

Improving the Environmental Performance of Small to
Medium-sized Enterprises: Reviews of Potential
Approaches

APPENDICES: PART II

***EXTENDED PRODUCER RESPONSIBILITY
OPTIONS FOR SMALL TO MEDIUM
ENTERPRISES***

APPENDIX 1: EPR: DEFINITIONS, AIMS AND PRINCIPLES

1. Definition

The term EPR was first developed by the Swedish Professor Thomas Lindhqvist and presented in 1992

Extended Producer Responsibility is an environmental protection strategy to reach an environmental objective of a decreased total environmental impact from a product, by making the manufacturer of the product responsible for the entire life-cycle of the product and especially for the take-back, recycling and final disposal of the product. The Extended Producer Responsibility is implemented through administrative, economic and informative instruments. The composition of these instruments determines the precise form of the Extended Producer Responsibility.²

The OECD definition of EPR is internationally accepted and broad

'a concept where manufacturers and importers of products should bear a significant degree of responsibility for the environmental impacts of their product throughout the product life-cycle, including upstream impacts inherent in the selection of materials for the products, impacts from manufacturers' production process itself, and downstream impacts from the use and disposal of the products.'

It is important to note that there is still some debate over the definition of EPR. For example, some jurisdictions have interpreted EPR as manufacturers taking responsibility for used packaging and products (e.g., Japan, Australia), and other jurisdictions (e.g., Sweden) interpret EPR to mean that producers should assume responsibility for manufactured or imported goods throughout their life cycle, including the waste phase.

Who Is the Producer?

Existing and emerging EPR policies do not share a common definition of "producer." There is considerable variation in how the producer is identified, although usually it is the company whose brand name appears on the product.

The 'producer' can be taken to be the brand owner or it can mean the most responsible entity which may include but is not limited to the brandowner, manufacturer, franchisee, assembler, filler, distributor, retailer or first importer of the product who sells, offers for sale, or distributes the product in or into a jurisdiction

In Germany, green dot fees are generally paid by the owner of the brand name - the filler of the packaging, not the company that produces the package. Thus, in the case of detergents, the "producer" would be a company like Procter & Gamble or Unilever. In the United Kingdom, a system is evolving in which responsibility is shared by all the actors in the product chain, each of which is allocated a percentage of the responsibility for collecting and recycling packaging waste.

The entity designated as the responsible party can also depend on the product. In the U.S. Ni-Cd battery take-back program, industry has allocated financial responsibility among the producer of the battery cell, the producer of the battery pack, and the producer of the product containing the battery.

If one of the main points of EPR is to encourage production of less wasteful products, it can be argued that the policy's effectiveness is enhanced when the producer is identified as the entity with most authority over materials selection and product design (or with most leverage over whoever exercises that authority). In such a system, this producer bears ultimate responsibility for the environmental impacts of its products, but responsibility can also be shared to varying degrees with others in the product chain.

In the WA Government's 2005 policy statement on EPR, the producer of a product is defined as including a supplier of the product in Western Australia, or a person having a proprietary interest in the name under which the product is supplied in WA

2. Aims

As originally conceived, EPR has broad aims as a policy tool:

- Enable producers to contribute to a more ecologically sustainable society by designing and supplying products that provide the greatest functionality and longest life with inherently safe materials and the least use of resources and with safe chemicals.
- Reduce public costs by shifting costs of end-of-life product management from taxpayers to manufacturers;
- Prevent the disposal of used products in landfills and incinerators, their recycling under sub-standard conditions, or their export to developing countries.
- Ensure responsibility is placed on the party with the greatest ability to reduce the environmental and human health impacts of products: the brand owner.

Environmental groups and others have high expectations of EPR as a critical tool for sustainable development

EPR is a tool to engage producers in eradicating social injustice. Many products used today are either disposed in landfills and incinerators that tend to reside in or near low income communities and communities of color, or they are exported to developing countries with inadequate health and labor standards. As a result, people in developed and developing countries are exposed to toxic materials that cause cancer, reproductive problems and other irreversible diseases. EPR can reverse this trend by ensuring that producers make safe products, take them back and recycle them responsibly.

EPR is a tool to moderate resource consumption. Consumer products are typically designed for one time use, to be thrown out by consumers at the end of life and disposed of in landfills and incinerators. This has led to unsustainable consumption patterns that are depleting the world's stock of raw materials at a rate faster than nature can sustain. EPR encourages producers to create products that last longer and manage materials so they are continually reused and recycled in a closed loop system.

EPR is a tool to achieve better product design. Many of the materials used in products are harmful to human health. As a result, harmful pollutants are dispersed from products during production, use and disposal. Society as a whole pays for the added costs of these impacts, whether it be in higher health care bills or increased waste management expenses. When producers pay for managing product waste at end of life, they have an incentive to design products that are less toxic, less over-packaged, longer lasting and designed for reuse and recycling.

EPR is a tool to achieve a vibrant economy. EPR will lead to product innovation, cost savings, reduced environmental liabilities and increased customer satisfaction. It will also increase competitiveness in a global marketplace where European and Japanese companies are already adapting to legally binding EPR requirements.

EPR is a tool to create safer work places and more jobs. EPR sets a standard for cleaner raw materials that are safer to handle in workplace facilities. Up the supply chain, brand owners hold their suppliers to a higher standard of environmental performance and workplace safety. EPR also creates new, meaningful jobs in redesign, repair, reuse and recycling, while recognizing the need for a Just Transition towards clean production. Workers must not bear the costs of a transition towards clean production.

Extended Producer Responsibility has many look-alikes -- accept no substitutes!

Source: Grass Roots Recycling Network, USA

3. Principles

Lindhqvist has set out the principles of EPR

- 'The EPR principle is consistent with the polluter pays principle and a necessary condition for reflecting the essential life cycle costs in the price of the product. Without an EPR approach, it is not guaranteed that even those environmental costs that have been priced will be reflected in the final price of the product and, hence, signal the buyer that these qualities exist.
- EPR should be seen as a principle for preventive environmental policymaking. The main emphasis of EPR is to stimulate product and product system improvements. In order to reach this objective, various policy instruments must be used. It is by linking the economic responsibility to the individual manufacturers that the feedback loops for product improvement are constructed. To combine the economic responsibility with the physical responsibility is a way to secure a correct and reasonable inclusion of the costs for the handling of the product, and it is also a way to give control of the organisation of the system to the actors that are responsible for covering the costs. This is the most direct means of building incentives for cost optimisation and improvements into the product systems.

Lindhqvist further presented the concept further in 2000, emphasising the intended breadth as a product-oriented policy approach.

- *'EPR is a policy principle to promote environmental improvements of products and product systems'*
- *'EPR is an important concept if viewed as a principle for environmental product policies and not just as an alternative name for take-back policies. This does not exclude take-back policies from being a most interesting policy instrument to be used in order to implement an EPR scheme. A distinguishing and crucial element in such policies should be the feedback to product and product system development.'*

It should be noted that EPR, while subsequently used to frame discussion, was developed to **describe** policy approaches already being developed in various European countries in the 1980s and 1990s to deal with the growing problem of waste, as well as including broader thinking regarding life cycle management approaches to the environmental impacts of products. These policies, such as packaging regulations in the European Union, did not, arise out of the EPR concept itself, and, while fitting within the EPR classification, have not generally included use of the term EPR in their wording.

APPENDIX 2: CLASSIFICATION OF EPR SCHEMES

1. By aims, objectives and scope

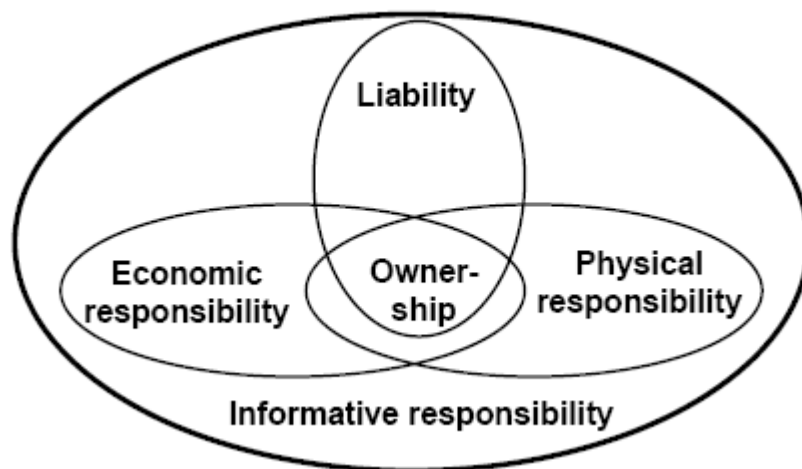
Schemes can be classified by primary aims e.g. reducing specific types of waste.

While schemes may intend to achieve the broad aims stated in Appendix 1, the primary aim has been to address problems of end-of-life waste by virtue of volume, lack of market, or toxicity.

Research into the effectiveness of schemes has often found a lack of clear objectives and targets, multiple objectives which are difficult or impossible to achieve concurrently, or unrealistic objectives e.g. in collective schemes the main objective has tended to be financing collection and take back rather than generating feedback and incentives for changing product design and consumer behaviour.

2. By type of responsibility

Lindhqvist developed a model for characterising different schemes for implementing EPR



Models for Extended Producer Responsibility

- **Liability** refers to the responsibility for proven environmental damages caused by the product in question during use or disposal. The extent of the liability is determined by legislation and may embrace different parts of the life cycle of the product, including usage and final disposal.
- **Economic responsibility** means that the producer will cover all or part of the expenses, for example, for the collection, recycling or final disposal of the products it is manufacturing. These expenses could be paid for directly by the producer or by a special fee.
- **Physical responsibility** is used to characterise the systems where the manufacturer is involved in the physical management of the products and/or their effects e.g. taking back

or arranging their recycling. The manufacturer may also retain the *ownership* of his products throughout their life cycle, and consequently be linked to the environmental problems of the product.

- **Informative responsibility** signifies several different possibilities to extend responsibility for the products by requiring the producers to supply information on the environmental properties of the products they are manufacturing e.g. on recycled material content, how to recycle or hazardous material content.

3. By product, industry or waste type

In principle EPR can be applied to any product, industry or waste (e.g. see Lindhqvist review and see also assessment of wastes in the NSW preliminary consultation on EPR)

In practice most existing EPR programs cover take-back requirements for product groups such as packaging materials, batteries, end-of-life vehicles, solvents, paper, tyres and electrical and electronic equipment (EEE) giving rise to problem or 'priority' wastes.

The characteristics of the products that have been covered by the EPR programs include

- those contributing to high volume in the waste stream (e.g. packaging, EEE)
- those that are large or difficult to manage (e.g. vehicles, white goods and other large EEE)
- contain substances that are potentially damaging to human health or the environment (e.g. chemicals, oils, drums, paint, fluorescent tubes, pharmaceutical waste, batteries)

They can be categorised between

- non-durable products – for example packaging materials and primary batteries – versus durable products, such as EEE and cars.
- Simple product, such as packaging materials and complex products, for instance EEE and cars.

These general categories apply to both voluntary and mandatory schemes (see below). In general voluntary initiatives have arisen to address problem wastes in lieu of or alongside regulatory controls.

4. By level of coercion

Classification

Schemes can be classified according to degree of coercion or government involvement

EPR programs are often described as either mandatory or voluntary and there has been ongoing, often heated debate between advocates of either. However, it is more accurate to think of them as falling along a continuum from mandated to truly voluntary. Mandatory programs are those that result from laws and regulations. Truly voluntary EPR initiatives are generally implemented when a company is able to make a profit or gain a marketing advantage by taking back its products.

| Main Types | Notes and examples |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voluntary industry initiatives | Undertaken independently by companies or industry associations There are numerous examples of such voluntary programs, including the Asset Recycling Management program at Xerox and Kodak's take-back of single-use cameras |
| Voluntary industry-government agreements | National Packaging Covenant (Australia) |
| Co-regulatory approaches | |
| Fully regulatory or mandatory schemes. | European WEEE and RoHS regulations for electronic and electrical goods, End of Life Vehicle Regulations |

Most true EPR schemes have been mandatory or supported by regulation (e.g. in Europe bans on electrical/electronic goods and tyres and other waste products being landfilled have accompanied regulations on product take back and recycling).

Many EPR programs do not generate profits, however, at least in the short term. Nonetheless, companies will sometimes institute them on a "voluntary" basis for other reasons, such as to preempt pending or future legislation. EPR programs driven by the threat of legislation are not truly voluntary, and fall midway along the continuum. Other programs falling within this region result from agreements negotiated between government and industry in lieu of legislation, such as those pertaining to vehicles in Germany and France.

Some purely voluntary initiatives can be identified. For example, at an 1999 OECD meeting on EPR, it was recognised that EPR can be government-driven programs with a regulatory backdrop or they can be voluntary initiatives where producers (e.g., Xerox's remanufacturing program) take responsibility for managing the end-of-life aspects of their products. This latter approach is an example of integrating producer responsibility concepts directly into business strategy.

In spite of this OECD view, most voluntary schemes are probably better classified as product stewardship (see below). Product stewardship is sometimes described as an EPR approach and this may be the case, but only when the level of responsibility is clearly defined and accompanying policy ensures rather than merely aims to achieve a desired outcome.

Voluntary versus mandatory

Industry invariably argues for a voluntary approach to EPR (as with most other issues). In the US, industry lobbying effectively killed the idea and replaced it with 'extended product responsibility' and then 'product stewardship' (see Appendix...).

In Australia, 2004 consultation by NSW EPA on EPR produced five industry submissions specifically favoured the use of voluntary 'product stewardship' action over regulatory EPR schemes:

- While commending the EPA for considering policy options in the management of various waste streams, the **Vinyl Council of Australia** believed that in the case of PVC products, the industry's voluntary approach to the stewardship of its products was the most appropriate mechanism for going forward.
- In the view of the **Plastics and Chemicals Industries Association**, an industry-wide and supply chain-based voluntary approach is the most appropriate mechanism for achieving positive outcomes for end-of-life materials and products. Product stewardship covers all stages of a product's life and is intended to prevent misuse, mishandling or other activities that might result in harm to people or the environment. Targeting a single functional point in the supply chain (producers) rather than encompassing broader involvement and consistency could reduce the likelihood of achieving desired outcomes.
- The **Australian Information Industry Association** believed that industry has a shared responsibility, along with other participants in the product life cycle, to manage the environmental impacts of their products from design to their ultimate disposal. The approach needed to be voluntary, dynamic and encourage change, which reflects Australia's circumstances, industrial base and societal expectations. The introduction of EPR schemes for computer waste will have significant cost and market implications. At this stage, the association does not believe that EPR is the most effective tool for addressing computer waste.
- **IBM Australia** believed that the most effective product take-back solutions would be implemented through voluntary actions by government, manufacturers, retailers and consumers without the need for legislation or regulation. If legislation became necessary, it had to be national in scope.
- The **Australian Industry Group (AIG)** said industry self-regulation would provide a better outcome than statute and it had a strong preference for the term 'shared producer responsibility' over EPR. The AIG said that its preferred term recognises the critical importance of influencing the behaviour of the market by ensuring that all elements of the supply chain, including the ultimate end-consumer of goods or services, must share in the cost of managing that waste.

Research by Lindhqvist and others on the effectiveness of EPR point to the critical role of regulation in influencing participation and upstream change provided that legislation is clear and there is a level playing field. Environmental organisations have more vehemently argued for regulation and in the USA have reopened the EPR debate

Often countries have tried voluntary approaches and mandated EPR only if the voluntary efforts are not successful in attaining their goals e.g. Voluntary EPR for packaging was attempted in France and Germany; both countries were dissatisfied with the results and ultimately passed legislation. Switzerland rejected a voluntary EPR approach to electric and electronic equipment because of concern about "free riders."

The Problem of Free Riders

Free riders - companies that do not contribute to the funding of EPR programs yet still benefit from them - are a major problem in voluntary programs. About 75 percent of U.S. battery producers have joined the RBRC program, which means the remaining 25 percent are potential free riders. There is no federal requirement for participation and state requirements are not being

enforced.

Lack of enforcement can cause problems with free riders in mandatory programs as well. In the early years of the Green Dot System, 90 percent of packages on the German market carried the green dot, but fees were paid for only 60 percent of them. Free riders remain a problem in the German system and are addressed in amendments to the Packaging Ordinance, passed in June 1998, requiring nonparticipants in the Green Dot System to meet the same recycling targets as participants.

The OECD has been looking into the free rider problem. Solutions may vary from regulatory enforcement to pressure from trade associations to publicizing the names of free riders. In order to drive product innovation toward sustainability, EPR programs need to reward the companies that are acting most responsibly and prevent free riders from gaining a competitive advantage.

The WA Government has preferred a voluntary approach while keeping open the regulatory option stated this as a policy in its 2005 policy paper on EPR

WA Government Policy

The guiding principle for the application of EPR in Western Australia is that the Government would not intervene where industries are effectively reducing problem priority wastes, but would act decisively where they are not. The Government would only act to regulate for a mandatory EPR scheme if voluntary measures had failed according to specified, published criteria.

The new waste legislation for Western Australia will incorporate head powers allowing the Minister for the Environment, after consultation with the appropriate government departments, public stakeholders, and the relevant industries, to introduce regulations giving effect to EPR policy instruments.

The new WA waste legislation will include an assessment framework describing the circumstances under which mandatory EPR schemes will be introduced and which policy instruments may be used.

For example, the following considerations may be incorporated into this assessment framework:

- the volume of waste requiring ultimate disposal or the toxicity of the waste generated,
- whether there is a national scheme in place that adequately addresses particular waste issues in Western Australia;
- whether there is an effective voluntary scheme in place that is achieving the desired outcomes and is being actively implemented, monitored and reported on;
- whether economic analysis supports the implementation of a particular scheme;
- whether there are any constitutional or other impediments to Western Australia acting unilaterally in implementing the particular mandatory EPR scheme.

New EPR regulations will be subject to a Regulatory Impact Statement as well as economic impact analysis, and will be advertised to invite public comment. Public appeal rights will be included in the legislation, similar to those already in section 100 of the WA *Environmental Protection Act 1987* and administered by the Environmental Appeals Convenor.

There are advantages and disadvantages in all approaches. Besides problems in implementing major EPR regulations such as WEEE and RoHS in Europe there have often been very long lead times.

5. By scale and maturity of scheme

Schemes can be classified by

- Geographical coverage e.g. local (e.g. take-back schemes in a municipality). State (e.g. some take-back schemes in Australia, the US and Canada), national (e.g. the National Packaging Covenant, various EPR schemes implemented in EU Member States), international (e.g. EU initiatives, international industry association initiatives, such as the International Chemicals Council, and initiatives by multinational companies). Outside of Europe there are few national schemes. The United States has no federal EPR legislation or policy. EPR for packaging was included in the Resource Conservation and Recovery Act (RCRA) reauthorization bill submitted to Congress in 1992. Failure of this bill to pass ended EPR legislative initiatives at the federal level, at least for the foreseeable future.
- Scale by volumes and percentage of products and waste affected in a market, and participation by companies: Outside of mandatory schemes in Europe, EPR schemes elsewhere are comparatively insubstantial and limited in scale
- Maturity (how long they have been operating). Apart from the German Packaging Ordinance (1991) and a few other schemes in Europe, most EPR schemes are relatively recent.

In conclusion, EPR is generally in its infancy and limited in scale

- There has been more discussion than action
- It has been only applied to a few product groups
- It has only been applied with any significance, to end-of-life waste and there has been limited impact on supply chains in most cases (Lindhqvist)

An exception has been the European WEEE and RoHS regulations which have had global impacts on supply chains, including suppliers in developing countries, impacted on eco-design of many product categories, and forced comparable legislation in other countries including Japan, and even in the USA.

6. By individual or collective responsibility

Under implementation mechanisms of take-back and other requirements related to the downstream operation, a distinction can be made with regard to the degree of co-operation among the producers in fulfilling their responsibility. This distinction is often referred to as individual versus collective responsibility defined as follows:

- **Individual responsibility:** A producer takes responsibility for the end-of-life management of their own products
- **Collective responsibility:** Producers in the same product group together fulfil their responsibility for the end-of-life management of their products regardless of the brand.

There has been a mix of arrangements under existing programs e.g.

- For commodity type materials where there is no brand or product distinction relating to the waste, such as packaging and waste lubricating oil, collective arrangements are normal

- Individual responsibility tends to be practiced under voluntary programs by large companies
- Schemes may include a mix of arrangements e.g. under UK Packaging and WEEE regulations a producer may arrange their own take back or pay a levy towards third party recovery

The significance of this issue was manifested, among other things, in the lengthy discussions during the development of the EU WEEE Directive on waste electrical and electronic equipment. However, there is diverse understanding of what is meant by the terms. Individual responsibility has been viewed (Lindhqvist 2000, Tojo 2002) as

- *the situation where individual producers establish their own collection and recycling infrastructure.*
- *only referring to individual financial responsibility, where producers bear the cost for the end-of-life management of their own products*
- *financial responsibility does not necessarily require the physical management of discarded products on an individual basis.*
- *producers have individual responsibility when the fees producers pay for their products reflect the actual costs of end-of-life management.*

The distinction touches upon a fundamental question surrounding EPR: how should producers fulfil their responsibility in order to create incentives for design change?

There are advantages and disadvantages under both approaches

- Industries, government and experts generally assume that an EPR programme based on individual responsibility would promote design change more than one based on collective responsibility. If producers need to take care of discarded products similar to their own irrespective of brand, there are little or no incentives to spend extra resources enhancing their product design to reduce environmental impacts from end-of-life.
- If the responsibilities were distributed among the brands without considering the difference of the environmental properties of the products, producers who work harder to reduce environmental impacts from their products would end up subsidising the producers who did not

However, the identification of free-riders is more difficult under individual systems than it is under collective systems. Also, systems based on individual responsibility are assumed to make the transaction costs of various actors high and the system more expensive to operate. Perceptions of these administrative difficulties have raised scepticism regarding the feasibility of individual implementation in practice, despite the general acknowledgement on the superiority of individual responsibility in theory with regard to promoting design change.

7. By implementation mechanism

Depending on the policy and type of scheme, EPR schemes may be implemented through a range of approaches, including:

- Supporting legislation e.g. the European WEEE and RoHS legislation has included a ban on hazardous materials in electronic and electrical goods, and a ban on these goods being disposed of to landfill.

- Economic instruments, including advance recovery/disposal fees, deposit refund schemes, incentives and rewards (store discounts, subsidies to recyclers), levies or taxes on particular materials, tradeable landfill and recycling certificates.
- Product labelling and information to assist consumers and recyclers
- Performance standards for products
- Encouraging eco-design and green procurement by industry
- Establishing organisational and financing arrangements, e.g. for take-back schemes
- Establishing or ensuring recycling infrastructure
- Providing support where needed
- Product innovation
- New business models, including extended product ownership.

APPENDIX 3: PRODUCT STEWARDSHIP AND OTHER EPR-RELATED CONCEPTS

OECD has noted that many countries have implemented EPR policies. The term EPR itself is not widely used and in some cases these policies were under way before the term was invented. In some business and other circles, especially in the USA, the concept has generated hostility. It is useful, therefore to consider other, related terms and approaches, especially product stewardship, the main alternative.

1. Environmental product policy (EPP)

This has been the main term used in some European countries (e.g. the Netherlands and Denmark) and by the European Commission (EC) to describe policies aimed at reducing the life cycle impacts of products as opposed to addressing the impacts of manufacturing and operations. EPR policies, termed EPR or not, form part of EPP.

2. Integrated product policy

The European Commission has also used the term 'integrated product policy' (IPP) to attempt an integrated approach to the life cycle impacts of products. e.g. to help ensure that policies to address one issue do not result in adverse impacts elsewhere in the life cycle. According to the European Commission's Green Paper (2003) "IPP focuses on those decision points which strongly influence the life cycle environmental impacts of products and which offer potential for improvement, notably eco-design of products, informed consumer choice and the polluter pays principle in product prices. It also promotes instruments and tools that target the whole life cycle of products".

While EPR could be considered a subset of IPP, the distinction between these two approaches is the points in the product life cycle that are targeted for action (policy instruments or corporate product strategies). For IPP, it is the earlier stages of the life cycle side that are the primary focus (material selection, product design, consumer choice), whereas EPR focuses on end of life.

After much discussion, however, is now unofficially defunct and environmental product policy and life cycle impacts are being addressed under policies and action plans within the broad heading of ***Sustainable Consumption and Production***.

3. Extended product responsibility

While take back schemes for some goods such as bottles have long existed in the USA at State level, and environmental groups have long advocated applying EPR more widely at national level, there has been vigorous lobbying against it by business.

The major national policy discussion of EPR occurred at the President's Council on Sustainable Development (PCSD). In 1996, this multistakeholder group issued a report, Sustainable America, which recommended policies to "achieve national environmental, economic and social

goals." EPR was one of the policies recommended but the original designation was changed to "extended product responsibility."

As defined by the PCSD, "product" responsibility differs from "producer" responsibility in several major respects:

- Responsibility is for the environmental impacts of products over their entire life cycle, with no focus on the post-consumer stage.
- Responsibility is shared by consumers, government, and all industry actors in the product chain - there is no targeting of specific "producers" such as the manufacturer or retailer.
- Responsibility is not necessarily physical or financial - for example, it may simply mean providing consumer education.

The term appears to have disappeared without trace and been replaced by 'product stewardship' although environmental groups have been attempting to resurrect the debate on EPR.

4. Shared lifecycle responsibility

This term has been coined by the Environment Protection and Heritage Council (EPHC) as the preferred approach of Environment Ministers across Australia. It has been stated as meaning 'All players in a product's lifecycle commit to a planned and systematic approach across the whole of the product's lifecycle from design and materials use through to recovery, reuse and disposal, seeking to remove, reduce or reuse environmental waste.'

It is a variation on 'product stewardship' (below) and 'extended product responsibility' (above).

5. Product stewardship

Definition and development

The term product stewardship originated in USA where it has been preferred (at least by business and government) to EPR, and has been promoted there by the Product Stewardship Institute (PSI). The term has not been much used in policy-making in European or other countries. It has, however, been adopted in Australia where it is promoted by the Product Stewardship Council (PSC) established by the EPHC, a council of Australian Environment Ministers. The PSC is linked to PIC.

Product stewardship as been defined by the Environment Protection and Heritage Council (EPHC) (2004) as

An approach which recognises shared responsibility for the environmental impacts of a product throughout its full life cycle, including end of life management, and seeks to reduce adverse impacts and internalise unavoidable costs within the product price, through action at the point(s) in the supply chain where this can be most effectively and efficiently achieved.

The term has already been established in legislation (e.g. the Product Stewardship (Oil) Act 2000) and the Product Stewardship for Oil (PSO) Programme. This was introduced in 2001 by the Australian Government to provide incentives for the environmentally sustainable management, increased collection and recycling of used motor oil. The programme is

administered by the Department of the Environment and Heritage and comprises an economic incentives component (an on going levy/benefits scheme) and a transitional assistance component (a 7-year grants package).

In Australia, product stewardship schemes may be approved under a Product Stewardship Agreement by the EPHC. Approved Schemes may be operated by an independent Producer Responsibility Organisation or by another organisational model.

The EPHC released the discussion paper *Co-Regulatory Frameworks for Product Stewardship* for public consultation on 3 December 2004. This set out a range of options from purely voluntary to fully regulated, and included co-regulation where is a voluntary scheme but a regulatory safety net to ensure that non-participants do not gain competitive advantage. Interestingly, approximately 65% of all industry respondents supported that co-regulation be considered for the sectors they do business in – including both producers and recyclers in the tyres, television, computer, lead acid battery, motor vehicle, vinyl, paper/printing (excluding newsprint), mining and paint industries. Of all respondents 11% did not support co-regulation, reasons for which were mixed. Some preferred non-intervention or voluntary approaches as they believed that any additional regulatory burden on business to be undesirable and stifle innovation. Such respondents were mainly broad-based industry bodies, including the Australian Chamber of Commerce and Industry and the West Australian Chamber of Commerce and Industry. They wanted co-regulation to be subjected to a more detailed and rigorous impact assessment if it were pursued, and that consideration be given to exempting small business.

Sector-specific schedules under consideration for initial incorporation in the Product Stewardship National Environmental Protection Measures (NEPM) include, but may not be limited to, televisions and tyres.

EPR versus product stewardship

The terms EPR and product stewardship have sometimes been used interchangeably but there are distinctions

- EPR puts the onus upon the manufacturer and to many, represents a mandatory approach.
- Product Stewardship is less regulatory in nature and recognises that other parties have a role to play. Designers, suppliers, manufacturers, distributors, retailers, consumers, recyclers, and disposers - all those involved in producing, selling, or using a product take responsibility for the full environmental and economic impacts of that product.

Advocates of product stewardship (understandably preferred by business in the way that voluntary approaches are nearly always preferred to regulations) point to the costs and deficiencies of mandatory EPR programs (see PSC publications). In NSW consultation on EPR 'some objected to the terms 'EPR' and 'product stewardship' being used interchangeably' (NSW DEC Report on the EPR Preliminary Consultation Program, 2004).

Product stewardship, however, remains open to interpretation in its meaning and scope

- Like EPR, product stewardship is broad in definition but has been narrow in practice (focused on end-of life recycling of a few products and wastes)

- The Western Australian Government, in its 2005 policy statement on EPR, states that 'Extended *producer* responsibility (EPR) is one part of product stewardship.' However, section 15(2) of the NSW *Waste Avoidance and Resource Recovery Act 2001* defines EPR as 'including product stewardship schemes'.

Use by business

Within business, the term is not widely used but a number of US multinationals e.g. Kodak, Xerox, especially in the electronics and IT sectors use it to describe their policies and programs for supply chain and product environmental management as well as well covering broader health and safety and social responsibility aspects of products.

The chemicals industry also uses the term, especially for labelling and instruction for safe use and disposal and take back of containers. The pesticides industry developed programs especially in response to concerns about irresponsible use of their products, particularly in developing countries.

In overlapping with corporate social issues, product stewardship used in this way begins to embrace sustainability issues and is much broader than end of life take back.

6. Shared responsibility

How Can Responsibility Be Shared? In EPR programs in which responsibility is shared, it is shared between the public and private sectors and/or among the different industry actors along the product chain. In either case, the key is to shift sufficient responsibility to those with the greatest potential to trigger the actions needed to move toward a sustainable pattern of materials use. Germany shifted full responsibility for managing packaging waste to industry. In France and Japan, municipalities remain responsible for waste collection and industry was made responsible only for the recycling of certain materials.

The approach in which the various industry actors along the product chain - rather than a single "producer," as in Germany and Austria - share responsibility for the post-consumer stage is exemplified by Britain's packaging scheme. There, each industry player is allocated a specific percentage of the responsibility: 47 percent for retailers, 36 percent for packers and fillers, 11 percent for converters, and 6 percent for raw material processors.

An outstanding question is: Who should allocate responsibility among the different industry players in this type of shared system? Should government do it? Or should government give "producers" the authority to allocate specific responsibilities among the industry actors?

It should be noted that there is some degree of sharing in all EPR programs. Even in Germany, where the fillers of packaging pay the Green Dot fees, municipal governments, retailers, waste haulers, recyclers, and consumers are all involved in the program.

Consumers have responsibilities in all EPR programs. They separate recyclables and often return them to retailers or drop them off at a specified location. Consumers also pay for the costs of EPR through higher product prices.

It is interesting to note that in Japan the concept of shared responsibility is extended to consumers who are expected to return discarded EEE **and** pay a disposal levy. It appears that there are high levels of compliance in a 'compliant' culture (where there is also a high threat of dobbing or reporting of non-compliance). It has been observed that a similar law in the UK or Australia would result in an exponential increase in fly-tipping.

APPENDIX 4: IMPLEMENTATION MECHANISMS

A variety of voluntary and statutory mechanisms can be used to implement EPR (or product stewardship). As noted in Report 1, the most appropriate EPR instrument of use will differ across industry, depending on the characteristics of the particular industry, industry members and the institutions of social and economic governance associated with that industry. EPR instruments, typically used in combination, should account for available technology, the structure of the industry, the type of waste and its environmental effects, and the state of the resource recovery market. The list of instruments in the NSW consultation paper is adapted rearranged as follows into the following main type of mechanism.

1. Economic instruments and incentives

Examples include:

- advance recovery/disposal fees, where a fee (generally paid at the point of sale) is levied on certain products to fund their collection, recycling (if possible) or appropriate disposal.
- deposit/refund schemes, where a payment is made when the product is purchased, which is fully or partially refunded when the product is returned to an appropriate dealer or specialised treatment facility,
- incentives and rewards, such as:
 - store discounts or other benefits, to encourage consumers to return goods to stores,
 - subsidies to recyclers for effective reuse,
 - grants to develop resource-efficient alternatives, and
 - incentives to replace toxic materials.
- levies or taxes on particular materials, such as:
 - taxes on virgin materials to discourage their use where recycled or recovered products would not be competitive on cost, and
 - to provide funds to cover the cost of managing externalities, such as education, enforcement or clean-up of litter, illegal dumping or for the management of waste with problematic components.
- tradable landfill diversion certificates, where a threshold diversion rate is set by the regulator and designated product manufacturers are required to hold certificates proportional to the volume/weight or value of their production within a set period and certificates are issued to reusers/ recyclers based on net waste volumes processed that would be tradable, and
- tradable recycling certificates, issued to recyclers undertaking recycling and reuse activities, where a specified proportion of certificates must be purchased by producers (manufacturers and importers) during the accounting period based on the desired recovery and recycling rate.

While long discussed, and applied in a few areas, economic instruments have not been used to any great extent to address environmental problems (see report on incentives for SMEs⁰ and only to a limited extent in the context of EPR.

2. Regulations

May include

- Penalties for non compliance with EPR schemes
- Penalties or other regulations for non-participation in voluntary schemes
- Material bans and/or restrictions
- Prohibitions on the disposal of certain products to landfill or to waste treatment facilities
- Product standards, including mandatory labelling, minimum amounts of recycled content per product
- Performance standards, where targets are set, such as for recycling rates
- Requirements for green procurement by government

Regulatory approaches have been most extensively developed in the EU, especially for WEEE and RoHS, and also in Japan, for example in the Law to Establish a Recycling Economy and the Home Appliances Recycling Law. Green procurement by government is mandatory in Japan but rare elsewhere.

3. Organisational arrangements

Schemes may include the establishment of Producer Responsibility Organisations (PROs) or other organisations to manage schemes and recyclers to implement them. PROs are well established in some countries, especially in Europe under packaging regulations.

To create the most powerful incentives, individual producers would be required to take back and recycle their own products. Often, however, this is not practical. For example, it would not be economically feasible for producers of high-volume, low-value products, such as cereal or detergent boxes, to identify, sort, and take back the particular boxes they made.

For this reason, EPR policies usually permit producers to form "producer responsibility organizations" (PROs) which enable them to fulfill their responsibilities collectively. The Duales System Deutschland (DSD) in Germany and the Rechargeable Battery Recycling Corporation (RBRC) in the United States are both PROs. These organizations license their logos for a fee and use the revenues to finance, respectively, the Green Dot System and the take-back of Ni-Cd batteries. Private industry usually sets the fees and operates the PROs. For example, a company pays a fee to DSD for every package it puts on the German market.

It is important that the fee structures imposed by PROs reward companies that choose to design less wasteful and more economically recyclable products. Otherwise, one of the most important benefits of EPR will be squandered. For example, in a packaging take-back system, a standard fee based on the volume of the packaging contents would not provide any incentive to reduce packaging or increase its recyclability. However, fees based on packaging weight and packaging materials would allow companies to benefit from such design changes.

As EPR programs spread around the world, PROs are emerging in many countries. In addition to DSD and RBRC, these include Eco-Emballages in France, Alstoff Recycling in Austria, Fost Plus in Belgium, and VALPAK in the United Kingdom.

Problems in establishing effective PROs have sometimes occurred to undermine the

4. Infrastructure

Schemes, whether individual or collective, may include establishing collection, transport and recovery infrastructure.

Often these are collective arrangements provided by government (local or State), PROs, industries and recyclers.

Some companies arrange collection of their own products or containers. Besides suppliers of chemicals or similar products, leading IT/EEE suppliers such as Sony have been active, especially in Europe and North America.

In Japan the EEE industry, in collaboration, has established a network of EEE recycling plants.

4. Environmental management by business

General processes to improve life cycle performance

Processes to improve product life cycle performance and implement EPR or product stewardship include

- product design, such as adoption of eco-design, design for the environment, design for recycling and design for disassembly principles,
- cleaner production processes and environmental management systems, including waste minimisation, implemented to reduce the use of hazardous materials and adopt more sustainable production processes
- green procurement, where purchasing authorities aim to promote sustainable resource use, resource recovery and recycling through purchasing policies,
- eco-labelling, where labels are placed on products or packaging to provide consumers with information about a product's environmental performance,
- industry codes of practice, developed by chemicals and other similar industries to minimise hazards of products in use and recover/ ensure safe disposal of waste products and containers.
- education and awareness-raising, to promote internal and community awareness about how to safely dispose of certain products/wastes
- take-back schemes, where specific products or waste streams are taken back by the producer or returned to them for material recovery and recycling
- extended product ownership, where the producer retains ownership of the product and leases it to consumers for use under certain conditions,

It should be noted that all of these processes can be viewed as aspects of EPR, in that all have implications for or may contribute to product life cycle performance, and in that all aspects of environmental management require demonstration of some level of environmental responsibility. However, by themselves, none of these aspects is specifically EPR or an EPR scheme.

Those processes mainly concerned with on-site environmental performance (cleaner production, environmental management systems and waste minimisation) are fairly well established but only

very loosely aspects of EPR. They especially lack the 'extended' component of producer responsibility.

Those aspects concerned with upstream or downstream performance are more connected to EPR principles, namely green procurement, eco-design and supply chain management, and extended product ownership.

Green procurement, eco-design and supply chain management

As noted in the Incentives Interim Report, application of best practice in these areas is rare outside of a few leading multinationals and their potential has been barely addressed by governments.

The global electronic and electrical equipment (EEE) industry is an exception.

- Supply chain management is a major activity in an industry where outsourcing is commonplace.
- Major EEE companies have generally been among the leaders in environmental and management, for example in ISO 14001 certification, green procurement and in reporting on performance.
- Most majors will have their own networks of suppliers for whom environmental performance will be one purchasing consideration along with cost, delivery and quality. This applies to both local suppliers in Europe or Japan, and suppliers in host countries for subsidiary operations. For example, Philips and Siemens from Europe and Sony from Japan have well established supplier partnership arrangements, including provision of information, training and other support.
- More recently some leading EEE companies have embraced sustainability and CSR and have established expectations and requirements on social performance by suppliers, including such issues as working conditions and use of child labour. This area can be expected to grow in response to customer, investor and other demands. Auditing of suppliers on environmental and social as well as quality matters has become the norm among leading purchasers.
- With regard to EEE take-back and recycling some companies have been especially active in Europe. For example an alliance has been formed between Sony, Electrolux, Braun, and Hewlett-Packard to implement their own pan-European collection scheme.
- In 2004, various US companies launched the Electronics Industry Code of Conduct (EICC) , which includes social and ethical issues as well as environmental issues. Hewlett-Packard (HP) facilitated collaboration on the code between itself, Dell, IBM and electronics manufacturing companies Celestica, Flextronics, Jabil, Sanmina SCI, and Solectron. The code was developed to establish and promote unified industry expectations for socially responsible practices across the electronics industry's global supply chain. The code potentially provides a route for a harmonised approach for monitoring suppliers' performance across several areas of CSR, including labour and employment practices, health and safety, ethics, and environmental protection.
- Also in 2004, Cisco Systems Inc. HP, Microsoft and Intel Corporation announced the formation of a new supply chain working group to develop integrated implementation plans for the EICC. The new working group, facilitated by Business for Social Responsibility (BSR), will develop common mechanisms and tools that will enable compliance with the Code. The companies will work collaboratively with suppliers and partners in the supply chain to develop common approaches to supplier survey, reporting methods, auditing tools, risk assessments and programmes. The joint effort reflects the participating companies' commitment to leadership in the area of CSR and their desire to help suppliers streamline their reporting requirements and make performance easier to verify.

Extended ownership and other business models as environmental strategies

Renting and leasing and associated maintenance agreements has long been practiced by for business reasons, especially in business to business markets, and in some consumer markets. This trend is growing, especially in IT and other markets where products become quickly obsolescent.

This type of arrangement has helped facilitate tack-back requirements under EPR or product stewardship e.g. arrangements for recovering computers and mobile phones. It also reflects the trend towards suppliers offering services (higher value added) rather than physical products (often low margins and value added)

While business approaches and models are not significantly driven by sustainability considerations, the need to 'dematerialise' production and consumption has led to policy consideration and research (especially in the EU) into substituting physical products with 'product-service systems.' Apart from the usual examples such as teleconferencing instead of travel, and selling chemicals management instead of chemicals, and the oft –quoted Interface leasing and recovering carpet tiles, examples are still limited.

APPENDIX 5: SUCCESS FACTORS

1. OECD Principles

The OECD has set out fifteen guiding principles for an effective EPR program. These could also apply to, and are arguably more in line with the above discussion on an effective product stewardship program.

1 Provide incentives

EPR policies and programmes should be designed to provide producers with incentives to incorporate changes upstream at the design phase in order to be more environmentally sound.

2 Stimulate innovation

Policies should stimulate innovation by focusing more on results than on the means of achieving them, thus allowing producers flexibility with regard to implementation

3 Life cycle approach

Policies should take a life cycle approach and be directed at producing life cycle benefits, even if they focus on the post-consumer phase, so that environmental impacts are not increased or transferred somewhere else in the product chain.

4 Responsibilities defined

Responsibilities should be well defined. They should not be diluted out of existence across all the actors in the product chain.

5 Product specific

Policies should be product specific. One type of programme or measure is not applicable to all products, product categories or waste streams.

6 Increase communication

Extension of producer responsibilities should take place in such a way as to increase communication among the actors in the entire product chain concerning the product's life cycle impacts.

7 Communication strategy

A communication strategy should be devised to inform all the actors in the product chain as well as consumers, about the programme and enlist their support and co-operation.

8 Consultation

To enhance a programme's acceptability and effectiveness, consultation of stakeholders about its goals and objectives as well as estimates of its costs and benefits should be conducted.

9 Involve local government and other agencies

Local governments and other agencies should be consulted in order to clarify their role and obtain their advice concerning the programme's operation.

10 Consider voluntary and mandatory approaches

Both approaches should be considered, with a view to meeting national environmental goals and objectives in the best way possible.

11 Analysis

A comprehensive analysis of the EPR programme should be made. (e.g., which products, product

categories and waste streams are appropriate for EPR, whether historical products should be included, and the roles of all actors in the product chain).

12 Evaluation

□ EPR programmes should undergo periodic evaluations and be flexible enough to be adapted by government in response to these evaluations.

13 Environmentally and economically effective

□ Programmes should be designed and implemented in such a way that environmental benefits are obtained while domestic economic dislocations are avoided.

14 Transparency

The process of developing and implementing an EPR strategy, and putting it into operation, should be based on transparency.

15 Compliance mechanism

Stakeholders should agree on a **compliance** mechanism that best meets the programme's goals and objectives.

Source: Adapted from Extended Producer Responsibility: A Guidance Manual for Governments. OECD. May 2000

2. Strict EPR

Lindhqvist (who coined the term) and others have stated the following requirements which are firmer on the need for a mandatory approach and strict producer responsibility

- **Mandatory.**
Programs are encoded in law so that all competing producers within a product category have to participate and meet the same high standards (level playing field and no free riders).
- **Focus on products.**
Each program is focused on a specific product category or priority waste material to encourage competition (or collaboration) within the industry sector to develop more sustainable product design and material management systems.
- **Assignment of brand responsibility.**
Responsibility for the product belongs to the brand-owner. Individual brand-owner responsibility creates a direct feedback loop encouraging better product design and rewarding progressive companies. However, collective industry responsibility is needed for 'orphan' products, whose producers are no longer in business.
- **Physical and/or financial responsibility.**
Producers are legally responsible for ensuring that their products are managed responsibly and must bear physical or financial responsibility for their management at their end of life. Physical responsibility means that producers operate a take-back program themselves. Financial responsibility means the producers contract with others to operate the program.
- **Performance standards and deadlines.**
Rules establish clear outcomes reflecting the goal of minimizing product environmental life cycle impact, including measurable rates and deadlines. Performance standards should advance product reduction (dematerialization) and reuse before recycling. Likewise, leasing systems should be encouraged.
- **Mandated phase-out of hazardous materials.**
Rules clearly define harmful materials that need to be phased out by a set deadline. Phase-out should take priority over product take-back.

- **Ban waste disposal and exports.**
Recovered products must not be landfilled or incinerated and must be managed in accordance with international laws and conventions (hazardous or unsanitary used products must not be exported from developed to developing countries either for disposal or for recycling).
- **Flexibility and accountability.**
Producers have the flexibility to design their own clean production and product take-back plans to meet performance standards and deadlines. Regulations establish clear and effective mechanisms for transparency and public accountability, including:
 - Clear labeling of products.
 - Public participation in the development of EPR programs.
 - Regular monitoring and reporting of progress.
 - Strict and prompt enforcement of performance standards by government, to protect both the public interest and duly acknowledge progressive companies who act proactively.
- **Historical waste.**
Rules establish responsibility for historical waste – products sold prior to the effective date of the program and orphan products – products whose manufacturers are no longer in business.
- **Complementary measures.**
EPR programs may be supported by complementary measures such as minimum recycled content and detailed procurement policies.
- **Social justice.**
EPR programs ensure that people in industrialized and developing countries are not exposed to toxic materials in their workplaces or their communities. Workers receive a living wage and do not bear the costs of a transition to cleaner production.

APPENDIX 6: BARRIERS

EPR can be and has been successful in achieving specific waste objectives, such as reducing end of life waste, increasing recycling rates and eliminating specific hazardous wastes from waste streams. Certain policies may have upstream impacts on the design practices of producers, such as using less harmful materials, and using fewer and more easily recyclable materials, for example packaging regulations.

There are various barriers to applying EPR, product stewardship and the concepts more broadly the product life cycle management

- Common understanding: There remains continuing debate regarding the meaning and scope of EPR. OECD distills the debate over EPR down to two primary issues: (1) the extent to which other actors in the product chain have responsibility and (2) the acceptability of targets set.
- Often uncertain efficiency and effectiveness: Potential high costs of implementation for industry and society need to be considered against environmental and wider social and economic benefits.
- Lack of drivers for life cycle thinking e.g. lack of demand by customers.
- Markets for end products: Lack of markets for lower grade recycled material are a common problem in take-back and other recycling schemes
- Setting charges at levels which reflect true environmental costs but which are not going to create hardship, especially to SMEs
- Sending feedback signals along supply chains in long or globalised product chains. Except for major regulatory, industry collective or multinational based initiatives, supply chain influence may be limited even for fairly large companies
- Defining the producer: Aside from the legalistic arguments, many companies no longer make anything directly. Many players along a supply chain may be involved in some aspect of production and contribute to impacts.
- Resistance by industry: Outside of a few European countries where there have been high levels of industry cooperation, regulatory approaches in the product responsibility area have often faced intense industry resistance and lobbying, especially by large companies. This has been the case in various countries but especially in the U.S. where industry has tended to be sensitive about any form of explicit corporate responsibility or liability and dislikes the term EPR. The US was also the main lobbyist against the proposed product environmental standard ISO 14062 which provided certification to companies managing the product-life cycle of their products. The standard is now for guidance only.
- Difficulties in implementation by companies, especially SMEs. Introduction of EPR policies requiring action by SMEs has often generated compliance problems where practices and operations have had to be changed. Various studies have found SME product life cycle awareness and preparedness for new regulations to be low in both developed countries and international supply chains even after efforts to raise awareness (e.g. research conducted for the European Commission by the Centre for Sustainable Design)

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