware of the ethical nature of purchase decisions may not change their buying pattern as long as that would be inconsistent with their loyalty to a particular taste, brand or supplier.^{xxii}

These examples indicate that consumers' preferences cannot simply be read off their purchases in the market. At the moment of the purchase decision, the label's impact will depend on how consumers understand, trust and value its claim in relation to other choice criteria. Teisl *et al.*^{xxiii} note that environmentally-conscious consumers may even rank a green-labelled product lower, if they consider the green label incongruous with other signals, such as, for example, a low price. Consumers may consider the addition of the green label as an attempt to manipulate them, and therefore reject the product. Given the many hurdles that may hold consumers back from making a well-informed choice between more sustainable and less sustainable practices, it is presently emphasised in the marketing literature that the companies involved should pay more attention to the question what kind of green product consumers really want.^{xxiv} If the only merits of a green product seem to be that it is considered preferable from an environmental or moral point of view, many consumers might not be fully convinced that they should search for that product and pay a price premium for it. In order to create more value for these consumers, both the design and the marketing of a product should be addressed to all the product attributes that they consider relevant, such as functional and esthetical features, together with distinctive environmental and moral advantages. Depending on the product category (e.g., luxuries or necessities) and the market segment the product is aimed at, this strategy might imply that the product's environmental and moral advantage is presented as one of its self-evident qualities rather than as its main selling-point.

As a result of these new marketing strategies, it can be expected that the role of environmental and social labels in the communication between consumers and companies will become more differentiated, varying from direct shopping aids to background quality assurances. The present marketing strategies may also involve that the information the labelling is intended to convey to consumers will increasingly refer to the overall corporate image of a store chain or a line of products (e.g., the private label of the Body Shop). In that case, a retailer or producer can claim the distinctive environmental and moral advantage with regard to an assortment of products. This development might increase the probability that consumers come into contact with a labelled product and that they include it in their set of choice alternatives.

A well-designed marketing strategy can create many opportunities for consumers to learn how to recognize a label and evaluate the meaning of its claim. This learning process may also increase consumers' awareness of sustainability issues in general, even if they don't use the label as a direct shopping aid. Such an additional role of labelling policies is often overlooked.^{xxv} However, consumer learning is not a smoothly running process^{xxvi} and it might also be slowed by possible gaps between producers' and consumers' understanding of what "sustainability" means. As mentioned in Chapter 2, such a gap might hamper the understanding of sustainability labelling.

To return to an earlier point, it has to be noted that consumers should not only trust the difference between labelled and unlabelled products, but also the reasons for a price premium. As a result of the bad reputation of the "green" claims in the early 1990s, many consumers have become very sceptical about the behaviour of companies.^{xxvii} This scepticism adds another motive to consumers' purchasing decisions. Those consumers, in particular, who are highly motivated to include pro-environmental or moral considerations into their purchasing decisions may also be highly motivated to scrutinize the claims and the premium prices of labelled products.

3.3.3 *What labelling means for policymakers*

Supporting or regulating labelling schemes are tools that policymakers have at their disposal to address some important aspects of two policy issues. The first issue is mainly concerned with the economic interests of consumers and comes down to correcting for asymmetries in information, where sellers have more information than buyers about product qualities. An important aspect of this issue is protection of consumers against any substantial risks associated with a product or service usage, for example through warning labels, and prevention of misleading advertising or deceptive environmental claims. The second issue refers to government policies to achieve sustainability objectives, particularly by promoting the design and marketing of environmentally sound products or services. From the perspective of a policymaker, labelling and certification schemes can be seen as tools that create incentives for business to change the market in a more sustainable direction.

With regard to these wide-ranging policy issues, labelling and certification schemes typically address those aspects that are related to the disclosure of information about products, production methods or services. Clearly, any intervention in the information environment for products or services may have far-reaching consequences in the marketplace, especially if the information refers to culturally "sensitive" issues, such as health and moral concerns. Well-known government interventions include establishing mandatory labelling laws (e.g., to enforce the disclosure of a disadvantage), regulating claims through legal definitions of specific terms (e.g., "organic"), and providing services to support voluntary labelling (e.g., financing public education). Additionally, governments may incorporate sustainability considerations into public procurement by linking the terms of purchase to labelling and certification schemes. These interventions can often be conceived as complements to or substitutes for other tools, such as the banning of hazardous products.

Whether and in which form labelling is an appropriate policy tool for the specific issue involved will, among other things, depend on the regulatory context and its matching socio-cultural tradition. For example, a strong legal and cultural emphasis on consumer right to know combined with consumer responsibility to use

the information properly, such as in the United States,^{xxviii} makes labelling a policy tool that is highly compatible with the values and practices of all parties concerned. Given the strategic role of information in this context, however, potential government interventions may become hotly contested, as they leave much room for legal disputes over the description of claims and appropriate disclaimers.^{xxix} Observers have noted that labelling may often represent a short-term solution to a difficult regulatory problem.^{xxx} If there are diverging opinions on the appropriate regulatory response to an issue, labelling can become a compromise that is particularly attractive to policymakers because of its market-based character. In the long term, labelling can become one of the first steps in a government strategy of gradually increasing pressure on producers and consumers to steer their behaviour in a particular direction (e.g., voluntary labelling as a precursor to mandatory labelling). Although purely information-based policies will usually be insufficient to achieve societal "ideals" or avoid societal "ills," they may effectively prepare the ground for more far-reaching measures.

A final consideration for policymakers in evaluating interventions in labelling refers to potential conflicts between the national right to regulate and international trade-related rules. This point will not be discussed here, because it requires a closer consideration of international institutions. Despite the differences between countries in the way they are dealing with the issues of consumer protection and sustainability, however, there are common attempts to improve the transparency of quality assurances and the substantiation of socially relevant claims, whether they are directly product-related, such as health claims for foods, or not, such as ethical claims.^{xxxi} One of the reasons of this might be that labelling can only keep its status as a market-based policy tool, if policymakers are able to adapt government interventions to the developments in the market and these may require both standardisation and differentiation of quality assurances and claims.

3.3.4 What labelling means for other groups

Supporting or criticising labelling schemes are tools that environmental or social NGOs can use to put pressure on producers and consumers to make progress

towards sustainability. This potential function of labelling for third parties has been highlighted by the economist Julie Caswell,^{xxxii} who argues that the analysis of labelling policies should not be restricted to their role as a direct aid to consumers in making purchase decisions. For example, a labelling initiative may stimulate public discussion and crystallise a set of judgements on the environmentally or morally relevant qualities of a product, production method or service. The discussion on these judgements might provide guidelines for appropriate actions by producers, retailers, consumers and other groups. A labelling initiative may also create new relationships between companies and NGOs in the development of standards for practices that are sufficiently more sustainable than the conventional ones.^{xxxiii} This can be particularly important in view of the possible gap between sustainability issues as conceived by large companies and those perceived by other groups.

The role of critics of conventional practices is most fundamentally performed by those NGOs who act in a tradition of opposition to the domination of society by consumerism. Consumerism has always provoked opposition, inspired by various moral, esthetical and political themes.^{xxxiv} Although the rather heterogeneous nature of this opposition should not be underestimated, its key themes have much in common with the concept of sustainability. This means that a variety of protest groups and more established NGOs may put pressure on companies and governments, for example by public campaigns or court actions to disseminate information about the environmental and social consequences of consumption. As far as their criticism is based on opposition to consumerism, it is not likely that they will support a labelling initiative to promote sustainable consumption without also promoting other themes, such as consuming less, consuming second hand products or consuming products for a longer time. These themes of what is sometimes called "voluntary simplicity" are, by their very nature, not designed to fit into the marketing strategies of large companies, but they may be compatible with the patronage of alternative "ethical" products.^{xxxv} A more radical point of view, noted by Peattie,^{xxxvi} is that labelling will do too little to transform the environmental or social impacts of entire markets and that it should be denounced as potentially counterproductive. In contrast, groups that are closer to the mainstream, such as many consumer

organisations, show a broad support for labelling as a tool for sustainable consumption, provided that spurious and misleading claims are eliminated.^{xxxvii}

3.4 Market strategies of companies

3.4.1 The economics of information

This section takes a closer look at the interaction between companies' strategies with respect to labelling, market form, and outcomes of the interactions among market participants. As was said earlier, labels have the specific purpose of signalling some attribute of the product or service to the buyer, that he or she might value but cannot directly observe before purchasing it, and, in the case of environmental or social attributes, cannot even be observed after the sale has been made. Based on insights derived from the economics of information,^{xxxviii} this section examines how disclosure of information through labelling can lead to various market strategies and interactions among market participants, which may not always lead to the desired outcome in terms of the objective of the label. Crucial in this respect is that a label splits the market of a product in *two* market segments: a labelled segment and an unlabelled one. To examine the overall effects of a sustainability label, its effects in *both* market segments should be examined.

The effect of asymmetric information on market performance was first explicitly addressed by Akerlof^{xxxix} who used the example of the second-hand car market to illustrate his ideas. It is well known that in his example the market collapses. Because of the asymmetrical information between buyer and seller about the quality of the second-hand cars, there is *adverse selection* implying that the uninformed side of the market (the buyer in this example), is not offered the quality he would like to purchase and would be prepared to pay for. It would be beneficial to both buyer and seller of high-quality goods if sellers could signal the quality of their goods to potential buyers. To be credible, however, sellers of low-quality goods should not be able to copy the signal. If products and services with certain sustainability attributes are in demand but also costlier to produce than products and services without these attributes, a lack of credible signals could make the market for sustainable goods collapse, just as the market for second-hand cars collapsed in the

example of Akerlof. What, then, are good signals? A seller of sustainably-produced products and services can have various options at his disposal, including, for example, brand-name reputation, advertising, high prices, introductory low prices,^{xi} and also codes of conduct and adopting sustainability label. A supplier must always make a trade-off between the effectiveness of a certain signalling strategy and its costs.^{xli}

What are the main ingredients of a company's strategy on sustainability labelling? The company has to decide whether or not to apply for a sustainability label for one or more of its products and/or services. Once it has adopted such a label it has to decide whether to comply with the rules set out by the labelling organisation (which we take to be a third party), or not. The working hypothesis in economics is that a company's aim is to maximise its profits. Although it cannot be denied that some companies also pursue other objectives, such as environmental and social ones, in a competitive environment no company can neglect concern for its profitability and hope to be in business for a long time. Therefore, we assume that profit maximisation behaviour is a fairly accurate description of the behaviour of the overwhelming majority of companies in market economies.

3.4.2 Market forms

Given profit maximisation, what is the rational behaviour of companies with respect to sustainability labelling? An important determinant of that behaviour is the market form in which the company operates. A broad classification of market forms is *monopoly* (no competition), *oligopoly* (competition among a small number of companies), and *perfect competition* (competition among a large number of companies without market power, i.e., without the ability to influence market variables, such as prices, through their own actions). While the analytics of profit-maximising company behaviour under monopoly and perfect competition are clear and unambiguous, those under oligopoly are generally not, because companies can compete with each other in a variety of ways, and the nature of competition is crucial for the market outcomes. We will return to this issue later.

Kirchhoff^{xxiii} examines optimal behaviour for a monopolistic company. Her research problem is the question as to why some many companies in today's world are actually overcomplying with legal environmental standards and why they are sometimes actively lobbying for third-party labelling or environmental auditing programmes. To answer this question, she develops a model for one monopolistic company that produces only one product. For simplicity's sake, the company is assumed to exist for only two time periods. The company's problem is whether or not to apply for an eco-label for its product, and whether or not to comply with the rules of the eco-label organisation (whether or not to be "honest"). It is assumed that a third party monitors compliance, but that the monitoring is not perfect, i.e. the probability of being detected in case of cheating is less than one.

There is effective consumer demand for the environmentally-superior variety of the company's product. As was already discussed in Section 3.3.2, the consumer's willingness-to-pay is a function of its belief that the environmental claim of the company is honest. This belief can change over time, i.e. increase if the company's claim is not found to be untrue.

Given this consumer demand, the company chooses its strategy as to maximise its discounted profit over two time periods. In this simple model, the strategies that include the adoption of an eco-label are always dominant over the strategies of not adopting an eco-label. The maximum penalty of cheating is that consumers pay the same price in the second period that they would have paid if the company had not adopted an eco-label at all. The question then is: will the company cheat or not? Kirchhoff derives from her model the conditions under which the company will comply and thus will adopt environmentally-friendly production methods. These conditions are more likely to be met if:

- The premium of the environmentally-superior product is relatively large;
- The cost increase due to the environmentally-friendly production method is relatively small, and smaller than the environmental premium;
- The probability of being monitored is high;

- The discount rate is low; and
- Consumers believe that the probability that the company is honest is high.

Hence, to the extent that third-party labelling increases the chance of the company being monitored and strengthens initial consumer beliefs that the company is honest, it is more likely that the company will actually adopt environmentally-friendly production methods. Moreover, Kirchhoff shows that if the company chooses environmentally-friendly production methods, its profits increase with stricter monitoring and higher consumer confidence. This can explain the observation that companies in the USA and Europe are sometimes actively lobbying for third-party labelling schemes and stricter labelling rules.

In the analysis of Kirchhoff, the company only produces one product. The adoption of an eco-label for this product and compliance to its rules, unambiguously improve environmental quality. In contrast, Dosi & Moretto^{xliii} argue that things might be more complicated if the company engaged more product lines, of which only one would acquire an eco-label. They argue that if the eco-label for this one product would somehow project a positive image over the entire company, and hence also increase the profitability of the non-labelled products, the eco-label might actually give an incentive to expand investments in the non-labelled product lines too. The overall environmental effect of the eco-label would then be ambiguous. The empirical relevance of this result is not entirely clear, however. Dosi & Moretto point to legislation on misleading advertising that allows companies only to use eco-labels in advertisements “in relation to the specific product for which it was awarded”^{xliv} but they do not provide empirical examples.

3.4.3 Competition

How does competition affect the results? In a much-cited article, Mattoo & Singh^{xlv} develop a simple model of eco-labelling in a perfectly competitive market. In their model, that assumes away some of the complexities of Kirchhoff,^{xlvi} an eco-label segments the market of a product into a market for labelled products and one

for unlabelled products. There are two kinds of consumers, one group – the “greens” – that only buys the labelled products and one group – the “browns” – that only buys the cheapest products, whether they be labelled or not. Given the willingness to pay of the “greens”, the relative price of the labelled products will be higher, the smaller the supply of labelled products, i.e. the stricter the eco-labelling criteria. For the unlabelled market segment, the price will also be higher, the smaller the supply, i.e., the laxer the eco-labelling criteria (so that a larger proportion of the product will be labelled as “green”). Relaxing eco-labelling criteria will therefore result in falling prices of labelled products and rising prices of non-labelled products. At some level of criteria, prices will equate. Assume that this will happen before all products are labelled and note that unlabelled products can never become more expensive than labelled products, because “browns” would then buy so many labelled products that price equality would be restored again.^{xlvii}

At this level of criteria, prices in both markets would be the same. However, because of the fact that the eco-label effectively skimmed the willingness to pay of the “green” consumers, the after-eco-label price must be higher than the before-eco-label price. Hence, under the assumption that supply is a continuous, monotonically increasing function of price, producers of unlabelled products also get an incentive to increase supply relative to the situation without labelling.

While this is a theoretical result, Mattoo & Singh^{xlviii} argue that it is not implausible. As examples they give the dolphin-friendly label on tuna sold in the USA and labels for sustainably-produced timber. In the case of tuna, they suggest that prior to the labelling requirement, about 80 per cent of tuna supplied to the U.S. market could qualify as “dolphin-friendly”, while effective demand for “dolphin-friendly” tuna would be much less. They argue that had it not been for the U.S. embargo on the importation of tuna caught in a dolphin-unfriendly manner that coincided with the labelling requirement, the market price of tuna and the supply of tuna caught by dolphin-friendly methods as well as by dolphin-unfriendly methods would have increased.^{xlix} The market for timber would show similar characteristics and hence an eco-label could produce perverse results in this case too.

While Mattoo & Singh analyse market structure effects of eco-labels, they do not address the problem of asymmetric information. Kuhnⁱ extends their analysis by including this aspect into his model. Rational consumers in his model forecast the ratio of “green” to “brown” products in a particular market correctly. In the case of eco-labelling, consumers form beliefs over the probability that a label’s claim is correct. Producers of “green” and “brown” product variants can both apply for an eco-label, but it is assumed that on average it is more costly for a producer of a “brown” product variant to acquire the label, because he has to invest resources to manipulate the auditing outcome. Assuming also that “brown” producers have a cost advantage over “green” producers, Kuhnⁱⁱ formally establishes the conditions under which “green” producers will enter the market, and what the effects are of a small change in the eco-label’s criteria. He thus finds the theoretical conditions under which eco-labels perform well, i.e., increase “green” supply and reduce “brown” supply, and conditions under which eco-labels can create perverse effects, as in Mattoo & Singh.ⁱⁱⁱ

3.4.4 Oligopoly

Oligopoly is the most complex market form. Analytical results with general validity are hard to derive, because of the many types of competition that are possible. Nadai & Morel^{liii} examine the effects of an eco-labelling programme on competition and the environment in an industry with a limited number of interdependent companies that compete through manipulating their supplies (a strategy that is called Cournot competition). They also examine the companies’ optimal strategies in negotiating the eco-label’s criteria with the eco-labelling organisation. The theoretical analysis is derived from case studies on the development of EU’s eco-label on several product categories.^{liv} The papers of Nadai and Morel focus, respectively, on an industry in which each company supplies an identical range of products or product variants, ranging from environmentally-friendly (“green”) products, to products with less favourable environmental characteristics (“brown”), and on an industry where each company only supplies one product or product variant, that may be either “green” or “brown”, depending on the

eco-label-criteria chosen. Nadai and Morel call the multi-product industry, which resembles the indoor paints and varnishes industry, a homogeneous industry, while they call the mono-product industry, e.g. the detergent industry, heterogeneous. The effect of eco-labelling on heterogeneous and homogeneous industries is different, and their respective negotiation strategies also differ.

In a homogeneous industry, where each company produces “green” as well as “brown” product variants, all companies can potentially benefit from an eco-label, if there is effective demand for the “green” product quality. Therefore, it is relatively easy for a labelling organisation to develop an eco-label in a homogeneous industry, e.g. the indoor paints and varnishes industry. In contrast, in a heterogeneous industry there is no natural coalition of companies with whom to negotiate labelling criteria. At any criterion (from very stringent to very lenient), profits in the green sector exceed those in the brown sector, the more so, the less innovation takes place. Formally, any company will maximise its profit at that criterion at which its product would just qualify for the eco-label. Because of the fact that it is assumed that all companies have a different environmental "profile", every company has its own optimal criterion. Nadai & Morel^{lv} suggest that this heterogeneity among companies is the principal reason why the development of a EU eco-label blocked for several product groups, for example, detergents, paper products, hairsprays, and batteries.

Two more results on the homogeneous industries are worth mentioning. First, from the perspective of the companies there are two profit-maximising equilibriums for eco-label criteria: very strict and very lax. A very strict standard maximizes profits in the “green” market segment; a very lax standard (so lax that there will be no price difference between “green” and “brown” varieties) maximizes profits in the “brown” market segment. Which equilibrium is preferred depends on the effective demand for “green” products: if this is high the strict equilibrium is preferred, if it is low the lax equilibrium will be preferred. However, because all companies benefit from the eco-label, there is scope for the labelling organisation to negotiate criteria that are sub-optimal for the companies, but are better for the environment.^{lvi}

Second, the amount of environmental innovation to the eco-label depends on the ratio of innovation costs to production costs and “green” demand. If innovation

costs are very small and “green” demand is high, strict eco-label criteria may induce environmental innovation that “pull” products into the green market segment. However, more lenient criteria may also induce innovation, as the homogeneous companies innovate “brown” products for the purpose of “pushing” them out of the “brown” market segment, in order to reduce supply and maximize profits in this market segment.

Even under the restriction of Cournot competition, Nadai & Morel^{lvii} show that many possible outcomes on total market size, green market share, innovation and competition are possible under oligopoly in a heterogeneous industry, depending on parameter values of, e.g., eco-label strictness, green demand (both the share of green consumers and their willingness to pay) and innovation costs. For example, total market volume of the product may increase, decrease or remain unchanged after the eco-label. While profits of eco-labelling companies always increase after an eco-label, profits of non-labelling companies may actually decrease after an eco-label, especially if innovation costs are high and the ratio of green consumers is high, such that non-labelling companies are “locked-in” in an unattractive and declining brown market segment. If such a situation is likely to occur, fierce opposition of these companies to an eco-labelling scheme can be expected.

Companies that can obtain the label relatively easily, are likely to see their profits increase and could be expected to lobby for a sustainability label. Companies can also view the label as a device to restrict competition and as a barrier to future entry into the industry, and also as a device to pre-empt future mandatory regulation by the government.^{lviii}

An overall conclusion would be that in the case of oligopoly, few general predictions can be made on the economic effects of eco-labelling. Especially in a market with interdependent companies, the effects of eco-labelling will be highly dependent on the nature of competition and on various relevant parameter values, including those of demand and innovation costs.

3.4.5 Inputs with alternative uses outside of the targeted industry

The economic analysis so far was restricted to the effects of eco-labelling on single industries. While this partial equilibrium approach may well be justified for those labels that focus mainly on emissions of pollutants that are by-products of production processes in some industry and do not have significant impacts on other markets, it may not always be appropriate if the label focuses on inputs such as labour or natural resources that may have alternative uses outside of the targeted industry. Examples are labels that focus on forestry products and labels that focus on child labour. The appropriate approach in those cases in which inter-industry linkages are potentially important is general equilibrium analysis that takes on an economy-wide perspective.

One area of labelling where such inter-industry effects might occur is the labelling of sustainable wood. Swallow & Sedjo^{lix} argue that labelling and certification of sustainable wood could, under certain circumstances, lead to deleterious effects on non-certified forests and idle lands that might partly or totally undo the positive effects on certified forests. The general equilibrium mechanism is as follows. Assume an economy that produces two goods: wood (W) and other goods (Y). Certification and labelling of all W, increases the price of W and decreases demand for W by brown consumers and may increase or decrease demand for W by green consumers. Brown consumers shift their demand to Y, and green consumers may or may not shift their demand to Y (depending on their ratio of willingness to pay for certified wood and the market price increase due to certification and labelling). Assume that, on balance, there is a shift in demand towards Y. Then the marginal product of land in W production declines and the marginal product of land in Y production increases. Therefore, eco-labelling might cause the economy to reallocate land from forestry, or from hitherto “idle” lands, to the production of other goods, e.g., agricultural products. To assess the final ecological impact of the eco-label, the benefits of the improved ecological quality of the land under certified forestry should be weighed against the potential costs due to the reallocation of formerly forested or idle lands to other uses.

Labelling schemes that might have a significant impact on labour can also have inter-industry effects. An example is a label that guarantees that a product has not been made by child labour. Brown^{lx} argues that in the case of child labour labels, the underlying motivation of consumers concerns the children's quality of life, rather than just the assurance that a particular product is not produced by children. A labelling programme that just eliminates or reduces the supply of products made by children cannot guarantee that the former child worker is now better off. It is indeed a common practice of labelling organisations in this area to devote some portion of the licensing fee to contribute to child welfare programs. In this case, Brown^{lxi} argues, it is not enough to examine the impacts of the labelling scheme on the specific industry concerned, but there is a need for a general equilibrium analysis that sheds light on the economy-wide effects on child labour participation, their wage rates, and their overall welfare.

How could a labelling programme improve the welfare of children? In principle there are two ways. The first way is that the premium paid by consumers for adult-produced products is so large that adult wages rise above a threshold above which families choose not to let their children work. Research has indeed found an inverse correlation between per capital GDP and labour force participation by children.^{lxii} The second way is that the licensing fee is so large that sufficient funds can be raised to support displaced child workers.

Brown^{lxiii} develops a two-sector general equilibrium model for a small economy. Sector X is the export sector, and sector M the import-competing sector. Both sectors use child and adult labour in different proportions. A labelling scheme is installed for the X sector. Two distinguishing variables in Brown's model are the labelling premium offered by consumers and the adequacy of monitoring.

1. With perfect (and costless) monitoring and a labelling premium just sufficient to compensate the X-industry for employing only adults, the factor rewards (wages) of adult and child labour will not change and hence overall labour force participation of children will not change. Moreover, the child welfare fund will be approximately empty.

2. With perfect (and costless) monitoring and a labelling premium that exceeds the minimum amount of 1), then there is money for the welfare fund and children may be better off. However, as some part of the premium compensates for the higher costs of adult labour in the X-sector, children would be even better off if consumers would pay a premium that is not contingent upon child labour-free imports. An alternative is that no license fee is raised. In that case profits in the X-industry would rise, bidding up the cost of adult labour. Wages of adults would rise and wages of children would fall, and therefore, if the premium is high enough, possibly inducing families to withdraw their children from the workforce, especially since the opportunity costs of not letting the children work (their foregone wages) have dropped.

3. In the case of imperfect monitoring and a relatively low labelling premium, there is no labelling equilibrium. The relatively low premium is just enough to compensate firms for employing adults only. The premium is not high enough to finance a license fee. Without a license fee cheating would not push profits of cheating firms below zero, hence all firms will cheat.

4. In the case of imperfect monitoring and a relatively high labelling premium, then a labelling equilibrium as in case 1) can be established or when the premium is even higher, results of case 2) can be established.

The conclusions of Brown are rather pessimistic. To have any effect, the labelling premium offered by consumers must be relatively high; revenues must exceed the adjustment costs of the affected industry. If these revenues are used for a children welfare fund, children may be better off, but their labour participation rate will be unaffected. Children would be even better off if consumers would pay an equivalent sum of money directly to the welfare fund, instead of through the roundabout route of paying extra for child-labour free products, for example, footballs or hand-knotted carpets. If the revenues are returned to the sector, the faith of the child workers is very uncertain. The short-term effect is that their wages go down, and that would affect their welfare negatively. Whether adult wages rise sufficiently for families to choose to withdraw their children from the working force is very uncertain. Imperfect monitoring reduces the chances of beneficial effects.

3.5 Implications

Taken together, the evidence in the preceding sections underlines the special status of sustainability labelling. The claim that a certain product or service has an advantage over a conventional one from the perspective of sustainability is more than just a marketing tool. It refers to ills that can be avoided or ideals that can be achieved in relation to the present production and consumption patterns. By its nature, it is closely connected with the political force that is generated by all kinds of actors in society to change these patterns in a more sustainable direction. Because this pressure is not the same in all sectors and industries, it is not feasible to draw generalising conclusions on the effectiveness of labelling and certification schemes. What labelling may produce, at the very least, is that it helps to learn more about the arguments used to substantiate or to challenge a claim. This learning process requires a transparent organisation of labelling schemes with enough opportunities for stakeholders to participate in the design of sustainability standards.

A more effective change might be produced through the interaction between societal pressure and market forces. Many companies will need improved control over all the relevant aspects of product quality, including the way the product has been produced. This will often require more functional co-ordination of widely dispersed activities and more disclosure of information across the whole supply chain. Improved control is particularly necessary for those companies that want to supply to increasingly discriminating (niche) markets. Sustainability issues may be incorporated into their quality management and quality assurance programmes, but that will depend on the ripeness of the issue involved (i.e. innovations and "hot topics"). Moreover, a company's strategy to improve its sustainability performance may show a mixture of competitive and collaborative approaches. Whether it will disclose its sustainability performance by a distinctive label or by some other means is a matter of benefits and costs in view of its marketing opportunities.

Producers and consumers are still learning how to communicate about sustainability issues in the context of the marketplace. Actually, both of them have to cope with mixed motives, which include other considerations than the environmental

and moral advantage of a product. Consumers can learn, but this takes time and also positive experiences instead of lingering doubts about deceptive commercial practices. Similarly, in order to pursue the diffusion of ecologically or ethically sound products from small niche markets to mass markets producers will need time to find out what kind of "green and good" products consumers really want.

As a result of new marketing strategies, it can be expected that the role of environmental and social labels in the communication between companies and consumers will become more differentiated, varying from direct shopping aids to background quality assurances. The new strategies may also involve that the information the labelling is intended to convey to consumers will increasingly refer to the overall corporate image of a store chain or a line of products. In that case, a retailer or producer can claim the distinctive environmental and moral advantage with regard to an assortment of products. This development might increase the probability that consumers come into contact with a labelled product and that they include it in their set of choice alternatives.

The potential change in the information environment for products and services may give rise to additional questions about whether and how claims should be regulated. Government interventions in labelling will often be a complement to or a substitute for other policy tools to improve consumer protection or to achieve sustainability objectives. The links with other tools and broader issues have important consequences for the design and the evaluation of an intervention, because labelling will be insufficient to achieve these goals if it is merely an isolated action. Moreover, if policymakers want to optimise the design of this tool, they should adapt the intervention carefully to the developments in the market and these may require both standardisation and differentiation of claims

Finally, it is important to distinguish the role of labelling as a political force from its role as an economic instrument. It has been shown that disclosure of information through labelling can lead to various market strategies and interactions among market participants that may not always lead to the desired outcome in terms of the objective of the label. The point is that one should not only look at what happens to the labelled market segment, but also to the unlabelled one. Therefore, it

is essential to examine the market conditions under which sustainability labels can be successful (i.e., increase "green" supply and reduce "brown" supply) or can lead to unwanted or "perverse" effects.

ⁱ Part of this work was presented at the 10th International Greening of industry Network Conference, GIN 2002, Göteborg, June 23-26, 2002. A concise version of the presentation was published in: J. de Boer, "Sustainability labelling schemes: the logic of their claims and their functions for stakeholders", *Business Strategy and the Environment*, 12 (2003), pp. 254-264.

ⁱⁱ J. Stuyck, "European consumer law after the Treaty of Amsterdam: consumer policy in or beyond the internal market?", *Common Market Law Review* 37 (2000), pp. 367-400.

ⁱⁱⁱ F. L. Reinhardt, "Environmental product differentiation: implications for corporate strategy," *California Management Review* 40 (1998), pp. 43-73.

^{iv} S. E. Toulmin, *The uses of argument* (Cambridge: Cambridge University Press, 1958).

^v Lay out adapted from P. R. Kleindorfer, H. C. Kunreuther, and P. J. H. Schoemaker, *Decision sciences: an integrated perspective* (Cambridge: Cambridge University Press, 1993), at p. 84.

^{vi} F. L. Reinhardt, "Environmental product differentiation: implications for corporate strategy," *op. cit.*

^{vii} L. K. Ozanne and R. P. Vlosky, "Willingness to pay for environmentally certified wood products: a consumer perspective," *Forest Products Journal* 47 (1997), pp. 39-48.

^{viii} B. Truffer, J. Markard, and R. Wüstenhagen, "Eco-labeling of electricity - Strategies and tradeoffs in the definition of environmental standards," *Energy Policy* 29 (2001), pp. 885-897.

^{ix} R. J. Shimp, "Perspectives of a consumer goods company concerning eco-labeling," *Conclusions and papers presented at the international conference: Green Goods V "eco-labelling for a sustainable future". Berlin, 26-28 October 1998* (Paris: OECD, ENV/EPOC/PPC(99)4/FINAL, 1999), pp. 117-119.

^x C. E. Lindblom, *Inquiry and change. The troubled attempt to understand and shape society* (New Haven: Yale University Press, 1990), at p. 42.

^{xi} IEFÉ & ICEM - CEEM, *Project for the promotion and the diffusion of the EU Eco-label in Italy and the Benelux* (Milan/Gent: Bocconi University, IEFÉ (Institute for Energy and Environmental Economics)/ Vlerick Leuven Gent Management School & University of Gent, ICEM - CEEM (Impulse Centre for Environmental Management and Centre for Environmental Economics and Management), final report submitted to the European Commission, DG XI.E.4, 1998).

^{xii} B. Cashore and I. Vertinsky, "Policy networks and firm behaviours: governance systems and firm responses to external demands for sustainable forest management," *Policy Sciences* 33 (2000), pp. 1-30.

^{xiii} C. Butz and A. Plattner, *Socially responsible investment: a statistical analysis of returns* (Basel: Sarasin Basic Report, 2000).

^{xiv} J. Diller, "A social conscience in the global marketplace? Labour dimensions of codes of conduct, social labelling and investor initiatives," *International Labour Review* 138 (1999), pp. 99-129.

^{xv} European Environment Agency, *Business and the environment: current trends and developments in corporate reporting and ranking* (Copenhagen: European Environment Agency, Technical report No 54, 2001).

^{xvi} R. A. Kozak and T. C. Maness, "Quality assurance for value-added wood producers in British Columbia," *Forest Products Journal* 51 (2001), pp. 47-55.

^{xvii} C. F. Kiker and F. E. Putz, "Ecological certification of forest products: economic challenges," *Ecological Economics* 20 (1997), pp. 37-51

^{xviii} K. Peattie, "Golden goose or wild goose? The hunt for the green consumer," *Business Strategy and the Environment* 10 (2001), pp. 187-199.

^{xix} S. Kirchhoff, "Green business and blue angels," *Environmental and Resource Economics* 15 (2000), pp. 403-420.

^{xx} A. W. Browne, P. J. C. Harris, A. H. Hofny-Collins, N. Pasiecznik, and R. R. Wallace, "Organic production and ethical trade: definition, practice and links," *Food Policy* 25 (2000), pp. 69-89; J. A. Roberts, "Green consumers in the 1990s: profile and implications for advertising," *Journal of Business Research* 36 (1996), pp. 217-231.

^{xxi} M. Wandel and A. Bugge, "Environmental concern in consumer evaluation of food quality," *Food Quality and Preference* 8 (1997), pp. 19-26.

- ^{xxii} T. Newholm, "Consumer exit, voice, and loyalty: indicative, legitimation, and regulatory role in agricultural and food ethics," *Journal of Agricultural and Environmental Ethics* 12 (2000), pp. 153-164.
- ^{xxiii} M. F. Teisl, B. Roe, and A. S. Levi, "Ecocertification: why it may not be a "field of dreams", *American Journal of Agricultural Economics* 81 (1999), pp. 1066-1071.
- ^{xxiv} A. Meyer, "What's in it for the customers? Successfully marketing green clothes," *Business Strategy and the Environment* 10 (2001), pp. 317-330 ; K. Peattie, "Golden goose or wild goose? The hunt for the green consumer", *op. cit.*
- ^{xxv} J. A. Caswell, *Uses of food labelling regulations* (Paris: Organisation for Economic Co-operation and Development, Directorate for Food, Agriculture and Fisheries, OCDE/GD(97)150, 1997).
- ^{xxvi} J. W. Alba and J. W. Hutchinson, "Applied cognition in consumer research," in F. T. Durso, R. S. Nickerson, R. W. Schwaneveldt, S. T. Dumais, D. S. Lindsay, and M. T. H. Chi (eds), *Handbook of applied cognition* (Chichester: John Wiley & Sons, 1999), pp. 343-373.
- ^{xxvii} K. Peattie, "Golden goose or wild goose? The hunt for the green consumer," *op. cit.*
- ^{xxviii} E. Golan, F. Kuchler, and L. Mitchell, "Economics of food labeling," *Journal of Consumer Policy* 24 (2001), pp. 117-184
- ^{xxix} Hill and Knowlton, *Study on nutritional, health and ethical claims in the European Union* (Brussels: European Commission, Directorate General for Health and Consumer Protection, 2000).
- ^{xxx} E. Golan, F. Kuchler, and L. Mitchell, "Economics of food labeling," *op. cit.*
- ^{xxxi} Hill and Knowlton, *Study on nutritional, health and ethical claims in the European Union, op. cit.*; S. Zadek, S. Lingayah, and M. Forstater, *Social labels: tools for ethical trade* (Brussels: European Commission, Directorate-General for Employment, Industrial Relations and Social Affairs, 1998)
- ^{xxxii} J. A. Caswell, *Uses of food labelling regulations, op. cit.*
- ^{xxxiii} C. F. Kiker and F. E. Putz, "Ecological certification of forest products: economic challenges", *op. cit.*
- ^{xxxiv} P. N. Stearns, *Consumerism in world history: the global transformation of desire* (London: Routledge, 2001).
- ^{xxxv} T. Newholm, "Consumer exit, voice, and loyalty: indicative, legitimation, and regulatory role in agricultural and food ethics", *op. cit.*
- ^{xxxvi} K. Peattie, "Golden goose or wild goose? The hunt for the green consumer", *op. cit.*
- ^{xxxvii} Consumers International, *Green labels. Consumer interests and transatlantic trade tensions in eco-labelling* (London: Consumers International, 1999).
- ^{xxxviii} D. K. Levine and S. A. Lippman, *The economics of information, vol.I and II* (Aldershot, UK/Brookfield, USA: Edward Elgar Publishing Ltd., 1995).
- ^{xxxix} G. A. Akerlof, "The market for "lemons": quality uncertainty and the market mechanism", *Quarterly Journal of Economics* 84 (1970), pp. 488-500.
- ^{xl} A. Kirmani and A. R. Rao, "No pain, no gain: a critical review of the literature on signaling unobservable product quality", *Journal of Marketing* 64 (2000), pp. 66-79.
- ^{xli} S. S. Hussain, "Green consumerism and ecolabelling: a strategic behavioural model", *Journal of Agricultural Economics* 51 (2000), pp. 77-89.
- ^{xlii} S. Kirchhoff, "Green business and blue angels", *op. cit.*
- ^{xliii} C. Dosi and M. Moretto, "Is ecolabelling a reliable environmental policy measure?," *Environmental and Resource Economics* 18 (2001), pp. 113-127.
- ^{xliv} Council Regulation (EEC) 880/92, OJ L99, 11.4.1992.
- ^{xliv} A. Mattoo and H. V. Singh, "Eco-labelling: policy considerations.", *Kyklos* 47 (1994), pp. 53-65.
- ^{xlvi} S. Kirchhoff, "Green business and blue angels", *op. cit.*
- ^{xlvii} Sedjo & Swallow too, note that, in the case of certified wood, below some threshold level of demand, there is no price premium for certified wood even if there is a substantial number of consumers willing to pay a higher price for certified wood. The chances of this threshold not being reached are higher, the higher the extra costs associated with certification and the lower the 'new' demand for certified wood in excess of general wood demand. See R. A. Sedjo and S. K. Swallow, *Some analytics and implications of eco-labeling* (Kingston: University of Rhode Island, Department of Environmental and Natural Resource Economics, Working Paper, 1998).
- ^{xlviii} A. Mattoo and H. V. Singh, "Eco-labelling: policy considerations", *op. cit.*
- ^{xlix} Although this view has been contested by Reinhardt, see note 3

ⁱ M. Kuhn, *Green Lemons: environmental labels and entry into an environmentally differentiated market under asymmetric information* (Rostock: Universitat Rostock, Thunen-series of applied economic theory, Working Paper No. 20, 1999).

ⁱⁱ *Ibid.*

ⁱⁱⁱ A. Mattoo and H. V. Singh, "Eco-labelling: policy considerations", *op. cit.*

ⁱⁱⁱⁱ A. Nadai and B. Morel, *Product ecolabelling, competition and the environment*. (Milano: Fondazione Eni Enrico Mattei., 2000); A. Nadai and B. Morel, *Product ecolabelling: looking further into policy considerations* (Milano: Fondazione Eni Enrico Mattei, 2000)

^{lv} A. Nadai, "Conditions for the development of a product ecolabel.," *European Environment* 9 (1999), pp. 202-211.

^{lv} A. Nadai and B. Morel, *Product ecolabelling: looking further into policy considerations, op. cit.*

^{lvi} A. Nadai and B. Morel, *Product ecolabelling, competition and the environment, op. cit.*

^{lvii} A. Nadai and B. Morel, *Product ecolabelling: looking further into policy considerations, op. cit.*

^{lviii} R. Brau and C. Carraro, *Voluntary approaches, market structure and competition* (CAVA, Working Paper 99/08/1, 1999).

^{lix} S. K. Swallow and R. A. Sedjo, "Eco-labeling consequences in general equilibrium: a graphical assessment," *Land Economics* 76 (2000), pp. 28-36.

^{lx} D. K. Brown, *Can consumer product labels deter foreign child labor exploitation?* (Medford, MA, U.S.A.: Tufts University, 1999).

^{lxi} *Ibid.*

^{lxii} Krueger finds that labour force participation by children falls to zero when per capita income reaches USD 5000. See A. Krueger, *International labor standards and trade* (Washington D.C.: The World Bank, Annual World Bank conference on development economics 1996, 1996.).

^{lxiii} D. K. Brown, *Can consumer product labels deter foreign child labor exploitation?*, *op. cit.*