Environmental Labelling

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Environmental Labelling

Staff Working Paper

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Preface

The use of environmental marketing, including environmental labels, has become an increasingly important issue for firms, government and the broader community.

Many firms have recognised the potential commercial advantages of marketing 'green' products. Indeed, the number of environmental claims used in many markets has increased dramatically in recent years as firms tap into the growing community interest, awareness and concern regarding environmental issues.

Effective environmental labelling arrangements exist in some markets. However, potential problems may occur if the information on labels is inadequate or not perceived to be credible or reliable, or if there is widespread confusion about its meaning. These problems can have direct implications for consumers (in terms of making informed choices) and indirect implications for firms and the environment.

Governments may sometimes intervene if environmental labelling practices significantly impede consumers' choices. Governments have also used environmental labels as part of a broader environmental policy, seeking to improve environmental outcomes by indirectly influencing firm behaviour.

This paper provides some insights into how environmental labelling practices can potentially influence consumers' and producers' choices, and thus affect environmental outcomes. The focus is on examining the analytical issues relevant to policy consideration rather than on specific policy assessments or recommendations.

This paper had its origins in a project undertaken by a vacation student in the Productivity Commission's Economic and Environmental Studies Branch. After initial research, it was felt that wider interest in the issues, by the Commission and by others, warranted assembling the material as a Staff Working Paper.

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The views expressed in this paper are those of the authors and do not necessarily reflect those of the Productivity Commission.

Key messages

Environmental labels can provide information about the potential (positive and/or negative) environmental impacts of a variety of products and services, as well as the overall environmental performance of organisations.

Accurate, relevant and credible information about the potential environmental impacts of products can be important when:

- product prices and disposal and waste costs do not fully reflect the environmental impacts of a product over its lifecycle; and/or
- it is difficult or prohibitively expensive for consumers to identify and/or evaluate the environmental qualities of a product either through inspection or use.

Environmental labels may influence consumers' choices by:

- affecting the costs of searching for, and evaluating, information about particular environmental attributes;
- signalling the importance of that information; and/or
- potentially affecting the price of the product (if, for example, firms pass on to consumers any additional costs related to labelling practices).

Firms may use environmental labelling voluntarily if they perceive a commercial advantage in providing consumers with environmental information about the product. In this context, firms make their own judgements as to whether the extra costs of such labelling are worth incurring — such costs are generally passed on to consumers. Firms may also label to be 'good corporate citizens' or in response to existing or expected mandatory labelling requirements. Sometimes firm have incentives to withhold information or provide exaggerated or deceptive information. This can lead to concerns about the adequacy and reliability of environmental labels in some markets.

Governments may use environmental labels explicitly as an element of environmental policy, seeking to improve environmental outcomes by indirectly influencing firm behaviour. Governments may also become involved with environmental labelling in response to community concerns regarding inadequate voluntary environmental labelling practices or misleading and deceptive environmental claims.

It can be difficult to evaluate the impact of environmental labels on consumer choice and the environment. Some environmental labels appear to facilitate consumers' choices and/or have some positive environmental effects; however, this may not always be the case. Indeed perverse effects from environmental labelling practices may sometimes occur which increase, not reduce, environmental damage.

Effective environmental labelling practices may be facilitated by the development of effective voluntary third party verification and certification programs (administered by governments or by other organisations). Governments may also use mandatory labelling requirements and/or general provisions that ban misleading or deceptive claims.

Whether particular problems are best handled through general or specific regulation, or by the market, is a complex matter. A comparison of the expected size of the benefits and costs of alternatives is crucial.

1 Environmental labelling in practice

Over the past few decades, public concern for the environment has become more widespread. These concerns have been mirrored by a growing demand by consumers for information regarding the environmental features of competing products (or services) and for the environmental performance of organisations.[1]

Environmental labels are logos, symbols and/or phrases, usually on the packaging or the product itself, which may help consumers distinguish competing alternatives on the basis of their environmental characteristics. Such labels often suggest that buying the product the consumer is making a choice that has a positive (or less negative) impact on the environment. Environmental labels may also warn consumers of potential environmental hazards, or encourage them to use products in an environmentally 'friendly' way. They can also be an important component of other marketing strategies — for example, product advertising, catalogues and retail 'on-shelf' displays.

The use of environmental marketing, including environmental labels, has become an increasingly important issue for firms, government and the broader community. Labelling, and any tests to support claims, are not costless for producers, nor ultimately for consumers.

Some firms use environmental labels voluntarily — for example, to promote the 'green' environmental attributes of their products. Voluntary environmental labels are often found on common Australian household products such as grocery items, laundry detergents, household cleaners, toilet rolls, paper towels and some toiletries. Environmental labels can also be found on office paper and equipment where they identify 'green' products for government procurement and institutional purchasing. Environmental labels may be applied to services too, such as tourism.

Firms may use environmental labels in response to mandatory labelling requirements, as with existing energy labelling of many whitegoods. Industrial products such as intensive cleaners containing phosphates and other hazardous

[1] The importance of information is equally relevant to markets for services. Some existing environmental labels provide information about the environmental performance of certain services as well as products (see Canada's Environmental Choice Program — box 1.3). The term 'products' will be used in this paper to refer to products and services.

chemicals also display mandatory warnings or instructions about preferable workplace practices related to the product's use and disposal.

Governments have used environmental labels (and other informational approaches) explicitly as an element of environmental policy, seeking to improve environmental outcomes by indirectly influencing firm behaviour. This is because firms may improve environmental performance in response to additional consumer (or community) pressure brought about by the mandatory disclosure of product-specific (or organisation-specific) environmental information. As ACF (2000, module 7, s. 4.1) notes:

> The buying power of consumers provides them with considerable potential to promote environmentally and socially sustainable goods and services and conversely, to 'force' environmentally and socially damaging products and their producers out of the market.

Governments have also become involved with environmental labelling in response to concerns regarding potentially inadequate or deceptive labelling practices.

This paper considers how environmental labelling practices can facilitate the effective operation of markets, and thus potentially provide environmental benefits. It also considers the possible implications of inadequate or unreliable environmental labels on consumers' and producers' decisions and environmental outcomes.

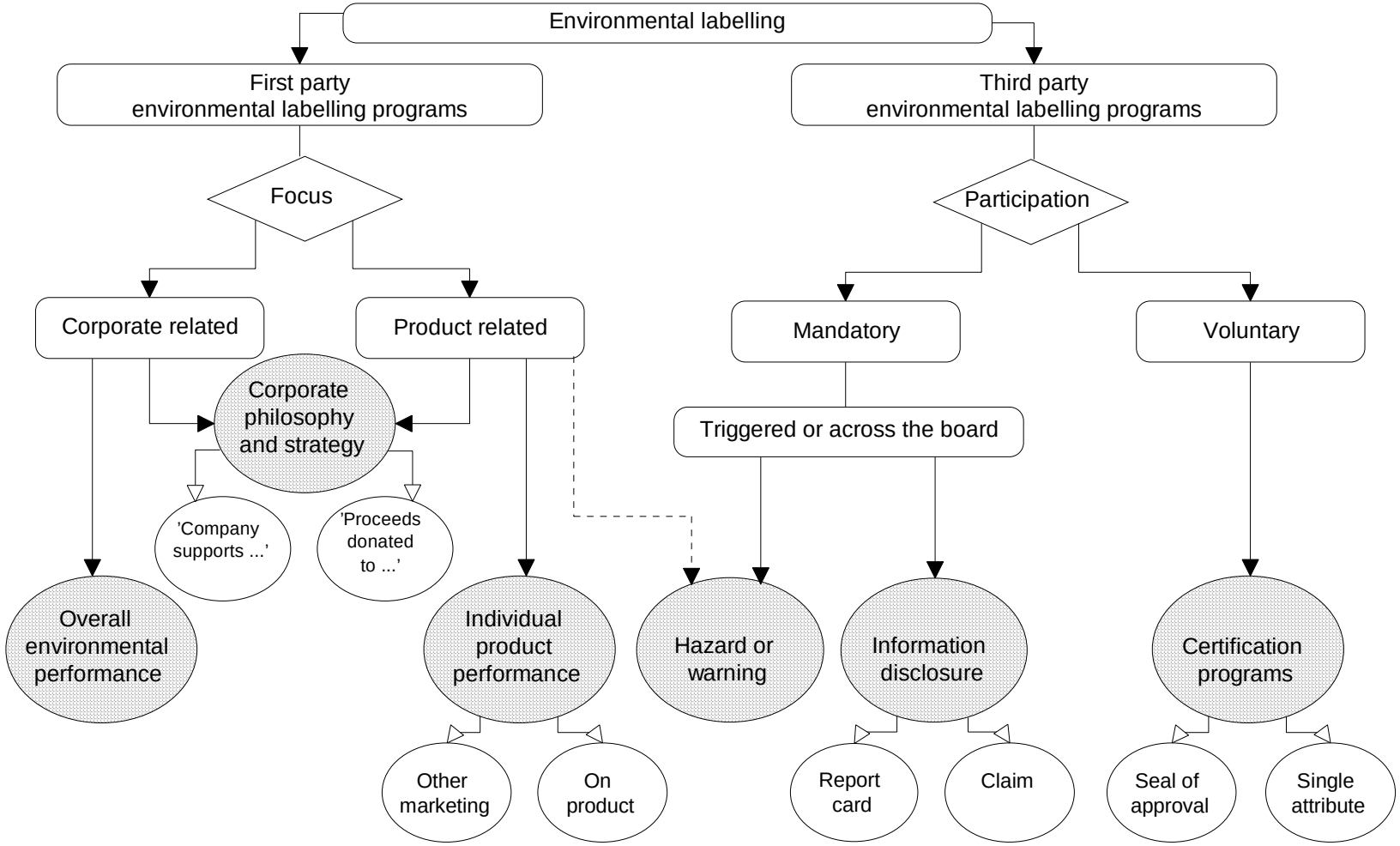
This chapter outlines the various types of environmental labels used in Australia and overseas. Chapter 2 describes how environmental information (particularly environmental labels) can influence consumers' and producers' decisions. Chapter 3 considers how consumers, producers and the environment are affected when environmental labels contain inaccurate or unreliable information, or when there is widespread confusion about the label and its meaning. Chapter 4 examines possible government or third party responses to this, including the potential costs and benefits of each response.

1.1 Types of environmental labels

Environmental labels can be classified according to a number of characteristics (figure 1.1). For example, a distinction can be made between labels that are applied as part of first party or third party labelling programs.

- First party environmental labelling programs make claims about the environmental impacts of a product that have not been verified independently.
- Third party environmental labelling programs make 'independent' judgments about the environmental quality of a product based on certain criteria or standards. These programs may be voluntary or mandatory.

Figure 1.1 **Classification of environmental labels**



Source: Adapted from USEPA (1998).

A distinction can also be made between positive, negative or neutral labels (box 1.1). In practice, different types of labels may appear on the same product.

Box 1.1 **Types of labels: positive, negative and neutral**

Positive environmental labels typically suggest that the product is environmentally superior (or possesses an environmentally preferable attribute or attributes) to functionally comparable equivalents. The focus is on the *relative* environmental superiority of a product, given that the production, use and disposal of most products leads to some kind of environmental resource use and/or damage. Many positive environmental labels are self-declared by firms (so-called 'first party' labels) or awarded through third party 'seal-of-approval' programs.

Negative environmental labels typically warn consumers about the potentially harmful or hazardous ingredients contained in the labelled products (for example, hazard labels on poisons containing specific chemicals). Many negative labels are applied as part of mandatory programs which require disclosure of specific information to consumers, although some manufacturers may voluntarily provide hazard/warning information on their products for liability purposes. Negative environmental labels may sometimes be applied as a consequence of labelling to address potential health and safety concerns.

Neutral environmental labels contain summary facts about the potential environmental impacts of a product and allow consumers to make their own judgments based on their particular concerns. The energy rating label applied to many household goods, for example, provides an estimate of the 'average' annual energy consumption of the appliance. Most neutral environmental labels are applied by firms by law, although some may be applied voluntarily as part of a particular industry code of practice. One feature of neutral labelling programs is the presentation of specific and consistent information, allowing a comparison across products.

Source: USEPA (1998).

First party environmental labelling programs

Environmental labels applied as part of a first party program are voluntarily placed on products by manufacturers, importers, distributors, retailers or other organisations likely to benefit from them. They are often called 'environmental claims' and can relate to:

- the environmental performance of the individual product or processes associated with it — for example, identifying the use of an environmentally preferable production technique, as with 'dolphin friendly' canned tuna;

- the overall environmental performance of the organisation — for example, identifying corporate responses to potential environmental issues such as continual improvement programs to facilitate a reduction in raw material use; or
- the corporate philosophy and strategy of the company — for example, identifying that the organisation supports the activities of a particular environmental organisation (USEPA 1998) (figure 1.1).

First party labelling occurs at the initiative of the firm, so it is more likely to focus on potentially positive environmental attributes. However, sometimes firms may provide negative information, perhaps responding to anticipated product liability action.

Firms may choose to align their first party labels with various industry standards or codes of practice. They may also seek further 'independent' certification that their product complies with existing standards (see 'Voluntary third party labelling programs', p. 8).

The Australian Standard AS/NZS ISO 14021 deals with 'self declared' environmental labels. It sets specific rules and requirements for commonly used claims such as 'recyclable', 'degradable' and 'reduced water consumption', and provides guidelines for the use of logos and symbols (box 1.2).

Specific voluntary codes of practice have also been developed for firms in terms of the marketing and promotion of particular products. The Code of Practice for Environmental Marketing developed by the Personal Hygiene Products Industry (CPEMPHPI), for example, outlines appropriate marketing and advertising practices, as well as enquiry and complaint procedures and sanctions, to ensure the 'accurate and informative marketing of the environmental aspects' of personal hygiene products, including toilet tissue products, facial tissues, paper towels, feminine hygiene products and baby nappies (CPEMPHPI Secretariat 2000). The CPEMPHPI does not include the use of any logo, although signatories may indicate that they adhere to the CPEMPHPI on their packaging.

Third party environmental labelling programs

Third party programs may develop in response to consumer demands for *verified* information about a product's environmental effects, or producer demands to improve the credibility of claims made about their product.

A broad range of third party environmental labelling programs exists worldwide. These vary according to whether participation in the program is voluntary or mandatory, the program administration (government, private for profit, not for

profit, quasi government), the program methodology and the product categories considered (for example, see box 1.3).

Box 1.2 The Australian Standard for self-declared environmental claims

Firms that make self-declared environmental claims about products or services in Australia may voluntarily adopt the principles outlined in the Australian Standard AS/NZS ISO 14021:2000.

The standard was prepared by the Joint Technical Committee EV/3, including representatives from the Australian and New Zealand Environment and Conservation Council, Australian Chamber of Commerce and Industry, Australian Food and Grocery Council, Consumers Federation of Australia, Department of Industry Science and Resources (Australia), and Packaging Council of Australia. The standard is based on the International Standard ISO 14021, with some national modifications.

It outlines requirements for environmental claims on labels and in marketing more generally (such as advertising, Internet sites and trade reports).

Key elements of AS/NZS ISO 14021 include:

- *general requirements for all claims*, including that claims should be:
  - accurate and not misleading;
  - substantiated and verifiable using publicly available information;
  - relevant to the particular product and used in only appropriate contexts; and
  - unlikely to result in misinterpretation.

  The standard also bans claims that are vague or nonspecific (such as 'environmentally safe', 'green' or 'nature's friend');
- *guidelines for evaluation and claim verification*. Under the standard, claims must be evaluated using measures that achieve reliable and reproducible results before they are made, using information available on request to any person;
- *specific requirements for selected claims*. For example, the term 'recyclable' can be used when the characteristic of the product can be diverted from the waste stream and collected, processed and returned to use. Alternatively, 'reduced energy consumption' refers to a reduction in the amount of energy associated with the use of a product performing the function for which it was intended compared with the energy used by other products performing an equivalent function; and
- *guidelines for the use of symbols and logos*. For example, under the standard, the Möbius loop (the 'chasing arrows' symbol) can have two different meanings — either 'recyclable' or 'recycled content':
  - the use of the Möbius loop on its own indicates 'recyclable'; and
  - the use of the Möbius loop accompanied by a percentage value (X%) indicates recycled content.

Sources: CI (2000); SA (2000b and 2000c).

Box 1.3 Voluntary third party labels: an international perspective

Canada's Environmental Choice Program: the Canadian EcoLogo

The Canadian EcoLogo is a voluntary eco-labelling program that is government owned but now privately managed. The seal of approval is awarded based on established lifecycle criteria. It has been awarded to over 3 000 products and services and over 250 companies (TerraChoice, personal correspondence, 23 August 2000). Applicants pay the verification costs.

The Nordic Council's Nordic Swan Label

The Nordic Council's Nordic Swan Label is a voluntary, seal-of-approval scheme that the Nordic Council of Ministers introduced in 1989 to attempt to unify emerging regional programs. Current participants are Norway, Sweden, Finland, Iceland and Denmark. Label criteria account for environmental factors throughout the product's life, although the program considers it impossible to evaluate the total influence of a product on the environment. Funding comes from fees and participating governments.

The EU Eco-Label Program

The EU Eco-Label program is administered at national levels by representative organisations chosen by member states of the European Union. Product criteria are based on an environmental impact assessment that includes a lifecycle assessment. The program aims to certify between 5 and 30 per cent of market participants. Applicants pay an application fee and an annual licensing fee if the label is awarded.

Germany's Blue Angel

The Blue Angel was established in 1977 and has served as a model for many other programs. It is a voluntary, seal-of-approval program that the German Federal Government launched. The Blue Angel has been awarded to over 4 000 products. Award criteria have been modified to consider multiple environmental attributes.

Japan's EcoMark

Japan's EcoMark was developed in 1989 and is managed by a non-government organisation. The program covers over 2 000 products, using a lifecycle analysis. There is no application fee but manufacturers are charged to use the award based on the retail price of the product.

Scientific Certification Systems' Certified Eco-Profile Labelling System

Scientific Certification Systems is a neutral, third-party testing and certification organization based in the United States with international alliances. The program provides certified 'eco-profiles' which include a 'report-card' assessment of environmental performance based on lifecycle analysis. Fees, including a full lifecycle analysis report and certified eco-profile, are between US$15 000 and US$50 000.

Sources: EA (2000a); Ecolabelling Norway (2000); European Union (1999); Gerus and Lo (1999); Japan Environment Association (2000); Jury Umweltzeichen (2000); OECD (1997); Scientific Certification Systems (2000a); TerraChoice (2000); USEPA (1998).

The most common products covered by third party programs (worldwide) include paper products (such as paper towels, toilet paper and office paper), detergents, office equipment and household whitegoods (including refrigerators, freezers and washing machines). The environmental impacts of these products have been studied in some detail over a long time. Less typical products usually reflect the particular needs or conditions of individual markets — for example, fusuma and shoji paper made from recycled pulp in Japan, and low-noise construction machines, compost choppers and mopeds in Germany (USEPA 1998).

Voluntary third party environmental labelling programs

Voluntary third party environmental labelling programs can be sponsored and/or administered by governments (box 1.4), private companies or some combination of these.

Box 1.4 **The Green Power Guarantee**

Electricity companies in Australia can use the 'government approved' Green Power logo if they meet certain requirements, including agreeing to:

- use energy sources that are based primarily on a renewable energy resource and that result in greenhouse gas emission reduction and net environmental benefit;
- source at least 60 per cent of green power from 'new' renewable generators (generators commissioned after 1 January 1997);
- establish a separate, independently audited Green Power account to provide funds to purchase energy from renewable sources;
- lead by example by becoming Green Power customers; and
- make publicly available a yearly financial statement on their Green Power program (SEDA 2000b).

The NSW Sustainable Energy Development Authority (SEDA) accredits Green Power schemes.

Green Power accredited programs are available to 73 per cent of the Australian population and all residents of New South Wales, Victoria, Queensland and the Australian Capital Territory (SEDA 2000a). In Victoria, for example, CitiPower buys electricity from accredited Green Power sources which it then feeds into the electricity grid when consumers purchase 'EcoUnits' under its EcoPower program (CitiPower 2000). In New South Wales, Advance Energy purchases the equivalent amount of energy from solar, wind and non-flooding hydro-power used by Green Power customers (Advance Energy 2000). In Queensland, Ergon Clean Energy is primarily derived from biomass power using a byproduct of crushed sugarcane (bagasse) (Ergon Energy 2000).

Sources: Advance Energy (2000); CitiPower (2000); Ergon Energy (2000); SEDA (2000a and 2000b).

Firms voluntarily apply to the certifying organisation and, after testing and verification, may be licensed to use appropriate endorsements or logos in advertising and on labelling and packaging.

As labelling occurs at the initiative of the firm, it is likely to focus on potentially positive environmental attributes (USEPA 1998). The labels often certify that a particular product has achieved a minimum level of performance for each environmental characteristic assessed. For example, products certified to meet Australian Standards (for example, AS/NZS ISO 14021) by Quality Assurance Services can use the five tick 'StandardsMark' in marketing packaging and promotion materials (QAS 2000). In many cases, the endorsing organisation continues to monitor and evaluate the products' performances to ensure they meet required standards. For example, Quality Assurance Services conducts an ongoing surveillance program and a full recertification audit every three years (QAS 2000).

A common type of voluntary eco-label is an endorsement or seal of approval (figure 1.1). These labels may be awarded to products that are judged to have environmentally superior performance, based on specific criteria (Davis 1997; USEPA 1998). For example, seafood products are eligible to be labelled with the Marine Stewardship Council logo, subject to assessment against a broad set of principles and criteria for sustainable fishing (box 1.5).

Other voluntary eco-labels certify that claims made for a single product attribute meet a specified definition (Davis 1997; USEPA 1998) (figure 1.1). This is the case with the ENERGY STAR® label that indicates that a product meets minimum energy efficiency standards. For example, a computer that complies with ENERGY STAR® the must switch itself into a power saving mode after a specified amount of idle time (NAEEEC 2000f). The call for a nationwide system of consumer labelling that identifies products from 'clean, green and sustainable farming systems' is another example of this type of eco-labelling (LAWN 2000a).

An alternative type of voluntary eco-label discloses specific information in a simplified way that can be comparable across products. The Australasian Window Council's (AWC) Window Energy Rating Scheme is a voluntary program that rates the energy impact of residential windows in housing. Rated windows get from ½ to 5 stars to indicate their energy efficiency for cooling (summer) and heating (winter) in comparison to alternatives. Ratings are voluntary and are made by AWC accredited rating organisations (AWC 2000). Another example, suggested recently by the CSIRO and others, involves voluntary assessment of farm products against a 'five star' rating system, where a five star rating signals that a product was produced on a farm in a manner consistent with regional and industry plans and basin-wide strategies for sustainability (Lawn 2000a, 2000b; Young 2000).

Box 1.5 **The Marine Stewardship Council**

The Marine Stewardship Council was established in 1997. It is an independent, charitable, not-for-profit, non-government international organisation that promotes 'responsible, environmentally appropriate, socially beneficial and economically viable' fisheries and fishing practices (MSC 1998, p. 5).

Certification is undertaken according to the *MSC Principles and Criteria for Sustainable Fishing*. The principles include that:

- the fishery must be managed in way to maintain or re-establish healthy populations of targeted species;
- fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem on which the fishery depends; and
- the management system of the fishery should respect local, national and international laws and standards and incorporate institutional and operational frameworks that require responsible and sustainable resource use (MSC 1998).

Products from a certified fishery are eligible to be labelled with the Marine Stewardship Council's logo. In Australia, rock lobsters from the Western Australia rock lobster fishery have been awarded the logo (MSC 2000a). The UK Thames–Blackwater herring fishery and the Alaskan salmon fishery have also been certified. Certification of the UK Burry Inlet cockle fishery is underway (MSC 2000b).

Participation in the scheme is voluntary. Fisheries are assessed against approved performance criteria and scoring guidelines by an independent, accredited certification organisation. Criteria for the Western Australia rock lobster fishery include:

- an adequate knowledge about the fishery, including the monitoring of catch and effort, and information on fishing methods, fishing patterns and changes over time;
- a well defined and effective harvest strategy to manage the target population;
- an adequate knowledge of the ecosystem and its values where the fishery operates, including knowledge of species diversity, population structures and natural relationships between the species in the area;
- a robust assessment of the impacts of the fishery on the environment, including a scientifically defendable ecological risk assessment of the impact of the fishery on the ecosystem structure or function, and on the habitats or populations of dependant or otherwise associated species;
- a comprehensive and effective management plan or management system, including sustainability objectives and a research and monitoring strategy; and
- compliance and enforcement strategies designed to support the management plan (MSC 1999).

Source: MSC (1998, 1999, 2000a and 2000b).

In some cases, an environmental 'report card' label may be used. This type of label uses a standardised format to categorise, quantify and provide information about elements of a product's and/or firm's environmental performance but does not judge the performance against that of other products and/or companies (Davis 1997; USEPA 1998). Examples of this type of label include the US Scientific Certification Systems' Certified Eco-Profile Labelling System (box 1.3) which lists impact categories like fossil fuel resource depletion, ecosystem depletion, greenhouse gas loading and residual hazardous waste (Scientific Certification Systems 2000b).

Mandatory third party environmental labelling programs

Mandatory third party environmental labelling programs place specific requirements on firms to disclose particular environmental information. Mandatory requirements may be used to compel producers and suppliers to reveal information about particular environmental attributes to consumers. They may also assist in overcoming the credibility problems sometimes associated with voluntary (first party or third party) labels. Common mandatory labels include hazard/warning labels and mandatory information disclosure labels (figure 1.1).

Mandatory labelling programs are sometimes run in conjunction with voluntary programs. For example, companies that manufacture, market, distribute or sell appliances with (mandatory) energy rating labels (box 1.6) may (voluntarily) enter the Galaxy Energy Awards.[2] These awards recognise commitment to, and excellence in, the production and marketing of energy efficient appliances. Winners and finalists feature in a variety of Australian media and can use a Galaxy logo to identify superior environmental performance (SEAV 2000c). This can add value to existing labelling schemes by further promoting the most efficient appliances in the market (SEAV, personal correspondence, 9 August 2000).

Hazard or warning labels

A common mandatory third party label is a hazard or warning label applied to products that contain potentially harmful or hazardous ingredients, including some household pesticides, household cleaners, paints and batteries. Some hazard or warning labels are applied 'across the board' — for example, warning labels on cigarettes. Others are 'triggered' subject to defined thresholds — for example, the National Hazardous Substances Regulatory Package requirement for labels and information sheets for all hazardous substances. Under the package, products

[2] The Galaxy Energy Awards are part of the 'Reach for the Stars' Appliance Efficiency Program, which is a joint initiative of the Australian Greenhouse Office, the Sustainable Energy Authority Victoria and the NSW Sustainable Energy Development Authority (SEAV 2000c).

containing white phosphorus in concentrations above 0.1 per cent are required to be labelled. The extent to which the phosphorus level exceeds this threshold determines the exact label to be used (NOHSC 2000). In a similar way, the New South Wales *Pesticides Act 1999* requires specific labelling of registered pesticides and includes strict guidelines covering the size, position and colour of the label.

Box 1.6 **The Energy Rating Labelling Program**

The Energy Rating Labelling Program is coordinated by the National Appliance and Equipment Energy Efficiency Committee (NAEEEC) and managed by the Australian Greenhouse Office (AGO 2000b). Under the scheme, refrigerators, freezers, washing machines, clothes dryers, dishwashers and airconditioners may not be sold without displaying an approved label that provides:

- a star rating that allows a comparative assessment of the model's energy efficiency on a scale from one to six — the more stars, the higher the model's energy efficiency; and
- an estimate of the annual energy consumption of the appliance (kilowatt hours per year) based on the tested energy consumption and on information about the typical use of the appliance in the home (NAEEEC 2000d and 2000i).

The energy rating scheme is carried out in relation to energy rating standards that define test procedures and conditions for measuring energy consumption and minimum energy performance criteria (NAEEEC 2000b). For example, the Australian Standard AS/NZS 4474.2 defines the test procedures that determine the comparative energy consumption and performance, and sets out the requirements for energy labelling of refrigerators, freezers and refrigerator-freezers. Under the standard, appliances must meet certain performance requirements, such as being able to reach certain internal temperatures within specified times and to maintain internal temperatures under specified external ambient temperatures. Energy consumption is then measured using specified test procedures at specified internal compartment target temperatures while operating at an ambient temperature of 32°C (NAEEEC 2000c).

The base energy consumption (BEC) defines the 'one star' level of particular products. An additional star is awarded when the comparative energy consumption (CEC) of the model is reduced by a defined percentage from the BEC. For refrigerators, energy reductions per star vary from 14 per cent to 23 per cent per star, depending on the refrigerator group. If the energy reduction per star was 20 per cent, then a CEC that was 0.8 of the BEC or less would achieve two stars. Similarly, a CEC of 0.64 (0.8×0.8) of the BEC or less would achieve three stars and so on (NAEEEC 2000j).

Sources: AGO (2000a and 2000b); NAEEEC (2000b, 2000c, 2000d, 2000i and 2000j).

Mandatory information disclosure

Other mandatory third party labels require firms to disclose specific information in a simplified way that can be comparable across products.

Energy rating labels

The Energy Rating Labelling Program applied to many household electrical appliances is a well known information disclosure label in Australia (box 1.6).

Gas energy labels also exist, and can be found on flued gas space heaters and gas water heaters. These labels provide an energy star rating and estimate of the comparative energy consumption (in a similar way to energy labels found on electrical appliances (box 1.6)). The energy tests, label requirements and relevant performance criteria for gas water heaters are carried out in accordance with Australian Gas Association Standard AG102 (gas water heaters) and AGA Standard AG103 (gas space heaters) and also include safety requirements (NAEEEC 2000k).

The Australian Gas Association is responsible for gas appliance energy labelling. This labelling program is voluntary, although the tests required for energy labelling are also required as part of the specification for safety approval. This effectively makes the collection of data required to produce a label mandatory, because the association is responsible for the entire gas industry including utilities, local appliance manufacturers and importers (AGA 2000; NAEEEC 2000k).

Another example of a mandatory energy rating program is the ACT Housing Energy Rating Scheme (ACTHERS) which uses a star rating system to indicate the potential energy efficiency of new and existing residential dwellings in the Australian Capital Territory (Environment ACT 1999). The more stars, the higher the energy efficiency. Assessments reflect a number of factors including air leakage, insulation, other design features and windows (including orientation). Assessments are made by ACTHERS Accredited Assessors.

Under the ACTHERS, all new homes built after 1 July 1995 must achieve a four star energy rating (DUS 1999). Further, energy ratings of all dwellings (regardless of age) must be disclosed to potential buyers (for example, in advertisements for the sale of property) (*Energy Efficiency Ratings (Sales of Premises) Act 1997*, s. 6) or potential tenants (*Residential Tenancies (Amendment) Act 1997*).

Other requirements

Mandatory requirements can also be placed on environmental claims made voluntarily. For example, producers that intend to export food or fibre that claims to be ‘organic’ or ‘bio-dynamic’ are subject to mandatory Export Control (Organic

Certification) Orders, which make it illegal to export organic produce without a certificate accompanying the product that verifies its nature. The order provides for industry organisations accredited by the Australian Quarantine Inspection Service to issue an Organic Produce Certificate. Industry organisations are accredited subject meeting requirements contained in the National Standard for Organic and Bio-Dynamic Produce (OFA 2000a and 2000b).

1.2 Summing up

Environmental labels are widely used in Australia to provide information about the potential environmental impacts of a variety of products. The type of information presented on labels can vary significantly, depending on the issues specific to the product, service or organisation. Some labels focus on potential environmental impacts of production (such as resource and energy inputs or various production techniques). Others describe potential environmental impacts during use or disposal (such as hazard warnings or instructions for environmentally 'friendly' disposal).

First party labels are 'self-declared' and make claims about the environmental impacts of a product that have not been verified independently. These labels may highlight the environmental performance of the individual product or processes associated with it, the overall environmental performance of the organisation, or the corporate philosophy and strategy of the company. First party claims usually focus on potentially positive environmental attributes although firms sometimes voluntarily provide negative information.

Third party labels make claims about the environmental quality of a product that have been 'independently' verified or certified. A key distinction can be made between voluntary participation by firms in third party labelling programs and mandatory participation. Common voluntary third party labels include endorsements or seals of approval which suggest that the product has met a minimum level of performance based on specific award criteria. Common mandatory labels include hazard/warning labels and mandatory information disclosure labels. Mandatory labelling programs are sometimes run in conjunction with voluntary programs.

2 Environmental labelling and the provision of information

Consumers need appropriate information about the factors they consider to be important in their purchasing and consumption decisions. When consumers have adequate information about the price, quality and other attributes (including environmental 'friendliness') of products, they can make better use of their limited budget by finding and purchasing the bundle of products whose mix of attributes they most prefer.

The 'vote' for particular characteristics (including environmental characteristics) that consumers make through their purchasing decisions provides a signal to producers and sellers about what to produce, how to produce it and for whom. For example, when consumers purchase 'dolphin free' tuna rather than unlabelled (but otherwise equivalent) alternatives, they send a signal to canned tuna producers about, among other things, their preferences for tuna caught using 'dolphin safe' fishing practices. Consumers' purchasing decisions can also provide producers and sellers with an incentive to compete to improve their products, perhaps by changing inputs or adopting new or different technologies that lower the environmental burden of the product.

Consumers may be unable to make decisions that best accord with their preferences if they do not have enough information about the characteristics of products that they consider important. This may mean that producers and sellers receive the 'wrong' signals about their products or production processes, which can lead them to allocate resources inefficiently (for example, by allocating them to less desirable products and/or production processes). Impediments to consumers' choices can also be a problem in their own right — for example, when the community places value on consumers being able to express their individual preferences (Dolling and Peterson 2000) or on consumers' 'rights to know' about potential environmental hazards or consequences (USEPA 1998).

This chapter considers how providing information about the environmental attributes of products (particularly the use of environmental labels) can influence consumer and producer decision making.

2.1 Environmental information and decision making

A product may have significant environmental impacts over its lifecycle, perhaps because its production, consumption, or disposal use excessive energy and resources or generate unacceptable byproducts and waste. Sometimes consumers may wish to include such environmental considerations in their purchasing decisions (box 2.1).

Box 2.1 **Environmental considerations and purchasing decisions**

Consumers may include environmental considerations in purchasing decisions for a variety of reasons.

Some consumers may implicitly include broader environmental or community considerations in their purchasing decisions because the costs (or benefits) of their choices have a direct and known impact on their individual welfare. For example, they may purchase environmentally superior products to lower potential health risks — such as when using indoor paints (Karl and Orwat 1999).

However, when the environmental costs (or benefits) of consumer choices are not fully known or are imposed on (or accrued by) the environment or others, consumers may not take these effects into account. For example, road users may account for the costs of air and noise pollution and traffic congestion only to the extent that these costs are included in the road pricing systems (including car registration and fuel excise and taxes).

Other consumers may be motivated by more 'altruistic' reasons or may make decisions to be 'good citizens' or to comply with existing social norms. In these cases, consumers may make decisions that more explicitly account for additional broader environmental or community costs and benefits.

Governments and large organisations are also increasingly considering environmental attributes of purchased goods and services. Incorporating environmental attributes in procurement programs may potentially benefit the organisation directly (for example, reducing costs over the life of the purchased good) or indirectly (for example, creating corporate goodwill among shareholders or customers) (USEPA 1998).

Source: Karl and Orwat (1999); USEPA 1998.

If product prices accurately reflected the environmental (and other social) costs (and benefits) of production, and if disposal and waste costs were imposed accurately, then consumers could use prices to make purchasing decisions reflecting environmental considerations. Other things being equal, price differences would reflect the environmental superiority, or otherwise, of the products.

However, consumers rarely encounter prices that fully reflect the environmental impacts of a product over its lifecycle, not in the least because many of these costs can be difficult to measure (box 2.2) or are uncertain or unknown.

Box 2.2 Lifecycle analysis: quantifying the overall environmental impact of a product

Lifecycle analysis is a comprehensive product evaluation technique that assesses the environmental impacts of a product from 'cradle to grave'. It provides a detailed evaluation of the environmental performance of a product over its lifecycle — including the energy inputs and other environmental impacts of its manufacture, transport, use, and disposal.

Complete lifecycle analysis can sometimes be prohibitively expensive and/or time consuming, especially when products have complex or interdependent environmental effects.

A potentially less expensive or time consuming alternative is to focus on the 'most important' environmental attributes of a product. This may mean focusing on the primary environmental impacts of a product in the 'key stages' of its lifecycle — for example, those stages expected to have the most significant and highest priority environmental impacts, or those over which producers or governments have more control and can more readily measure. Mandatory labelling requirements for selected household appliances focus on quantifying the energy consumption of the appliance from typical household use (not production or disposal of the appliances) reflecting ongoing concerns about greenhouse gas emissions (NAEEEC 2000e and 2000i). In contrast, the voluntary analysis (and reporting) of the environmental impacts of certain paper products may focus on the types of inputs used (for example, the use of recycled material or material sourced from renewable sources) or the various production techniques (for example, the use of 'non-chlorine' bleaching techniques) because producers have some ability to control and monitor them. Firms may also voluntarily provide information about the potential environmental impacts related to the 'typical' use and disposal of products, or provide some guidance regarding environmentally preferable practices (even though they have limited control over whether consumers follow these practices).

However, this method may not provide a complete picture of the environmental impacts of the product. A product that performs well in selected life stages may perform poorly in others, so the (sometimes subjective) choice between the key stages, or environmental impacts considered in analysis is important.

Sources: NAEEEC (2000e and 2000i); USEPA 1998.

Instead, the potential environmental attributes of a product add another dimension to the bundle of characteristics that influence the product's overall image and potential desirability. Indeed, consumers may 'tradeoff' particular environmental attributes with other product features, such as functional performance and quality.

In these cases, consumers may rely on information about the possible environmental attributes of products (information provided by the firm or others) to inform their choices. Consumers may also rely on existing 'duty of care' laws or statutory rules and regulations that protect them from personal damage and injury and/or assure them that minimum environmental performance standards are being met.

Environmental information and consumer choice

Consumers may sometimes collect and process information about the environmental attributes of products (or the overall environmental performance of organisations) until the expected cost of additional information just equals the expected benefit.[3]

Consumers interested in buying 'green' products can access information about the environmental attributes of a product from a diverse set of sources (Church 1994). They may seek information from the firms that supply products directly — for example, through advertising campaigns and company reports, the use of environmental labels, and/or the firms' reputation. Consumers may also seek information from secondary sources, including governments, certification services or other agents. Sometimes, consumers may also use information gleaned from past experiences or from inspecting the product before making a purchase.

Information on the environmental attributes of products can influence consumer decisions by providing environmentally aware consumers with an additional basis for choice. Some consumers with strong preferences for particular environmental attributes may base their decisions largely on whether the product has those qualities. In these cases, the provision of environmental information may allow consumers to choose one product over another because its production, use or disposal causes less environmental damage. For other consumers, information about environmental attributes may affect their choice mainly by enhancing a product's chances of being on the short list from which the consumer makes a final choice. For example, consumers may choose a product based on price from a group of products with some minimum level of environmental quality.

In some cases, silence adequately informs consumers. Consumers generally correctly assume, for example, that food that does not claim to be organically produced is not organically produced. Consumers may also be able to identify and/or evaluate the environmental characteristics of a product themselves either by inspecting the product before they purchase it (as with 'search' attributes) or by learning over time through consumption (as with 'experience' attributes) (box 2.3).

[3] Although sometimes consumers will not protect themselves by gathering and rationally evaluating the optimal amount of information (Beales et al 1981).

Consumers can observe prior to purchase, for example, that one brand uses less packaging than another competing product (Church 1994).

Box 2.3 **Search, experience and credence attributes**

Product characteristics can be classified according to whether they are search, experience or credence attributes.

Search characteristics are those product attributes that consumers can determine with relative certainty before purchase (say, by inspection). Consumers may be able to determine, for example, the expected amount of waste resulting from the type of packaging used.

Experience characteristics are those product attributes that consumers can assess only after purchase: during the course of consumption, use or disposal. Under these circumstances, the buyer learns whether the product features the desired qualities.

Credence characteristics are difficult for consumers to assess even after consumption. This may be because it is difficult to link product use with its effects, given either the complexity of the relationship or a significant time lag between the cause and effect. Many environmental attributes of products have strong credence characteristics because the transaction costs of investigating the wide range of environmental impacts of products can be prohibitively expensive (Karl and Orwat 1999).

Products may have all three elements, for example:

> … a tomato has search (eg colour), experience (eg taste) and credence (eg levels of micronutrients) attributes. (Caswell and Padberg, 1992, p. 461)

The classification of particular attributes of products may change over time, especially if the costs of searching for the relevant information changes. For example, particular environmental attributes with credence characteristics may take on some search elements that are easily recognised at the point of sale when environmental labels are used effectively (Karl and Orwat 1999).

Sources: Caswell and Padberg (1992); Darby and Karni (1973); Karl and Orwat (1999); Nelson (1970).

In other cases, silence does not inform consumers because it can be difficult for them to identify and/or evaluate the environmental qualities of a product, even after consumption — that is, the environmental qualities of a product exhibit 'credence' characteristics (box 2.3). For example, consumers may be unable to effectively determine how their consumption of a product (such as an aerosol spray) has affected the environment (say the ozone layer) given the complexity of the relationship between the use of the spray and potential changes to the ozone layer.

In addition, if product (or disposal) prices do not accurately reflect environmental costs, and if it is prohibitively expensive for consumers to find out more, then consumers may be unable to determine whether products are produced (or disposed of) in an environmentally sensitive manner. For example, consumers may be unable

to effectively determine whether they are buying free-range eggs or eggs from a battery cage system, by inspecting the product in the shop unless the price of eggs varies by production method.[4]

Preferences for information may vary according to individual characteristics of consumers, such as age, income, ethnic origin and stage of family life. Preferences can also vary depending on the choice being made. Consumers choosing between competing products (say between disposable nappies and reusable cloth nappies), may want information about the potential environmental impact of the products that they buy, and guidance on how they should use and dispose of products to reduce that impact (ACA 1999). Alternatively, consumers may want information about the different environmental impacts of competing processes (for example, chlorine bleaching versus 'non-chlorine' bleaching for processing white paper products) or competing materials (for example, plastic versus paper packaging) (Davis 1997).

Preferences for information may also change over time, reflecting contemporary environmental issues, goals and priorities. The widespread community concern about the disintegration of the ozone layer in the 1980s, for example, was mirrored by increased consumer interest in the removal of chlorofluorocarbons (CFCs) as a propellant from aerosol products and the labelling of 'CFC free' products. In a similar way, concerns about logging native forests and deforestation have been reflected in increased consumer interest in the sources of paper production inputs and the labelling of paper products that are '100 per cent recycled' or 'sourced from plantation forests.' More recently, some consumers have expressed strong preferences for information about genetic modification (particularly in food products) partly to address potential health and safety concerns but also in response to ethical, cultural and social preferences, which include concerns about potential damage to the environment (for example, see Dolling and Peterson 2000).

Environmental labels

Environmental labels provide consumers with information about one or more environmental attributes of a product. In many cases, they are more visible, particularly to final consumers, at the point of purchase than other marketing devices (NEF 1998).

Environmental labels can influence consumers' decision making by potentially affecting the cost of obtaining, storing and evaluating information about particular environmental attributes and by signalling the importance of that information. This

[4] Even then, price differentials may reflect other factors, such as strategic marketing activities and the size of the production facilities.

occurs because environmental labels can affect the number of attributes that the consumer considers when making choices and/or the implicit weight that consumers assign to each attribute (Teisl et al 2000). Environmental labels can also influence consumers' choices by potentially affecting product prices — as prices incorporate the costs of labelling, including any testing to support environmental claims.

Some consumers prefer to use environmental considerations in their decision making, but may be unable to express these preferences if it is too difficult or prohibitively expensive for them to access the relevant information. In contrast, a credible, easily understood environmental label may more easily allow consumers to recognise, and consequently consider, 'green' products or attributes.

Some environmental labels may also change consumers' preferences for particular environmental attributes. A prominent environmental label can signal that the particular environmental attribute is important and that information about it 'deserves' greater weighting in a consumer's decision. In addition, a label may increase the potential benefits accruing to the consumer from their purchase by securing a positive social identity for that consumer (NEF 1998). For example, a consumer may purchase 'dolphin safe' tuna to appear to be 'doing the right thing' (McCluskey 2000a).

All consumers are unlikely to have similar reactions to various environmental labels, because consumers have diverse preferences (including preferences for information), dissimilar interpretations of what a label means, and different levels of exposure to the information (for example, to whether the label provides new information). Important influences include:

- the type of label used, including its size, format and location on the product;
- the credibility and authority of the information provided by the label; and
- the amount of additional information available to consumers from other sources.

The type of label used may affect the amount of information available about environmental attributes, as well as the way in which consumers are likely to interpret this information. The credibility and authority of the information presented in the label is also important (Karl and Orwat 1999).

A report card label provides information on a number of environmental attributes. This means consumers must independently interpret and prioritise the information presented, which can be difficult given the complex nature of the potential environmental impacts of a product. Consumers may prefer others (for example, firms, environmental organisations or government) to prioritise and assess the available information for them. The seal-of-approval label does this explicitly by

indicating to consumers that a product has been judged to be environmentally preferable.

The single attribute label implicitly ranks information for consumers by providing information only about a specific environmental attribute, so that consumers consider this attribute alone in making their decisions. An important issue here is the extent to which consumers desire information about that specific attribute. A label that gives the recycled content of copying paper, for example, may not satisfy consumers who are interested in purchasing environmentally sound copying paper if they are equally interested in knowing whether the paper came from sustainable timber plantations.

In many cases, there will be a tradeoff between information detail and simplicity. Labels with significant detail may benefit consumers who have some knowledge of the environmental issues related to the product and a particular preference for information about a limited number of these issues. In contrast more simplified labels (for example, a seal of approval) may benefit consumers who have less time, less interest or less knowledge of the relevant environmental issues and/or those consumers who may benefit from the knowledge of the label's verifier.

The effectiveness of environmental labels is also influenced by the amount of information available to consumers from alternative sources, including third parties or through broad consumer education and awareness programs.

Environmental labels are unlikely to be effective if consumers lack general knowledge or information about potential environmental issues. For example, a label stating that a product has a certain environmental quality (say being made from recycled inputs) may not be useful to consumers if they have inadequate information about what recycling means and the potential impact that recycling has on the environment. Alternatively, consumers may underestimate the value of the information provided by a label because they lack the knowledge which would tell them of their need to learn more (Beales et al 1981). In contrast, environmental labelling schemes implemented in countries with high levels of consumer awareness (and corresponding demand) for environmentally preferable products may be more likely to be successful (OECD 1997).

Evaluating the impact on consumers' choices

It can be difficult to evaluate the market impact of many environmental labels, not in the least because the label is only one of many factors that can influence market penetration (OECD 1997). Independent research that quantifies the market impact and effectiveness of environmental labelling at a broad level is limited, and

quantitative results are rare (OECD 1997; Teisl et al 2000). However, the widespread use of environmental labels may suggest that some firms perceive that environmental labels influence consumer choices effectively. There is also growing evidence that particular labels are well recognised by consumers, and may have an important influence on their decisions. For example, several market studies have suggested that there is broad community awareness of the energy rating labels applied to many household whitegoods (box 2.4) and that these labels have a high and growing level of influence on consumers making appliance purchasing decisions (SEAV 2000b).

Environmental information and producer decisions

Firms provide consumers with information about the environmental performance of their organisation and products through a number of channels, including advertising, labelling and maintaining a reputation as an 'environmentally friendly' producer. In many cases each acts to reinforce the other. The amount and type of information, as well as the choice of channel, depend on factors such as the availability of information provided by other sources, the behaviour of competitors, the market conditions for the product, and the relative costs of generating and disseminating the information (Church 1994).

Environmental labels

The use of environmental marketing, particularly environmental labelling, has emerged as an increasingly important issue for some firms (OECD 1997; USEPA 1998). This may be because some firms see a commercial advantage in voluntarily providing environmental information about their product. Firms may also be motivated by liability or public image concerns — that is, by disclosing information producers may hope to avoid financial and public relations risks. Firms may also label in response to existing or expected mandatory labelling requirements.

Box 2.4 The Energy Rating Labelling Program — consumer awareness and influence

The Sustainable Energy Authority Victoria has undertaken several market studies relating to consumer awareness and use of the energy rating labels applied to many household whitegoods (EEV 1998 and 1999; EV 1996; SEAV 2000a). In the most recent study, 850 random telephone surveys were conducted with residents from Victoria (411 respondents) and New South Wales (439 respondents) (SEAV 2000a).

Consumer awareness

In terms of awareness of energy rating labels or star ratings, the 2000 study found:

- 83 per cent of all consumers surveyed were aware of labels or ratings, with similar awareness levels in Victoria (84 per cent) and New South Wales (83 per cent) and awareness for residents in regional areas at least as high as that for residents in capital cities;
- there was greater awareness among major appliance purchasers (88 per cent) than among general consumers (79 per cent);
- there was greater awareness among consumers in the 31–39 and 40–54 age groups (89 per cent and 91 per cent) than among those aged over 65 (68 per cent);
- there was greater awareness among consumers who earn over $35 000 per year (88 per cent) than among those who earn less than $15 000 (71 per cent); and
- consumers were most aware of labels applied to refrigerators, followed by washing machines, freezers and room airconditioners.

These results are largely consistent with other evidence of significant overall consumer awareness of labels, greater awareness by consumers with higher incomes, and significant awareness of labels on refrigerators (EEV 1999; EV 1996).

Influence on consumer decisions

In terms of influence on consumer decisions, the 2000 study found:

- 81 per cent of those consumers aware of energy rating labels or star ratings believed that the labels were influential on their choice of an appliance;
- a larger proportion of females (87 per cent) than males (75 per cent) are influenced by labels;
- the degree of influence increased with consumers' age (except for consumers aged over 65, of whom most are not major appliance purchasers); and
- the degree of influence did not vary significantly with consumers' gross incomes.

The 2000 study found that 10 per cent of respondents only purchased appliances with high ratings, 36 per cent used labels and ratings to decide between two models, and 28 per cent actively looked for labels on appliances (SEAV 2000a). In contrast, an earlier study that reported that 5 per cent of respondents only purchased appliances with high ratings, 28 per cent used labels to decide between two models and 23 per cent actively looked for labels on appliances (EV 1996).

Sources: EEV (1998 and 1999); EV (1996); SEAV (2000a).

Voluntary environmental labels

In Australia many voluntary environmental labels are self-declared (first party claims). However, some firms may voluntarily participate in third party certification programs to differentiate their products from competing (uncertified) products, if the benefits of doing so outweigh the costs. This may be because consumers may consider 'certified' claims to be more reliable and consequently may be more likely to consider these claims in their purchasing decisions (Karl and Orwat 1999).

Voluntary environmental labels have become progressively more important to firms in some markets as consumers have become increasingly aware of, and concerned by, environmental issues and have become more willing to make purchasing decisions that account for the environment. As Standards Australia (2000a, p. 1) notes:

> People are understandably eager to 'do their bit' for the environment and are more and more inclined to favour products that seem likely to do the least damage to it. Manufacturers, sensing business, may be keen to encourage this interest by marking their products or packaging to reassure consumers that their products cause less stress on the environment.

In some cases, public concern about environmental attributes can translate into increased demand for 'environmentally friendly' products or a greater willingness to pay a price premium for products with credible environmental claims.

This creates an incentive for firms with environmentally superior products to develop marketing strategies that emphasise these attributes. As Grodsky (1993, p. 147) notes:

> … environmental marketing has grown dramatically in response to consumer preferences for environmentally sensitive goods.

A key motivation for firms to use voluntary environmental labels is to signal that their product is environmentally superior to competing (unlabelled) products.[5] Their aim may be to attract a price premium to their product. For example, an Australian beef cooperative promotes its 'Biograze' beef in Japanese markets which pay up to 20 per cent more for this type of 'green' accreditation (CSIRO 2000).[6] A recent national survey found that 52 per cent of consumers would be willing to pay more for organic food and 37 per cent would be willing to pay a 5–10 per cent premium

5 'Green' producers also need to be competitive in the market in terms of performance, quality and economic value to be successful.

6 These premiums can sometimes cover the related ongoing cost of 'green' production, such as the income forgone from setting aside land for sensitive species (CSIRO 2000).

(Johnson 2000). Firms may also use labels to increase market share or to prevent rival companies from taking 'green' consumers.

Firms may use voluntary environmental labels to provide information about particular environmental attributes when consumers value these attributes. For example, if consumers value the use of recycled materials, and are sceptical of firms that say nothing, firms with products made largely (or totally) from recycled materials have an incentive to label this information to distinguish themselves from products made from smaller proportions of recycled inputs. These incentives can exist so long as the benefits to the firm from labelling outweigh the sometimes significant costs. In an extreme case, where the value to the firm of having some (albeit small) recycled content is high and the cost of labelling is low, all products except those made entirely from new materials may be labelled. This 'unfolding' of information can also occur across various product dimensions. For example, firms marketing products with more than one desirable characteristic (such as paper products that are made from recycled materials and are not rebleached), have incentives to label both.

Firms may also make claims about particular products when it is not clear that consumers value the particular environmental attribute of that product. They may use labels to make claims that strengthen the public image of the entire organisation and show that they are responsible corporate citizens (Lynch 1997). For example, if a firm's claims about particular environmental attributes suggest the overall environmental superiority of its product, then it may use environmental labels to attract consumers who are not interested in the product's environmental attributes in particular but who are otherwise 'green'. Some firms also use brand names or trademarks that suggest environmental sensitivity — for example, 'Nature's friend', 'Safe' and 'Nature's own'. This approach can be important in markets where consumer recognition and firm reputation are important.

Firms will be more likely to use environmental labelling voluntarily when they can positively distinguish their products from others through 'green' branding. If branding is ineffective, then the benefit of the label is reduced. This is because the firm's competitors can potentially share the benefits of having the information available to consumers without bearing any of the costs — that is, they can 'free ride'. Some firms may not provide information about the environmental impacts of their products, even when the information is positive, if they believe other firms can 'free ride'.

Labelling can be an effective marketing tool for firms when consumers desire the information, recognise the label, and trust its credibility and authority. When this is not the case, labels do not offer a firm any significant marketing advantage, even if the product is environmentally superior.

The potential desirability of environmental labelling for firms can also be limited if the costs of labelling are high. The costs can include those of inhouse research and development and any changes to existing labelling practices and systems (potentially including third party certification).

The adequacy and reliability of environmental claims by firms

In many cases, firms face strong market incentives to make accurate and reliable environmental claims about their products. However, firms may sometimes see a commercial advantage from withholding negative information, providing exaggerated or deceptive information or otherwise misleading consumers (Karl and Orwat 1999). This sort of situation could potentially occur when consumers are willing to pay a price premium for environmentally superior products, but the desirable environmental characteristics have 'credence' qualities, making it difficult for consumers to observe (or independently learn about) the environmental quality decisions of producers.

In practice, markets may limit the extent to which firms can deliberately mislead consumers in the long run.

Market response — consumers

Consumers may boycott certain products if they believe that firms are providing misleading information. This can be a particularly powerful discipline on firms when buyers and sellers are involved in ongoing relationships (Cason and Gangadharan 2000; Church 1994; McCluskey 2000a). Firms that have established a reputation for an environmentally superior product may be reluctant to risk this reputation by making ambiguous, or potentially misleading claims. Similarly, firms may hesitate to risk an established 'green' reputation across a range of products by making potentially misleading claims about a particular product.

The ability of consumers to damage a firm's reputation or to withdraw from further dealings is an important influence on firm behaviour (Klein 2000). This may be affected by the ability of consumers to evaluate claims independently, including by accessing information from secondary sources (box 2.5). It may also be affected by the availability of alternatives, especially when consumers can readily access information about their environmental characteristics.[7] The frequency of purchases can also be important. When buyers purchase a product either as a one-off or

[7] For example, consumers may not purchase a product if they are sceptical of the environmental claim made about it, and if (otherwise equivalent) alternative products with more reliable claims are readily available.

infrequently, it is more difficult for them to punish the seller (or producer) by not purchasing the product in the future.[8]

Box 2.5 **A role for secondary markets**

When consumers cannot effectively learn about product attributes or characteristics on their own, they can sometimes seek information from secondary sources. Secondary sources of information can be remunerated by producers (for example, where producers voluntarily pay to be certified by a third party) or consumers (for example, the subscription magazine *Consumer Choice*) or they may be independent (for example, information from mandatory reporting).

The effectiveness of secondary sources of information in these markets depends on the ability of these organisations (or 'agents') to determine what information is relevant, to test, inspect or evaluate the product or service or information about it; and to provide results to consumers in a meaningful way. This reflects a number of factors including:

- the type of product or attribute being considered — when there is significant quality variation or the quality is unstable, it may be difficult to evaluate information in a meaningful way;
- the cost to collect, interpret and disseminate information — when the cost is high relative to the price of the product, it may become prohibitively expensive;
- the ability to recoup these costs, so that the providers of information are rewarded for doing so — when information has a significant 'public good' aspect, it is difficult to exclude those who do not pay for information from benefiting from that information (so-called 'free riders'); and
- the perceived credibility of the information in the eyes of consumers — the credibility of a source of information partly reflects consumers' perceptions of that source's incentives to provide biased information. If consumers believe that the secondary source of information has 'sold out' to producers or other interest groups then they may not trust the information.

Secondary information sources may be effective sources of information for some environmental characteristics of some products. However, in many cases, secondary markets may fail to provide adequate information because of inherent difficulties in collecting the relevant environmental information (unless producers are required by law to provide it) and because the information may have significant public good aspects.

Market response — competitors

Competitors can potentially counter false claims. However, a competitor may choose to remain silent about a firm's potentially false claims, especially if its own

[8] However, the buyer may indirectly punish the producer by telling other potential buyers of their dissatisfaction with the product.

products share the same negative attribute. In addition, a competitor may not wish to counter a false or misleading claim because it has concerns over the possible consequences of retaliation or protracted legal action. Even when false claims have been effectively countered, all sellers may suffer negative side effects. If consumers believe that some proportion of claims are false, they may choose to ignore such information altogether or may restrict their attention to claims that have been substantiated and certified by independent third parties. Such certification is costly and may be imperfect.

Governments can impose penalties on producers that mislead consumers, via general legislative provisions that prohibit misleading claims — for example, provisions under the *Trade Practices Act (Cwth) 1974*. Governments can also require mandatory provision of environmental information (see chapter 4).

2.2 Summing up

Environmental marketing, particularly environmental labelling, has emerged as an increasingly important issue for some firms. This can occur when firms perceive an advantage in voluntarily providing environmental information about their product, or it may be in response to existing or expected mandatory requirements.

Consumers interested in buying 'green' products may need information on the environmental characteristics of products to inform their choice between competing alternatives. Consumers may be able to identify and/or evaluate independently the environmental characteristics of a product by inspecting it before purchase, or by learning through the consumption, use and disposal of the product (as with 'search' and 'experience' attributes). However, in many cases, it is difficult or prohibitively expensive for consumers to do so even after consumption (as with 'credence' attributes). This means that consumers must rely on environmental claims made by the firm or on information provided by third parties (including independent certification organisations and/or government).

Environmental labels can potentially affect the cost for consumers to obtain, store and evaluate information about particular environmental attributes of products and can also signal the importance of that information.

Existing environmental labelling arrangements may meet some consumers' needs in some product markets. However, environmental labels may not meet some consumers' needs. This may be because the information provided on the labels is inadequate, or is perceived to lack credibility or be unreliable, or when there is widespread confusion about the label and its meaning. This can have direct implications for consumers (in terms of them making informed choices) as well as indirect implications for producers and the environment (see Chapter 3).

3 The implications for consumers, producers and the environment

Interest by consumers, producers and government in the potential consequences of environmental labelling practices has intensified as the use of environmental labels has expanded. Two important aspects are:

- whether environmental labels effectively convey information about products' environmental impacts — particularly whether this information satisfies consumers' preferences for information about environmental attributes; and
- whether environmental labels effectively address communitywide environmental issues — including whether identifying the environmental impacts of products can encourage manufacturers and retailers to develop alternative 'greener' measures of production and consequently improve environmental outcomes.

In many cases, firms face strong market incentives to provide accurate and reliable information about the environmental attributes of their products However, sometimes these incentives are weakened — for example, when consumers are willing to pay a premium for environmentally 'friendly' products but it is difficult for them to independently identify and/or evaluate firm claims (Chapter 2). While most firms may behave 'honestly', a small minority may not.

This Chapter considers the potential problems that may arise from inadequate, unreliable or misleading environmental labels. A key consideration is the potential distortion to consumers' choices in terms of affecting market outcomes (section 3.1) and influencing the potential effectiveness of environmental labels to address communitywide environmental problems (section 3.2).

3.1 Environmental labels and market outcomes

Effective market operation relies in part on the availability of accurate, relevant and credible information about the products in that market. In some cases, environmental labels provide adequate information about the environmental qualities of a product and, consequently, have facilitated consumers' and producers' choices; however, this may not always be the case. Indeed, concerns regarding the adequacy and reliability of information provided by environmental labels in some

markets have been raised (for example, ACF 2000; CI 1999; Cornwall 1996; Davis 1997; Mack 1996; McCluskey 2000b; Thomas 1995; CI 1999).

This section discusses the potential implications of inadequate or unreliable environmental labels for consumers' and producers' decisions.

Implications for consumers' decisions

Inadequate or unreliable environmental labels may impede some consumers' choices between competing products or product features, particularly when consumers wish to include environmental information in their decision but have difficulty accessing this information elsewhere.

Even when labels provide information about the relevant issue, consumers may not perceive them as being credible or trustworthy. This is because the firm both promises the environmental 'friendliness' of the product (through the claims made on the label) and also reaps any corresponding returns (Klein 2000). Consumers may be sceptical of information provided by firms if they believe that the firm has an incentive to provide somewhat biased information. Indeed, they may view the label as 'cheap talk' unless it is supported by outside monitoring and/or verification (see Farrell 1993).

In addition, a proliferation of environmental claims, particularly those that are vague, inaccurate or misleading (box 3.1) can cause confusion among consumers. Confusion can occur even when there was no intention to mislead because consumers, producers and the community can interpret vague or nonspecific terms (such as 'environmentally safe', 'green' and 'biodegradable') and symbols used on labels in different ways. For example, consumers may believe that biodegradability is an environmentally superior feature of a product. However, biodegradability will only be beneficial if the product biodegrades in a reasonable time and into residues that do not harm the environment (TPC 1992). In a similar way, some consumers may be unaware that 'farm fresh' eggs can potentially be produced using battery cage methods (as opposed to free-range) (PC 1998).

A further complication is that an environmental claim may be literally true but invite the consumer to reach the wrong inference. For example, claims relating to the reduction or removal of substances that are known to be harmful (such as chlorofluorocarbons (CFC), heavy metals and excessive levels of phosphates) may accurately reflect that these substances have been removed from the product yet may also imply that the identified product provides some environmental benefit. However, the replacement substances may not be benign and may also be damaging, or the reduction may not provide a significant benefit (CCB 1993).

Box 3.1 **Vague, inaccurate or misleading claims**

In 1999 Consumers International carried out 'shopping surveys' in 10 countries (including Australia) to, among other things:

- provide a qualitative 'snapshot' of the existing types of environmental claims in several broad consumer product groups; and
- identify claims that were considered 'confusing and/or unverifiable, vague, woolly, specious, dishonest or misleading' (CI 1999, p. 8) in light of the (then draft) International Standard on 'self-declared' environmental labels, ISO 14021. The current Australian Standard AS/NZS ISO 14021 is based on the international standard — see box 2.3.

In Australia 52 products were surveyed: 11 were judged to comply with ISO 14021, 36 were non-compliant and 5 were 'borderline'.

ISO 14021 bans vague or nonspecific claims such as 'environmentally safe' and 'achieves sustainability'. Consumers International considered that several claims were vague or nonspecific, including the use of 'safe' as the name of a brand of tissue paper products and the claim that the paper used to make greeting cards comes from '… from sustainable replanted forests'. The word 'renewable' was used in a vague manner on three products: an airfreshener with 'a formula base of natural seaweed extract, a renewable resource', matches made from 'plantation timber. A renewable resource' and shampoo ingredients 'derived from pure renewable plant sources'.

ISO 14021 also places specific requirements on claims, including that claims should be accurate and not misleading; substantiated and verified; relevant to the particular product and used in only appropriate contexts; and unlikely to result in misinterpretation. Consumers International considered that a number of claims fell short of these requirements.

- The claim on kitchen towels that 'where possible recycled waste paper is used in our packaging' was considered inaccurate and misleading because it did not state the percentage of materials used that were recycled and consumers could be misled into thinking the whole product is recycled.
- The claim on kitchen towels that 'we use suppliers who conform to high environmental standards' was not considered to be substantiated or verified because it did not specify what the standards are.
- The claim on tissues that 'we have programmes directed at re-using the materials we use' was considered likely to result in misinterpretation because it could mean that the company could recycle all materials left over during manufacturing or that those materials are used in the product/packaging.
- The claim that a paint tin was 'recyclable' was considered to be irrelevant to the product because whether the tin is recycled is a minor environmental issue compared to the potential environmental impacts of the paint.

Source: CI (1999).

Claims about the 'recyclability' of products may also cause problems. For example, plastic garbage bags may be made of a material that is technically recyclable, but when used as intended will invariably not be recycled, instead ending up in disposal facilities such as landfill (CCB 1993). Alternatively, it may be technically possible to recycle certain products, but there may be no infrastructure to allow that recycling to occur (CCB 1993; IC 1996).

In addition claims that may be relevant at one time (for example, the claim 'no CFCs' when other competing products contained CFCs) may become less relevant and ultimately trivial over time (for example, following government prohibition of the use of CFCs under most circumstances in Australia) (EA 2000b and 2000c; TPC 1992). These complications may lead to further consumer suspicion and cynicism about environmental labelling more generally.

Both consumer mistrust and confusion can influence consumers' choices. Labels that consumers perceive as being not credible or biased, are likely to be discounted or ignored. In the extreme, consumers may no longer take any notice of any labels, even those provided by truthful firms with environmentally superior products. Alternatively, consumers may become confused to the point where they cannot distinguish between competing products.

Implications for producers' decisions

Inadequate or unreliable environmental labels can also influence producers' decisions. If consumers make decisions that they would not have made otherwise, firms may receive the wrong signals about which products to produce and how to produce them.[9] This can cause firms to allocate resources inefficiently — that is to supply products and/or use production processes that are inconsistent with consumer preferences.

When consumers cannot discriminate between competing environmental claims, it may make little difference (in terms of product sales) whether the claims accurately reflect genuine improved environmental performance or just repackaging of existing products. Consequently firms may have little incentive to invest in alternative 'greener' products or production techniques, especially when these techniques are more costly.[10] This may occur if consumers assume that all products have an

[9] False deductions, errors of judgement, or naivety may also lead some consumers to make decisions that they would not have made otherwise particularly when faced with complex problems, technically complicated information and labels that are difficult to interpret or understand.

[10] In some cases, firms may have commercial incentives to invest in 'green' products or production techniques regardless of the effectiveness of labelling — for example, when

'average' environmental quality (in the absence of other information) and consequently are prepared to pay a price corresponding to a product with 'average' environmental qualities. This purchasing behaviour limits the incentives of firms to sell (more costly) environmentally superior products because they are unable to command price premiums to cover the extra costs. In contrast, sellers of (less costly) environmentally inferior products can make a profit, enjoying the price associated with an 'average' quality product but with lower production costs. In an extreme case, only environmentally inferior products are sold (this is similar to the so-called 'lemons' problem (Akerlof (1970)).

When consumers doubt firms' environmental claims, third party evaluations may provide firms with additional and sometimes costly credibility (see chapter 4).

Firms may be further affected when competitors use misleading, unreliable or trivial claims 'strategically' (McCluskey 2000b). For example, a claim that a product is 'free' of a particular harmful substance may be used to attract a concerned public to a product, even if competing (unlabelled) products do not contain the substance. In response, competitors may also use the label to defend their market position. However, the costs of such 'defensive' labelling can sometimes be high, in which case the firms face the 'prisoner's dilemma' — all would be better off if none used labels, but no firm will unilaterally stop because of the advantage it has if it labels while others do not. This means that all firms will continue to incur the additional costs of labelling unless there is a 'credible commitment' between them to stop.

3.2 Environmental labels and environmental issues

When consumers signal the desirability of 'green' products, firms have an incentive to respond by adopting new or different technologies that lessen the environmental burden of the product.

The potential environmental improvements resulting from environmental labelling programs depend largely on the ability of environmental labels to provide appropriate incentives for product or process innovations. A key influence is whether consumer concern about environmental issues can be successfully converted into corresponding 'green' buying behaviour (Karl and Orwat 1999).

environmentally superior products are less expensive to make and/or are more profitable. Firms may also invest in alternative 'greener' products or production techniques to be 'good' corporate citizens or in response to mandatory requirements.

Evaluating the impact of environmental labels on environmental outcomes

It can be difficult to evaluate the environmental impact of many environmental labels (Cornwall 1996; Dosi and Moretto 1999; OECD 1997; O'Neil 1996; Salzman 1998). This is partly because it may be too early or too difficult to isolate the effects of environmental labels from other policies and programs, or from broader changes in technology, community preferences and production decisions (OECD 1997).[11] It is also because the inherent uncertainty about potential environmental impacts (both positive and negative) means that there will be some uncertainty over which products or production techniques are environmentally superior. This is particularly important given the scope and pace of changes in some technologies.

There is some evidence that particular labels have contributed to particular environmental improvements in some markets. Although it is always difficult to separate the effect of labels from other factors that may have contributed to the environmental improvement, energy rating labels (box 1.6) appear to have had a measurable impact on improving the energy efficiency of major appliances (Harrington and Wilkenfield 1997, NAEEEC 1999). Between 1993 and 1997, the average star rating for all identified labelled appliances increased — for example, the energy rating for identified refrigerators increased from 3.56 to 3.99 (NAEEEC 1999 p. 2). The sales weighted energy consumption of appliances also fell over the period, although there was some deviation in the downward trends from year to year for certain products. This occurred despite increases in the average capacities of some appliances (refrigerators and washing machines) (NAEEEC 1999). Energy rating labelling has been revised recently to increase its effectiveness — to provide a more meaningful guide to consumers, as well as to encourage manufacturers to keep improving the energy efficiency of appliances (NAEEEC 2000a, 2000i). It is projected that falling electricity consumption by household appliances under the new program will reduce greenhouse gas emissions (in carbon dioxide equivalents (CO_2–e)) by 26.0 megatonnes of CO_2–e (or 11 per cent less than if the program effectiveness remains at its present level) (AGO 1999 p. 22).[12]

However, the use of environmental labels to solve environmental problems has several potential limitations. These limitations can be magnified when existing environmental labels are inadequate or unreliable.

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11 One alternative is to evaluate the effects indirectly on the basis of consumer awareness, consumer demand for environmentally labelled products and/or changes in producer behaviour. However, these techniques are also subject to sometimes serious limitations.

12 The projected emissions are associated with the lifetime electricity consumption of appliances purchased new between 1999 and 2015 .

Consequently, it is more likely that environmental labels will be more effective if part of a combination of integrated and reinforcing economic instruments and policy tools (for examples of various tools available see IC 1997). As Karl and Orwat (1999, p. 111) note:

> … with regard to the current situation of advanced environmental policy, informational instruments in general and environmental labelling in particular do not seem to function as complete substitutes for economic instruments and direct regulation in every situation of environmental policy, but rather as appropriate additional instruments which provide further incentives for environmental damage reduction.

Potential limitations

Environmental labels may not solve environmental problems when consumers' individual decisions are inconsistent with communitywide environmental goals (Church 1994). These inconsistencies can occur when consumers are either:

- unwilling to include broad environmental considerations in their purchasing decisions — for example, if they make decisions based on their own private perceptions of costs and benefits and do not take account the effects of their decisions on others; or
- unable to include broad environmental considerations in their purchasing decisions — for example, if they cannot access the relevant information to make choices that support their preferences.

Consumers may include environmental considerations in their purchasing decisions if their choices result in the environmental outcomes that have a known, direct impact on their individual welfare or for altruistic reasons (box 2.1). The choice to do so can be influenced by a number of factors, including whether the consumer is particularly aware of, or concerned by, a particular environmental issue.

However, consumer awareness and concern may not always translate into changed purchasing behaviour (Church 1994; Teisl et al 2000). This is because many factors influence consumers' decisions and some of these may reduce individuals' willingness to make 'green' purchases (such as price, or the limited awareness or availability of environmentally superior goods) (Karl and Orwat 1999).

It may also be that individual consumers are unsure of the environmental effects of their purchasing decisions, perhaps because they have inadequate knowledge about existing alternatives and can afford only limited time or effort to find out more. In addition, there may be continuing uncertainty and lack of consensus on the impacts of some environmental attributes. For example, deciding whether paper is environmentally preferable to plastic is difficult — either choice may be 'correct'

depending on the circumstances (Church 1994). Alternatively, individuals may feel that their individual purchasing decisions will make little difference to the overall environmental outcome.

In addition, the potential effectiveness of environmental labels will depend on how important environmental information is to consumers compared with other influences on their decisions. For example, consumers may be unwilling to forgo lower costs or better overall product performance for improved environmental features. This can be particularly important when consumers tend to 'buy cheap' rather than 'buy green' (OECD 1997). The potential effectiveness of environmental labels will also depend on the importance of environmental information compared with that of other information presented on labels on the package (such as broad brand marketing, instructions for use, or nutritional content). This can be particularly important given the limited space available on many product labels.

Even when consumers wish to include environmental considerations in their purchasing decisions communitywide environmental goals may not be achieved if there is inadequate, unreliable or misleading information about the environmental attributes of products. The Australian Conservation Foundation (ACF 2000, Module 7, s. 4.1) notes:

> … for consumers to be able to fully exercise their market power requires an ability to make an informed choice. One difficulty for consumers is not being able to distinguish between valid and spurious claims of producers … Another even greater difficulty for consumers is that most of the information needed by consumers to make an informed choice is not supplied at all.

Inadequate or unreliable information can potentially distort consumers' choices (for example, by masking preferences for environmentally superior products). These 'mixed signals' can limit the incentives of firms to develop alternative 'greener' measures of production (which may have potentially improved environmental outcomes) (section 3.1).

An ongoing difficulty relates to the strategic purpose of environmental labelling itself — whether the label is viewed as an instrument of consumer policy or environmental policy. This is because the different motivations for labelling may potentially influence the type of labelling program developed and the focus and type of information provided by the label (Smith and Potter 1996). For example, in terms of the development of the EU Eco-label, Smith and Potter (1996 p. 74) noted:

> … the EU Eco-label was conceived as an instrument of consumer policy not environmental policy … the consequence of this consumer policy rationale has therefore led to working groups being set up where there is likely to be commercial gain from identifying environmental performance and not where environmental impacts are a pressing concern … working groups were set up to develop Eco-label criteria for

> cat litter and floor tiles but no working group was set up for cars. The washing machine label is one of a few sectors where areas of popular green consumerism and real environmental impacts actually coincide … had the Eco-label been designed as an instrument of environmental policy in the first place, the key features of its voluntary nature, commercial financing and industry control would have been seriously questioned.

The focus and type of information provided by the label can be especially important when consumers make decisions based on labels that focus on a single environmental issue, rather than on the overall environmental burden of the product across its lifecycle (box 2.2).

Perverse effects might occur if emphasising one environmental attribute encourages the consumption of products that reduce one type of environmental damage but also impose other environmental burdens (Church 1994). For example, 'recycled paper' labels that encourage the consumption (and production) of recycled paper may provide potential environmental benefits (in terms of limiting logging of native forests) but may also impose potential environmental costs (in terms of energy intensive recycling processes).

Perverse effects can also occur if the increased demand (or willingness to pay) for environmentally labelled products results in increased production and supply of labelled (and unlabelled) products (Dosi and Moretto 1998; Mattoo and Singh 1994; Sedjo and Swallow 1999, 2000). For example, there may be more environmental damage overall if the environmental improvements associated with each unit of the product (through product redesign) are offset by an increase in the total amount of products sold. Alternatively an environmental label on one product may project a positive image over the entire firm. This could lead to an expansion in the production of all of the firm's products, including any environmentally inferior products.

Another perverse effect could occur if labelling encourages the use of environmentally preferable production techniques by some producers, but makes the remaining producers less commercially viable. If these operations switch to alternative, environmentally inferior products or processes, the overall effect of the label may be to increase environmental damage. For example, labels indicating that a product has been sourced from a 'sustainable farming system' may encourage the development of some additional sustainably managed farms but may also reduce the commercial viability of other farming operations which might consequently switch to alternative, environmentally inferior ventures. This could worsen environmental outcomes (overall) if the damage caused by the environmentally inferior ventures is significant.

The type of label, including the underlying measurement and test procedures used, can also create problems to the extent that it influences the incentives created for producers. If the criteria are set too low then some firms that may otherwise have exceeded the standards may instead only implement (cheaper) 'deemed-to-satisfy' solutions which could work against improving environmental performance (PC 1999). In a similar way, seal-of-approval labels may provide fewer incentives for further environmental product improvements once a product has been awarded the label (unless there is ongoing monitoring and review) (Karl and Orwat 1999).

3.3 Summing up

There has been growing interest in the potential consequences of environmental labelling practices as the use of environmental labels has expanded.

Some environmental labels appear to facilitate consumers' choices and/or have some positive environmental effects; however, this may not always be the case. Indeed perverse effects may sometimes occur which increase environmental damage.

Particular problems occur when existing environmental labels are inadequate or unreliable, or when there is widespread confusion about the label and its meaning. These can have direct implications for consumers in terms of making informed choices.

There may also be indirect implications for producers and the environment. If consumers' underlying preferences are masked firms may receive distorted signals about what to produce and how to produce it. This could lead firms to allocate resources inefficiently. Distortions to consumer choice can also influence whether environmental labels effectively address communitywide environmental issues. 'Mixed signals' from consumers can limit the incentives of firms to develop alternative 'greener' measures of production (which may have improved environmental outcomes), especially when these techniques are more costly.

If existing environmental labelling practices significantly impede consumers' choices, then government may intervene. However, government intervention may not always be warranted. Rather government must rigorously assess whether the anticipated communitywide benefits of a response exceed anticipated communitywide costs. It must also consider the distribution of these benefits and costs (see chapter 4).

4 Improving the effectiveness of environmental labelling

In some markets, firms have commercial incentives to provide relevant, accurate and truthful environmental labels. However, problems may exist, especially when firms have an incentive to provide exaggerated, inaccurate or misleading claims, or to withhold information about the potential environmental impacts of products. An additional complication may occur if consumers become cynical about, or lose trust in, environmental labelling more broadly.

This chapter considers how existing Australian regulatory practices and institutions can facilitate effective environmental labelling practices, and indicates potential complements or alternatives. These are discussed in terms of measures that:

- facilitate accurate and reliable environmental claims; and/or
- provide consumers with additional, credible information about the potential environmental impacts of products.

Whether particular problems are best handled through general or specific regulation, or perhaps by the market, is a complex matter, not in the least because it can be difficult to evaluate the impact of environmental labels on consumer choice and the environment (see chapter 3).

A comparison of the expected benefits and costs of alternatives is crucial. The focus should be on facilitating effective environmental labelling arrangements, not on supplying consumers with 'perfect' or 'complete' information about the environmental impacts of products. Collecting information is not costless, and people can only remember and process a limited amount of information. Thus information should be provided if the expected benefits of additional information outweigh its costs.

4.1 Facilitating accurate and reliable claims

Many firms face strong market incentives to provide accurate and reliable information about the environmental attributes of their products. However, sometimes these incentives may be weakened. Indeed in some circumstances, there

can be incentives for firms to exaggerate or provide misleading or deceptive information; for example, when the benefits for the firm of doing so (say through increased price premiums) outweigh any expected costs (say through government- (or market-) imposed penalties on producers that mislead consumers) (section 2.1).

This section considers two ways to improve environmental labelling practices: a general ban on misleading or deceptive claims and mandatory requirements for firms to provide information about specific environmental characteristics of the product on its label.

A general prohibition of misleading or deceptive claims

Environmental labels are subject to legislative provisions regarding misleading and deceptive conduct, which are contained in *Trade Practices Act (Cwth) 1974* and equivalent State and Territory legislation.

The Trade Practices Act — consumer protection provisions

The Trade Practices Act (TPA) contains general consumer protection provisions that, among other things:

- prohibit conduct by business that is misleading or deceptive, or likely to mislead or deceive (s. 52);
- prohibit specific practices, such as falsely representing goods and services as being of a particular standard, quality, value or grade (s. 53A and s. 53AA) or representing goods or services as having sponsorship, approval, performance characteristics, accessories, uses or benefits they do not have (s. 53C); and
- prohibit conduct that is liable to mislead the public as to the nature or characteristics of goods and services (s. 55).

The Australian Competition and Consumer Commission (ACCC) investigates alleged breaches of the TPA (box 4.1). It is more likely to pursue complaints when the matter involves:

- an apparent blatant disregard for the law;
- a history of contravention of the law, including overseas contraventions;
- significant public detriment;
- the potential for action to have a worthwhile educative or deterrent effect;
- a significant new market issue; and
- a likely outcome that would justify the use of resources (ACCC 2000b).

Box 4.1 **The ACCC and BOC Gases**

In technical and promotional materials for FR 12™ airconditioning installers, BOC Gases used the logo Ozone Care™, the words 'green', 'green air conditioning' and 'environmentally preferred' and the image of a frog. These representations were unqualified and, after ACCC inquiries, BOC Gases agreed to stop making them.

The ACCC's advice included that:

- the use of terms such as 'environmentally friendly' should be avoided because it is unlikely that a product could justify a claim that it is completely free of adverse environmental effects;
- the use of particular images may make a sweeping claim of environmental benefit that is misleading; and
- an environmental claim should explain the significance of the benefit and be able to substantiate the claim.

BOC Gases agreed to remove the frog image and the Ozone Care™ logo; cease using general claims such as 'environmentally preferred' and 'green'; clarify environmental and performance comparisons; and implement an internal policy to prevent future misleading environmental representations.

Source: ACCC (1999).

The onus of proof is on the complainant, which means that they have to prove that the alleged representations were made, that the representations were misleading and that they relied on them. Where penalties are sought for breaches of s. 53, there is an onus on the complainant to prove the allegations beyond a reasonable doubt (Miller 2000). However, the TPA also prohibits businesses making representations about the happening of any future event without reasonable grounds (s. 51A). This may reduce the burden of proof in some instances.

A breach of any of the specific prohibited practices (under s. 53 and s. 55) can result in a fine of up to $200 000 for a corporation and $40 000 for an individual. In addition, an injunction may be issued (s. 80), a disclosure order may be made (s. 80A), damages may be awarded (s. 82) or remedial orders made (s. 87). No fine can be imposed (s. 79[1]) for a breach of section 52, but all of the above remedies may be imposed (Miller 2000).

In 1992 the ACCC (then the Trade Practices Commission) released guidelines that outlined its policy on what constitutes misleading conduct and on the approach it will take in carrying out its functions. These were designed to promote compliance with the TPA by firms that make claims about the environmental impacts of products and to make consumers aware of its position on these claims (TPC 1992). The ACCC may also consider appropriate industry codes of practice and effective

compliance systems (TPC 1992).[13] Although guidelines and industry codes can potentially reduce uncertainty for firms and consumers, some concerns exist regarding their effectiveness, particularly for consumers (for example, see Kangun and Polonsky 1995).

State legislation — consumer protection provisions

Consumer protection provisions are also found in various State and Territory legislation, although instances of these provisions being used in relation to alleged misleading or deceptive environmental labels are rare. In contrast to the TPA, most State legislation places the onus of proof on the organisation making the claim. In Western Australia, producers must show that either they did not publish the label or claim or they had no reason to think that it was false (*Health Act 1911*, s. 246R). New South Wales recently strengthened its legislation with regard to claims on labels and businesses may now be required to provide the information to substantiate their claims or representations (*Fair Trading Act 1987* and *Fair Trading Amendment (Substantiation of Claims) Act 2000*).

The effectiveness of a general prohibition on misleading or deceptive claims

A detailed evaluation of the effectiveness of the TPA and equivalent State and Territory legislation in improving the accuracy and truthfulness of environmental claims (or at least limiting the prevalence of misleading or deceptive claims) is beyond the scope of this paper. However, it is useful to consider general principles that may influence the effectiveness of general legislative provisions in dealing with environmental labels in particular.

A general ban on misleading or deceptive claims will effectively deal with environmental labelling if it reduces the incentives of firms to make exaggerated or deceptive environmental claims or to otherwise mislead consumers.

The relative size and distribution of the benefits and costs of greater compliance partly depends on the perceived scale of the problem and on how greater compliance is achieved.

[13] Both the guidelines and industry codes do not have force of law. The Courts apply the law according to the particular facts and circumstances of each case and the principles established by precedent.

The scale of the problem

The potential benefits of greater compliance are more likely to be high when existing claims misstate serious environmental consequences and when consumers place a priority on that information when making decisions but cannot easily verify claims via alternative sources. In contrast, efforts to improve compliance are unlikely to influence firms that have market incentives to provide accurate and truthful environmental labels. In a similar way, the significant costs of enforcement may render a ban inappropriate for unimportant or immaterial claims.

Achieving greater compliance

More rigorous policing and more extensive and detailed monitoring of environmental claims by both consumers and regulatory bodies can improve compliance if it increases the likelihood of identifying firms which provide misleading information. The relative size of the sanctions imposed on those firms that are 'caught' (for example, mandatory controls or fines) can also be a factor, because it influences the relative magnitude of the deterrent.

Rigorous policing and enforcement can also encourage greater consumer confidence in the reliability of environmental labels that remain in the market. When consumers are assured that the system effectively removes labels that are inaccurate or misleading, they may be more confident that the remaining labels are credible and truthful.

However, more rigorous policing and monitoring may impose potentially significant time and resource costs on consumers and governments, given the nature of many environmental claims and the existing difficulties that consumers (and regulators) face in substantiating or refuting them.

Providing specific guidance to producers (and consumers) about how potentially false or misleading environmental claims will be approached and enforced under general provisions may also improve compliance (for example, see TPC 1992). This may be effective if firms unintentionally breach general provisions and are willing to change their labelling practices in response to the new information presented in the guidelines. The existence of guidelines will not in itself prevent intentionally misleading claims.

An alternative is to work with industry to develop self-regulating codes of practice that are consistent with general provisions and that producers voluntarily adopt (for example, see TPC 1992; ORR 1994). Several industry codes of practice and

standards relating to environmental claims and labelling exist in Australia (see chapter 1).

Industry codes and standards may also limit consumer confusion about what claims mean, because they may encourage greater consistency in the use of environmental descriptors, symbols and logos (ones that satisfy general provisions) without legally requiring firms to use descriptors that are inappropriate to their particular product or irrelevant to their consumers. They can also allow the increased flexibility necessary for product innovation, diversification and development and may be more easily and quickly changed to suit changing circumstances (ORR 1994).

However, the effectiveness of industry codes and standards may be limited if the codes are inconsistent with general provisions or if the codes are not adopted by industry more broadly. It is unclear whether a voluntary code that is consistent with general provisions will be effective if a large proportion of firms, or a significant firm, continue to operate outside the code.

A possible extension to industry codes and standards is voluntary third party environmental labelling programs. An *independent* third party program could provide the framework to ensure environmental labels are well within general provisions. This is because the endorsing organisation has a long run incentive to maintain the integrity of its label and, consequently, an incentive to monitor the compliance of endorsed products to ensure continued satisfactory performance (section 4.2).

The relative effectiveness of a general ban to limit the prevalence of false or misleading environmental labels in particular needs to be considered in the context of the likely effectiveness of alternatives. Governments could make specific requirements in relation to certain environmental claims by requiring producers to apply a label that provides specific information about specific environmental attributes.[14] Alternatively, the market may provide effective discipline in some cases (see chapter 2). Voluntary third party programs operated by respected consumer or environmental groups may provide credible, independent judgments about environmental characteristics of some products (section 4.2) so unsubstantiated claims have little influence on consumers' decisions.

[14] These may themselves be subject to general prohibitions. For example, the Australian Greenhouse Office can refer energy efficiency claims that it believes to be misleading to the ACCC for consideration and possible further investigation under the cooperation agreement between the two organisations (ACCC 2000b).

Specific labelling requirements

A number of environmental labels are subject to specific labelling requirements in Australia (see chapter 1). Specific labelling requirements may potentially improve the accuracy and reliability of environmental labels. They can also force firms to disclose information about a perceived negative attribute in cases where they may otherwise have little incentive to do so (section 4.2).

The effectiveness of specific labelling requirements

Specific labelling requirements will only be effective if they provide consumers with information that better meets their information needs — for example, information that clarifies any confusion or misunderstanding. This depends on:

- whether firms comply with specific labelling requirements in their labelling practices; and
- whether consumers interpret specific labelling requirements in the way in which firms (or regulators) expect.

A key influence is the regulatory approach and design (for example, see ORR 1998 and 1995; IC 1996).

Specifying particular words or styles or types of warning on labels may sometimes be appropriate if their meanings are clear and unambiguous to consumers (ORR 1994). Some environmental descriptions may be unambiguous. For example, many consumers would interpret a claim that a product contains 'no added …' to mean that the substance was not added during production, but could be present in the product (say, through contamination of raw materials). In a similar way, many consumers would interpret the claim of 'free range' eggs to mean that the eggs are not produced from battery caged chickens.

However, many environmental descriptions (especially those using scientific or technical terms) could be ambiguous or interpreted differently by different consumers. A claim that a product is 'free' of a particular substance, for example, could be interpreted to mean that it contains absolutely none of the particular substance, background levels of the substance, or less than some other threshold level of the substance. Alternatively, consumers may interpret a claim that a product is 'recyclable' as meaning that the product can be effectively recycled using existing recycling techniques, when the claim actually means that it is technically possible to recycle, even if the techniques for recycling to occur are not currently available. If there is ambiguity, prescribing particular meanings to particular environmental descriptions may cause greater confusion or may not convey the

message intended, unless supported by effective education and public awareness campaigns.[15]

In addition, overly prescriptive requirements can impose significant costs on firms. For example, the costs of altering existing labelling practices even if the information being conveyed is similar or identical to the current labels. This can become particularly important when different countries or regions require different labels, in which case firms may need to make a number of distinct labels and hold separate inventories (IC 1996).

Whether consumers actually read the label or take the information provided by the label into account in their decision making is also important. They may not consider the information, for example, when poor label design makes it difficult for them to comprehend the label (perhaps because they cannot read the label or because several pieces of information 'crowd out' each other) (IC 1996).

Potential costs

The potential net benefits of specific labelling requirements fall as costs imposed on producers, government and the community increase. These include costs related to:

- altering existing labelling practices and adopting new systems to satisfy labelling requirements, government monitoring, policing and enforcement costs;
- the possibility that some consumers may become confused or inaccurately interpret the label; or
- the possibility that the label provides producers with incentives to undertake socially undesirable changes in production (for example, see section 3.2).

The size, and distribution, of these costs will vary from case to case. This reinforces the need for rigorous assessment of these costs and comparison with potential benefits before such initiatives are undertaken.

4.2 Providing additional, credible information

Some firms may not voluntarily provide information about the environmental impacts of their products, regardless of whether the information is negative or

[15] Information and public awareness programs can offer several benefits to consumers and the community. They may complement existing labelling schemes by addressing misinformation and misconceptions that may exist (for example, about what each word means). They may also encourage more informed public debate on these issues and the environment more generally.

positive. Even when producers provide information voluntarily, consumers may be confused about its meaning or sceptical of its reliability (section 3.2).

This section considers how third party programs can potentially improve market outcomes by providing additional, credible information about the environmental impacts of some products.

Third party environmental labelling programs

Environmental labels can potentially be subject to a wide range of third party programs. These include voluntary certification and endorsement of products as well as the mandatory disclosure of specific environmental information and mandatory hazardous substances warnings (see chapter 1). Each seeks to provide consumers with credible, independent judgments on particular environmental characteristics of the relevant product.

The effectiveness of third party programs

The relative effectiveness of third party programs depends in part on the general level of environmental awareness of consumers (individual consumers or institutional and government procurers). Third party labels in Sweden (such as the Nordic Swan and Swedish Environmental Choice), for example, have had a significant market impact on some high turnover consumer goods sold in large retail chains, largely as a result of pre-existing demand for environmentally preferable products (OECD 1997). In Australia, the ENERGY STAR® program promotes the purchase and use of ENERGY STAR® compliant office equipment (including computers, printers, faxes and photocopiers) for government procurement and institutional purchasing (NAEEEC 2000g and 2000h).[16]

The relative effectiveness of third party programs will also depend on whether the program provides consumers with additional or more credible information than existing (non-verified) producer claims. Labels awarded through third party programs are unlikely to provide significant benefits to consumers who are already satisfied with existing producer claims.

In contrast, third party programs are more likely to be effective if consumers are dissatisfied with existing producer claims, and if the label:

- is well recognised and perceived by consumers as being credible; and

[16] The ENERGY STAR® program is funded by the National Appliance and Equipment Energy Efficiency Committee and managed by the New South Wales Sustainable Energy Development Authority (NAEEEC 2000h).

- provides consumers with additional information about the environmental performance of products.

The administration of the program, including its independence and transparency, is often important (see Karl and Orwat 1999).

Public awareness and credibility

The public awareness and credibility of third party programs can influence whether consumers use labels in their decision making. A third party label with a strong market presence may have the potential for reaching and influencing more consumers. In contrast the value of the information provided by a third party program may be limited if consumers are either unaware of what the label means or do not believe that it is credible.

This can be particularly important to voluntary third party labelling programs. Consumers are more likely to purchase a product endorsed by a recognised symbol, other things (say price) being equal, if they believe that it is environmentally superior to other products that bear only the manufacturer's claim. If a program has limited visibility (or credibility), then firms have little incentive to apply for the label, which may further diminish its exposure (or credibility).

Consumers may be more aware of mandatory schemes simply because they are more visible in the marketplace because all similar products must carry the label (USEPA 1998). The Energy Star Rating Label, for example, is widely recognised in the marketplace (box 2.4). However, long standing, well established voluntary programs can also have a strong market presence because the label has been in the market for a significant time, because the label has been awarded across a broad range of products, or because consumers recognise the additional activities of the endorsing organisation.

Credibility may potentially be a problem common to voluntary and mandatory schemes. This is because mandatory processes may also be 'captured' by particular interest groups or influenced by political sensitivities while private operators of voluntary programs may face inherent conflict between independent testing and certification and the need to generate revenue. However, a voluntary program, run by a respected consumer or environmental organisation, may be perceived as equally or even more credible than a mandatory one because it is more immune to political pressures (USEPA 1998). Alternatively the market entry of additional (private) voluntary programs may increase their perceived credibility over time if different programs compete with each other based on their credibility (Karl and Orwat 1999).

Another issue relevant to voluntary third party schemes is whether the labels are:

- 'rationed', so that only a small number of products receive labels; or
- awarded to any applicant that meets defined standards or criteria.

This choice can potentially affect the value that consumers place on the label, and may consequently influence producers' incentives to apply for it. This occurs because the proportion of products in a product group that receives the label can potentially affect the label's market visibility, perceived credibility and/or perceived 'exclusivity'. Restricting the number of products that receive endorsement, for example, may increase the perceived credibility and exclusivity of the label (because the label appears 'harder to get'), but this may be at the expense of broad consumer awareness.

Existing voluntary third party criteria (worldwide) are generally set so less than 30 per cent of products in a product category can obtain the label. However, existing programs covering over 30 per cent of the market may be more successful in practice (for example, detergents in Sweden and recycled paper in Japan) (OECD 1997). These programs tend to become a *de facto* environmental standard (OECD 1997).

The information presented on the label can also be important. Whether the environmental issues involved are local, national or global can have important consequences in terms of the reach and the perceived relevance of the label.

Providing additional information

Third party environmental labelling programs must provide additional (or more credible) information to that already available to consumers to be relevant to consumers' decision making.

Mandatory labelling requirements are unlikely to provide additional information to consumers if firms have market incentives to disclose the information that consumers need, or if the information is readily available from another source. In contrast, mandatory requirements are more likely to provide additional information when the market size or other constraints limit firms' incentives to disclose the information voluntarily (either as a claim or through a voluntary third party program). For example, if all products of a particular product group are made with a potentially harmful or hazardous ingredient, firms may have a limited incentive to disclose the information voluntarily. In these cases, mandatory schemes may provide greater certainty that particular information (that is, the information required on the label) will be provided. This can be particularly important when the use of a product involves risks that are significant or potentially irreversible. In

these circumstances, mandatory labelling requirements (including warnings) may be highly valued by consumers (Ogus 1994).[17]

In addition, mandatory programs may provide additional information that allows consumers to better assess the range and average environmental quality of products within a product group.[18] With voluntary labelling, consumers may not learn much about the average environmental quality of products in a product group because only environmentally superior firms have incentives to make claims (see chapter 3).

The type of label, including the underlying measurement and test procedures used, can influence whether the label provides additional information. For example, the New South Wales commercial building rating scheme provides a five star rating system that compares energy use to the size of the building. However, the same information could easily be obtained by any firm wishing to consider the energy requirements of a building (PC 1999). Nevertheless the system does provide a standard measure of energy efficiency in commercial buildings, allowing easy comparisons between buildings. This system is also likely to impose few costs on participating firms (PC 1999).

Award criteria

The level at which the standard (and the corresponding award criteria) is set can also have a significant influence on the potential effectiveness of third party programs. The value of the information provided by a third party program may be limited if the criteria on which the label is awarded are outdated, irrelevant or unduly restrictive. This reinforces the imperative for ongoing review and revaluation.

Outdated labels can be a problem because technological change over time and the associated continual improvements in environmental performance may mean that more products perform better and are consequently deemed environmentally superior. As more products are deemed environmentally superior, the ability of consumers to differentiate between competing brands on the basis of environmental performance may diminish. The energy rating label (box 1.6) has been in use in Australia for more than 10 years. Over that time continual improvements in appliance performance have resulted in a 'cluster' of energy star ratings at the top of

[17] When risks are associated with a product, a mandatory warning label is one of a number of options available to government. Other alternatives include licensing schemes, product standards, and moratoriums and bans (for a practical example, see Dolling and Peterson 2000).

[18] However, the potential effectiveness of mandatory programs to provide additional information is undermined when enforcement is inherently difficult or prohibitively costly (given the limitations of detection and analysis methods, and the costs of applying them, for example).

the range. The recent change to a tougher standard may better increase the spread of ratings across the range (NAEEEC 2000a).

Unduly restrictive labels can also be ineffective because few or no products perform well enough to satisfy many criteria. Although this provides the consumer with some information — that is, that a small number of products are exceptional and that most products in that product group perform badly — it provides limited information about the environmental quality of the majority of the products (that are environmentally inferior). This may be a particular concern to environmentally aware consumers whose choices are limited by their budget.

Voluntary programs may be more likely to ensure that performance criteria remain relevant to changing circumstances because the perception of the integrity of the label will influence its credibility and, ultimately, its ongoing success. In contrast, mandatory programs may be constrained by government decision-making processes, institutional bureaucracies, coordination difficulties or 'regulatory' capture. Mandatory programs may also be vulnerable to political pressures, and 'undue' influences of diverse interest groups, including environmental and industry pressure groups and consumer organisations (for example, Karl and Orwat 1999).

An additional consideration is whether the label:

- rates the environmental quality of a product on a scale from low to high (for example, the energy star); or
- provides a discrete evaluation of the environmental superiority or otherwise of a product (for example, a seal of approval) (see chapter 1).

Both can be effective. Discrete evaluations may be easy for consumers to understand and may allow faster comparisons between products — products either have the label or not. However, such 'black and white' assessments can be at the expense of detail, which can be a particular problem if the environmental superiority of a product is a matter of degree or tradeoffs. Discrete evaluations may also reduce firms' incentives to improve products (except at the margins). For example, products that perform significantly better than the criteria (and perhaps better than others that have been awarded the label) may not be recognised. This means that firms at the forefront of environmentally preferable technology may have less incentive to invest in new environmental techniques because they are unable to successfully communicate this superior product quality to consumers**.**

In contrast, evaluations that rate products across a range provide consumers with a significant amount of information, but consumers have to interpret it — a process that can be costly and time consuming, and can result in confusion. A ratings system may also encourage innovation by environmentally superior firms because it

further rewards better performance (products receive a higher rating and, consequently, a competitive advantage).

International trade

A further question concerning third party environmental labelling programs relates to the potential implications of domestic programs for international trade. This issue has become increasingly important, especially as trade in goods has become increasingly global (for example, see Karl and Orwat 1999; OECD 1997; USEPA 1998).

A potential concern is that domestic environmental labelling requirements, particularly mandatory requirements, may act as trade barriers into domestic markets, especially for firms in developing countries. Environmental criteria, which require specific processes and production methods, may especially hamper foreign producers in gaining access to the national label. This may occur because the specific inputs, production technologies and production processes are unavailable (for example, in some developing countries) or inappropriate (for example, in countries that have different environmental priorities or capacities). In addition, there may be a lack of information available to foreign producers about domestic environmental labelling requirements, or limited opportunity for them to participate in the development of environmental criteria or standards (Karl and Orwat 1999).

Effective domestic accreditation and labelling schemes may also be necessary for domestic firms that wish to access lucrative foreign markets, especially given global trends of increasing critical appraisal of the environmental friendliness of production systems (Karl and Orwat 1999; OECD 1997; USEPA 1998).

Potential costs

The potential size and distribution of costs of the third party verification programs are important. The size of the costs depends on a number of factors, including the type, size and scope of the scheme, the program method and certification processes, and the existing production practices and techniques. The potential implementation costs of mandatory labelling of genetically modified foods, for example, may fall if firms ‘track’ the genetic status of their ingredients up to a ‘reasonable’ point (perhaps using a common law ‘due diligence’ standard of care) rather than undertaking a complete assessment of all ingredients (see KPMG 1999 and 2000). Similarly a modified lifecycle analysis (perhaps focusing on key stages of a product’s lifecycle) may provide a less costly alternative to a full lifecycle analysis in some products (box 2.2).

Mandatory third party programs may cost more than similar voluntary ones because of the increased scope involved in covering all producers in an industry. With a mandatory program, every producer will have to apply for, verify and manufacture labels. In addition, the costs of greater monitoring and enforcement will increase because the entire product market is under regulation. In contrast, the costs of testing and verification under voluntary schemes fall to only those firms voluntarily applying for the label. However, these costs may be high — for example, if there is limited competition between certifiers, private certifying organisations may offer too few certificates and/or charge prices that are too high (Shaked and Sutton 1981).

The costs of third party programs are also more likely to increase when products are unique, so a separate assessment must be undertaken for each label — for example, assessing the energy efficiency of individual commercial buildings (and houses) (PC 1999). In addition ongoing administration and enforcement costs in these cases are likely to be higher than for 'standard' products (such as household appliances) which require fewer (unique) assessments.

Many of the costs of third party programs will be passed on to consumers — government costs through taxes and producer costs through product prices (depending on the demand for products). However, it may be possible to achieve improvements in efficiency (and thus reduce costs) over time as operators become more experienced in certification practices.

4.3 Summing up

Governments and third parties can facilitate effective environmental labelling practices in a number of ways. These include:

- the development of effective voluntary third party testing, verification and certification programs;
- the use of mandatory labelling requirements (for example, hazard warnings and mandatory information disclosure); and
- the use of general provisions that ban misleading or deceptive claims (for example, under the Trade Practices Act).

It is difficult to develop many 'hard-and-fast' rules about which is more appropriate — the choice will depend on the facts of each case.

The relative size and distribution of costs and benefits will be important, including the extent to which costs and benefits are passed on to consumers, firms or the wider community (through changes in the environment, for example).

The relative size and distribution of the benefits and costs may be clear in some cases — for example, the costs associated with mandatory requirements for environmental labelling that confirms consumers' correct assumptions about the products (assumptions derived from either existing labels or credible third party organisations) are likely to outweigh any benefits. In contrast, the costs of mandatory labelling of hazardous substances in markets where firms have little incentive to provide such information voluntarily are likely to be small compared with the benefits of enhanced safety or other environmental improvements. Consequently, mandatory labelling requirements to disclose safety information are likely to be appropriate.

In other cases, the relative size and distribution of the benefits and costs are less clear; for example, although it is likely that many of the costs will be passed onto consumers, the share that individual consumers bear may differ. In a similar way, the size of the potential benefits accruing to individuals (or groups) from more effective labelling practices may vary among individuals (or groups). The relative size and distribution of benefits and costs may also change over time. This reinforces the need for ongoing monitoring and periodic review.

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