

Extended Producer Responsibility, Integrated Product Policy and Market Development: Lessons from Europe and the U.S

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“The global sustainability debate has evolved to the point where businesses must consider the impacts of products and services throughout life cycle and supply chains”

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1. Introduction

Over the last decade, we have witnessed increasing recognition of the importance of products and product systems as a target for both corporate environmental strategy and government environmental policy. Concepts and tools that explicitly focus on products include; eco-efficiency, eco-labeling, product stewardship, green procurement, design for environment, life cycle management, life cycle engineering, extended producer responsibility and more recently integrated product policy.

This paper explores two key conceptual approaches to product-focused environmental management namely, extended producer responsibility (EPR) and integrated product policy (IPP). EPR refers to extending producer responsibility for products beyond the useful life into the post-consumer stage. The Organization for Economic Co-operation and Development (OECD) *defines* EPR as “an environmental policy approach where the producers’ responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product’s life cycle”². This concept has also been taken up by some leading private sector companies in the manufacturing sector (e.g. Xerox, Sony, Electrolux and HP) that see business value in recovering their products at the end of their life.

Integrated Product Policy (IPP) is defined as public policy “which seeks to **reduce the life cycle environmental impacts of products** from the mining of raw materials to production, distribution, use, and waste management”³. The objective of IPP is to integrate environmental considerations into key decision points in the product’s life cycle stages and assist stakeholders (producers, consumers, policy makers) in making environmentally sound choices. This is achieved through a range of instruments including eco-design, market incentives, and information mechanisms such as eco-labels.

¹ In Sustainable Solutions: Developing Products and Services for the Future. Charter M. and Tischner U. (eds). Greenleaf Publishing, UK 2001.

² OECD Working Party on Pollution Prevention and Control. Guidance Manual for Governments Extended Producer Responsibility. Draft Dec 1999.

³ Green Paper on the Contribution of Product-Related Environmental Policy to Sustainable Development: A Strategy for an Integrated Product Policy Approach in the European Union. Commission of the European Communities. 2000.

The paper provides an overview of the significance of products as a focal point for corporate and public sector environmental strategy and it defines and provides examples of IPP and EPR policies and programs. Market implications for Canadian industry of these two product-focused policy approaches are also explored.

2. The Product as a Focal Point for Corporate Environmental Strategy and Government Policy

Product-focused environmental management concepts and tools are distinct from more traditional facilities- and substance-based approaches in a number of fundamental ways⁴:

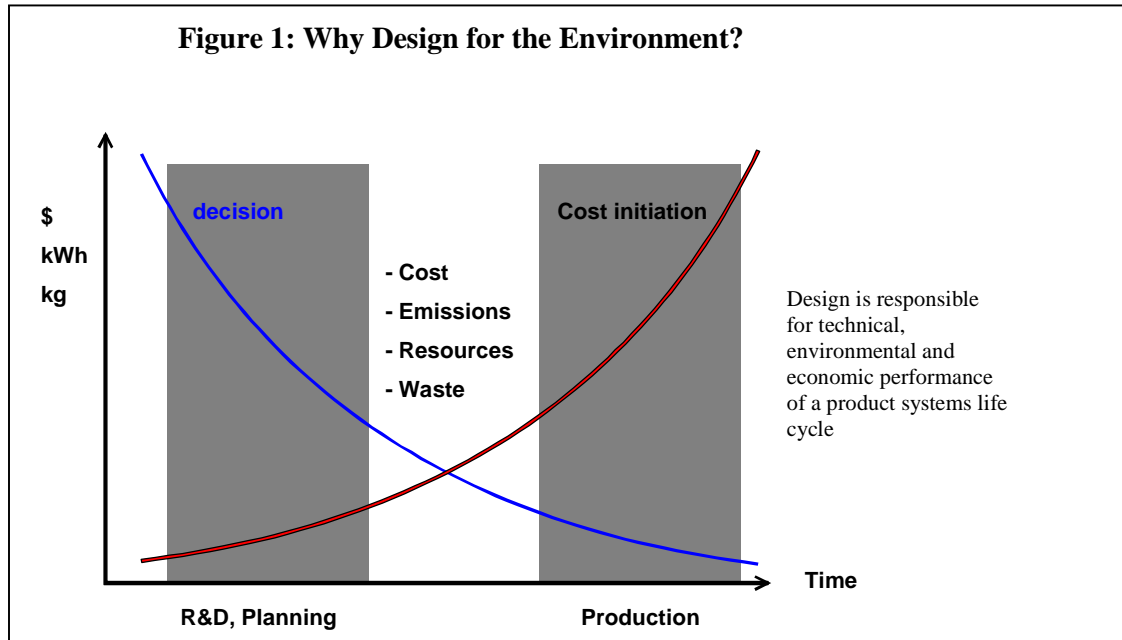
1. Because products are the focal point in a complex web of material and energy flows, product-focused approaches require a company to take a **systems perspective** to gain a full understanding of the implications of their products. This systems perspective results in the company looking beyond their plant gates to understand environmental and resource implications of the materials they select, the suppliers they engage, the energy supply options they choose, as well as the transportation, distribution, use and end of life of their products.
2. A focus on **products ties environmental issues directly into the core of business activities of a company**. By taking a product focus to environmental management, a door is opened to functions like product design, procurement, supply chain management and sales and marketing. For some companies, brand image is also deeply associated with the product.
3. Taking a product focus allows an organization to identify where it can get the **best return on investment for its environmental expenditure**. By understanding the full product system, a company can target resources in a manner that will lead to the greatest reduction in environmental releases per dollar invested. Similarly, by understanding product life cycles, governments can target policies and programs where they will get the best return on investment (reduced environmental impact) for taxpayer's dollars spent.
4. Environmental management activity is traditionally a cost centre within an organization. A product focus **enables environmental issues to become a means to reduce costs, maintain market access, gain competitive advantage, enhance brand image and increase revenues**. For government, product-focused policies and tools become a means to work co-operatively with industry to simultaneously improve environmental performance, stimulate innovation and support competitiveness.
5. Product-focused environmental management tools often begin with the question - *what is the core function or service the product provides?* This question has led a number of companies to begin to make the **shift from providing products to providing services**. The shift is important as it can lead to an increase in the knowledge content of products and a decrease in the material and energy content of products. Achieving this shift will be necessary if we are to achieve the "Factor 10" improvements in resource productivity required to move toward sustainable development.

⁴ A version of this list was originally presented in the paper Product and Supply Chain Focused Policies and Tools for Sustainable Development. Five Winds International

6. Products are a much **more tangible focal point for communication of environmental information and for engaging stakeholders** in an informed dialogue on environmental issues. The complexities of toxic substances management are inaccessible to most people, but engaging in a discussion on cleaner products is much more intuitive. This means that products can be a means to reach a broader range of stakeholders⁵.

Another key factor in the growing focus on products as an environmental policy and strategy target is the need to manage the end-of-life issues related to products. OECD statistics indicate that waste within the OECD has been increasing at a rate similar to that of economic growth⁶. For some waste streams, such as waste electrical and electronic equipment (EEE), the rate of growth is even faster than economic growth. Environment Canada recently published a study that predicted a doubling of the tonnage of information technology waste (a subset of EEE) between 1999 and 2005⁷. The rate of growth in waste is compounded by the increasing complexity of the waste stream. The growing electrical and electronic equipment waste stream is of particular concern because it contains a number of products containing potentially hazardous substances (e.g., lead, mercury, cadmium, brominated flame retardants). These products (monitors, laptops, printers, scanners, mobile phones etc.) need to be managed at the end of their life to ensure that hazardous substances do not enter the environment or impact human health (e.g., recycling workers) and to ensure that the economic value of the materials in the products are recovered.

All of these factors have led to a focus on products not only as a key leverage point to reduce waste, but also (as our understanding of product systems grows) as a focal point for developing preventative strategies and tools such as design for environment or eco-design. Design for environment (DfE) is the integration of environmental considerations directly into product development processes.

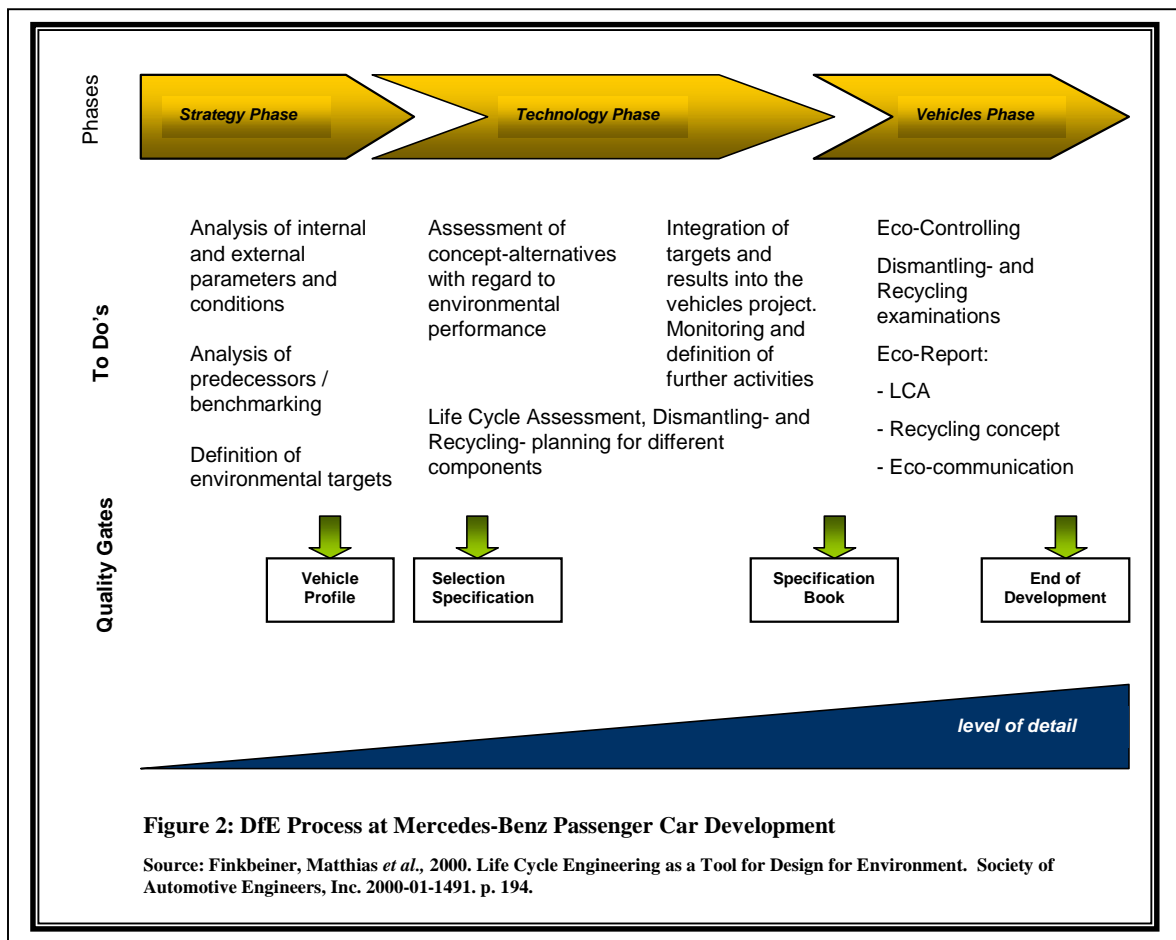


⁵ Five Winds International. Jan. 2000. Product and Supply Chain Focused Policies and Tools for Sustainable Development. Prepared for National Office of Pollution Prevention, Toxics Pollution Prevention Directorate, Environmental Protection Service, Environment Canada.

⁶ OECD Working Party on Pollution Prevention and Control (1999). Draft Guidance Manual for Governments Extended Producer Responsibility.

⁷ Envirostris. October 2000. Information Technology (IT) and Telecommunication (telecom) Waste in Canada. Prepared for Environment Canada

DfE is significant because product design and development is the most effective phase to target environmental improvement. This is because design can influence up to 80% of the economic cost of a product as well as 80% of the environmental impacts⁸ (see Figure 1). For example, DfE enables designers to eliminate hazardous materials right at the design stage. This can lead to considerable cost saving over the life of a product as it can eliminate labeling requirements, occupational health and safety requirements, specialized end-of-life management requirements, reporting and other hidden costs associated with the use of hazardous materials. In addition, DfE supports other design strategies (such as material optimization and design for disassembly) that can reduce the overall environmental impact of products and optimize the opportunities for the recovery of materials at the end of the products' useful life. Figure 2 illustrates how DfE is applied at DaimlerChrysler Corporation.



Design for Environment is highlighted here because it is a key differentiator between an EPR approach to product policy and an IPP approach. Extended producer responsibility has focused, at least in its initial incarnations, on reducing waste and maximizing material recycling. IPP as it is

⁸Charter M. and Tischner U. (eds) 2001. Developing Products and Services for the Future. Greenleaf Publishing, UK.

currently being discussed in the European Commission's Green Paper is focused on encouraging DfE or eco-design. Both of these approaches are explored in more detail below.

3. *Extended Producer Responsibility*

There are many characteristics or components of government product-focused environmental policy. One of these is the extension of environmental and in some cases financial responsibility for resource efficiency and emissions to the primary producer or manufacturer of the product. This includes not only responsibility at the manufacturing stage but also at other stages of the life cycle, particularly end of life. This concept of broadening manufacturers' responsibility for products beyond the useful life into the post-consumer stage, and in some case other life cycle stages, is called extended producer responsibility or EPR. The term "EPR" began in Europe and has now spread to other industrialized countries. It is also concerned about closing the loop with respect to materials use and waste management. While there is variation in how countries are interpreting the concept, there is a growing consensus in developed countries for the need to better define responsibility for the impacts a product has on the environment over its entire life cycle. There is less agreement, however, on who specifically holds the responsibility, including financial responsibility, for managing or mitigating the environmental impacts of products.

OECD and EU governments have been particularly aggressive in shifting responsibility for end-of-life management of products away from local governments to producers and distributors. The rationale for this approach is that these two actors often have the most influence and control over the design of a product and its packaging and therefore have greater opportunity to produce more environmentally sound products. This shift of responsibility addresses what the OECD recognizes as the "*weakest link*" in the product responsibility chain—"the final disposal of products after their sale and use by consumers". Typically producer responsibility initiatives involve product take-back, and design for disassembly. In the case of government programs, recovery targets are set and the provision of disassembly guidance to dismantlers is mandatory.

While this view of EPR has gained considerable momentum, 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. This expanded view is included in the EU proposed Directive on Electrical and Electronic Equipment (EEE Directive). This directive is focused much more on environmental issues related to product design than end-of-life management. In many respects, this draft EEE Directive is more aligned with an integrated product policy approach than it is with extended producer responsibility.

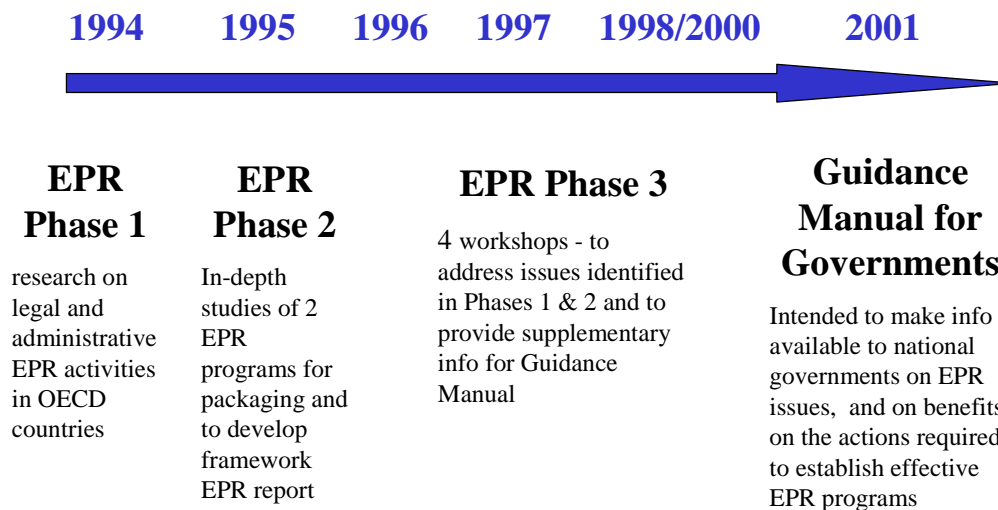
In the United States, the now defunct President's Council on Sustainable Development emphasized that manufacturers, suppliers, users and disposers of products all share responsibility for the environmental impacts of products and waste streams. This has lead

in the U.S. to the concept of Extended Product Responsibility as a means for actors along the product chain to identify opportunities for pollution prevention and resource conservation throughout the life cycle of a product⁹.

More recently, at a May 1999 OECD meeting on EPR, it was recognized 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 products¹⁰. This latter approach is an example of integrating producer responsibility concepts directly into business strategy.

The 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. The acceptability of the targets set is largely a technical issue, while the degree of responsibility of other actors is a more substantive issue. While the OECD recognizes that all actors in the product chain have some responsibility for the environmental externalities associated with products, the roles and responsibilities of these other actors are not clearly defined.

Figure 3. EPR Timeline - OECD's Work



⁹ Proceedings of the Workshop on Extended Product Responsibility. October 21-22, 1996 Washington, DC. Published by the Presidents Council on Sustainable Development and USEPA.

¹⁰ OECD workshop. Extended producer responsibility and waste minimization policy in support of environmental sustainability. Paris, France May 4 - 7, 1999 Environment Canada . *Delegation report*.

There is no single right way to implement a successful EPR program. The OECD developed the fifteen EPR principles in Box 1 after three phases of international stakeholder workshops. The principles are designed to guide governments that are considering the adoption of EPR strategies. The OECD emphasizes that if the principles are taken into account, then the full potential of an EPR program is more likely to be realized.

The OECD principles provide significant insight into how future EPR programs may be designed. It is important to note that while these principles represent the “Cadillac version” of an EPR program, they are significant in that they are the culmination of a four-year process and are likely to become the criteria against which future EPR programs will be judged.

Box 1: OECD's Fifteen Guiding Principles for an Effective EPR Program

- 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.
- Policies should stimulate **innovation** by focusing more on results than on the means of achieving them, thus allowing producers flexibility with regard to implementation
- 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.
- **Responsibilities** should be well defined. They should not be diluted out of existence across all the actors in the product chain.
- Policies should be **product specific**. One type of programme or measure is not applicable to all products, product categories or waste streams.
- 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.
- 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.
- 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.
- **Local governments** should be consulted in order to clarify their role and obtain their advice concerning the programme's operation.
- Both **voluntary and mandatory approaches** should be considered, with a view to meeting national environmental goals and objectives in the best way possible.
- 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).
- EPR programmes should undergo periodic **evaluations** and be flexible enough to be adapted by government in response to these evaluations.
- Programmes should be designed and implemented in such a way that environmental benefits are obtained while domestic **economic dislocations** are avoided.
- The process of developing and implementing an EPR strategy, and putting it into operation, should be based on **transparency**.
- Stakeholders should agree on a **compliance** mechanism that best meets the programme's goals and objectives.

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

3.1 Examples of EPR Programs

To illustrate both sides of the EPR debate this section provides an example of extended **producer** responsibility (European End of Life Vehicle Directive) and an example of extended **product** responsibility (Sony's Electronic Take-Back Program in Minnesota).

3.1.1 *European End of life Vehicle Directive*

The European Commission has been striving for a legally binding framework to address the issue of end-of-life vehicle (ELV) management in Europe. A number of European countries have already adopted their own take-back programs but the Commission is

hoping that legislation consistent across all Member States will reduce the inefficiencies that result from incompatible national initiatives. These inefficiencies often result in trade and competition distortions and higher overall costs.

The ELV Directive applies the "Extended Producer Responsibility Principle", requiring manufacturers to take back vehicles once they have reached the end of their lives at no cost to the consumer. The directive also specifies a number of additional requirements for vehicle manufacturers, material manufacturers and Member States.

Prevention Requirements

The ELV Directive calls for vehicle manufacturers to eliminate by July 1, 2003, the use of hazardous substances, including lead, mercury, hexavalent chromium and cadmium (with a few exceptions) in the vehicle production process. This is meant not only to protect the environment from the release of such hazardous substances, but also to make the recycling process easier. The proposed Directive also calls for manufacturers to re-examine their design considerations and incorporate concepts such as design-for-dismantling and design-for-recycling. Manufacturers are encouraged to utilize more recycled content in new vehicles, providing new markets for the recycled materials that would result from the recycling process.

Collection Requirements

Member States will be required to ensure that an adequate collection system is in place for all end-of-life vehicles (ELVs) and that all ELVs are transferred to legitimate treatment facilities at the cost of the producer. A "certificate of destruction" is also required to de-register the vehicle. De-registration must be done by the vehicle's last owner at a licensed dismantler. All dismantlers must obtain a permit to handle ELVs. Permit conditions include credited de-pollution procedures and designated parts removal in order to facilitate the reuse and recycling of batteries, tires, operating fluids, hazardous components, CFCs and air bags¹¹.

Treatment Requirements

Each Member State must ensure that all end-of-life vehicles are stored and treated in an environmentally sound manner by certified treatment operations.

Re-use and Recovery Requirements

The proposed directive sets clear, quantifiable targets and places responsibility for the reuse, recycling and recovery of vehicles and their components on the automobile producers. The ELV directive mandates recycling rates of 80 and 85 percent, respectively, for vehicles put on the market after 2006 and 2015. Recovery targets (which

¹¹ European Commission, Final Proposal: Directive on End-of-Life Vehicles. Europe. September 18, 2000.

allow waste-to-energy) are 85 percent for 2005 and 95 percent for 2015¹². Member States must ensure that vehicle producers, in partnership with material and equipment manufacturers, adopt consistent coding standards for materials and components to facilitate an easier dismantling process. Manufacturers must produce and distribute disassembly manuals within six months after a vehicle is put on the market to assist certified auto recyclers with recycling and to aid certified treatment operators in the identification of hazardous components.

Reporting and Information Requirements

Vehicle manufacturers are obligated to compile specific data and report regularly to designated authorities. The data in the following list must also be provided to prospective vehicle buyers as part of the promotional material for the vehicle.

Required data includes information on:

- the design of vehicles and their components with a view to their recoverability and recyclability;
- the environmentally sound treatment of end-of-life vehicles, in particular the removal of all fluids before dismantling;
- the development and optimization of ways to re-use, recycle and recover end-of-life vehicles and their components; and,
- the progress achieved with respect to recovery and recycling in reducing the waste-requiring disposal and to increase the recovery and recycling rates¹³.

In turn, Member States are required to report to the European Commission every three years so that it can determine whether targets are being met and whether goals need to be revisited or adjusted.

¹² European Commission, Final Proposal: Directive on End-of-Life Vehicles. Europe. September 18, 2000.

¹³ Ibid.

Implementation Requirements

Member States are required to bring the ELV Directive into force five years after the adoption of the Directive by the European Commission. Enforcement is mandatory, and objectives have to be met within the established timelines. In cases of non-compliant organizations, Member States are required to take regulatory or administrative measures. The ELV Directive is still before parliament and therefore a work in progress. If adopted this year, vehicle manufacturers will have until 2006 to prepare for taking some financial responsibility for the take-back and recycling of end-of-life vehicles. There has been a great deal of discussion around who should take responsibility for older vehicles (those produced before 2006) that were not designed with future disassembly or recycling in mind. After significant amendment, it is now up to Member States to ensure that producers meet all, or a significant part of, the costs associated with the implementation of this Directive without hindering the functioning of market forces¹⁴.

3.1.2 Sony Electronics, Waste Management, Inc. and the Minnesota Office of Environmental Assistance Electronics EPR initiative

Sony and the electronics industry, in general, are facing a number of issues that are driving them toward integration of environmental considerations into industrial practice. Drivers include pressure for recycling, market demand in the form of consumer pressure in Europe, eco-labeling requirements, legislative requirements regarding materials handling, emissions and product take-back; increasing costs for resource use and competitive pressures.¹⁵ Sony has a world-class product development process that includes a product assessment process that examines environmental impact throughout the life cycle including use and end-of-life disposal.

In October 2000, Sony Electronics announced that it was teaming up with the Minnesota Office of Environmental Assistance (MOEA) and Waste Management, Inc. (WMI) to develop a take-back and recycling program for end-of-life electronics. Consumers in Minnesota can now return their outdated Sony brand electronic equipment to the company through WMI's existing waste disposal network free of charge. WMI will process the electronics and sell the scrap for profit. The glass from Cathode ray tube (CRT) monitors will be sent to a WMI facility in Pennsylvania where it will be cleaned and then resold to Sony Electronics for reuse in the manufacture of new CRTs. Plastics will also be disassembled and sold after a sufficient amount of consistent grade plastic has been collected to market as secondary material for the manufacture of new products.

Sony Electronics' chief operating officer has committed to "a shared responsibility for the products of the past", and also stated "taking back and recycling products helps Sony

¹⁴ European Commission. Final Proposal: Directive on End-of-Life Vehicles. Europe. September 18, 2000.

¹⁵ L. Rowledge, R. Barton and K. Brady. Mapping the Journey: Case Studies in strategy and action toward sustainable development. Greenleaf Publisher UK. 1999

design future devices that cost less to manufacture and help save our precious natural resources. It's a win-win situation"¹⁶.

Sony Electronics will subsidize the take-back and recycling of the electronics in Minnesota until the process becomes cost-effective. Sony is planning to expand this program to other states in 2001 and then go nationwide within five years. Throughout the five-year agreement, Sony has committed to designing products that facilitate easier recycling and researching new methods of re-using the recycled materials in the manufacture of newer products. An inherent assumption of the project is that "secondary materials have different value depending on the end-user of the scrap commodity"¹⁷. Figure 4 illustrates this concept. A key to the success of this type of program will be to ensure that products have a higher value at the end of life. This value is influenced by the design of the product, the value of the materials or component parts in the product and the presence of a "reverse infrastructure" that reduces the collection, recovery (materials) and reuse (components) of the product.

High End Reuse

Added Value of the Supply Chain

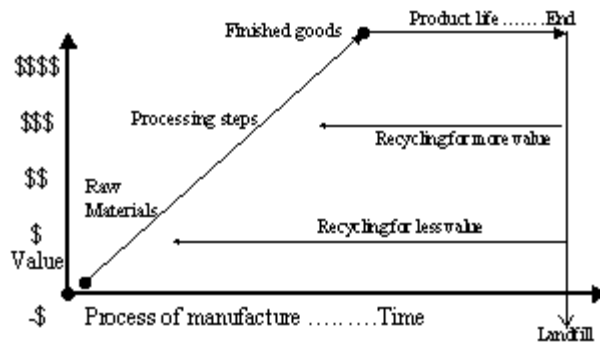


Figure 4. Recovering Value from End of Life Products Source: www.sel.sony.com/SEL/esh/mnproj/wpaper.html

Sony's voluntary EPR program followed a successful three-month pilot project initiated by Sony, WMI, MOEA, the American Plastics Council, and Panasonic/Matsushita, that collected and analyzed close to 600 tonnes of end-of-life electronic equipment throughout Minnesota during 1999. Sony Electronics was selected as the inaugural recipient of the U.S. Environmental Protection Agency's Energy Star® Home Electronics "Partner of the

¹⁶ Garth Hickle. Personal Communication December 2000. Minnesota Office of Environmental Affairs. www.moea.gov.us

¹⁷ Minnesota's Multi-Stakeholder Approach To Managing Electronic Products At End-Of-Life Tony Hainault*, Douglas S. Smith, David J. Cauchi, David A. Thompson, Michael M. Fisher, PhD, Colleen Hetzel* Minnesota Office of Environmental Assistance*, Sony Electronics Inc., Waste Management-Asset Recovery Group, Matsushita Electric Corporation of America, American Plastics Council. <http://www.sel.sony.com/SEL/esh/mnproj/wpaper.html>

Year” award in 1999¹⁸. This program is significant in that it demonstrates a voluntary approach to EPR and it also links EPR with design.

4. Integrated Product Policy

Nowadays it is widely accepted that, in order to achieve sustainable development it is necessary to “dramatically” reduce our impact on the environment. In this respect, IPP could make a major contribution, because the environmental challenges are such that a more integrated and holistic approach is necessary in order to meet them.

European Commission DGXI¹⁹

Integrated Product Policy (IPP) is a relatively new (discussions began in 1998) environmental policy approach that attempts to provide a more integrated and holistic perspective on mitigating the environmental impact of products. It is seen as an alternative to traditional facilities, single media and substances-based environmental policy. According to the European Commissions recent Green Paper, “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 left-hand side of Figure 5 that is the primary focal point (material selection, product design, consumer choice), whereas EPR focuses on the right side of the figure (end of life).

Discussions on the form and content of IPP are still underway in Europe. The rationale for moving to IPP was developed in some of the earlier research work by Ernst and Young. They noted that:

- Industrial competitiveness may be enhanced through sound product policy;
- A coherent framework would provide a level playing field for industry;
- Consistent European policy would lessen gaps and disparities between Member States;
- A common approach by Member States could reduce the potential for trade problems; and
- Product focus is fundamental to sustainable development.

¹⁸ Garth Hickle. Personal Communication December 2000. Minnesota Office of Environmental Affairs. www.moea.gov.us

¹⁹ European Commission. Directorate General XI Workshop on Integrated Product Policy. Programme and Book of Abstracts. Dec 1998

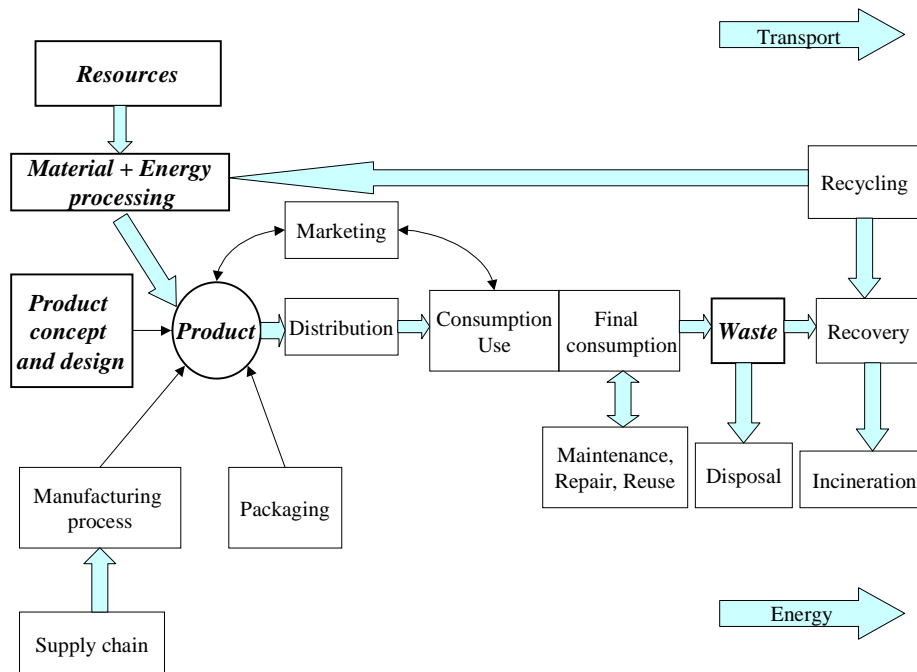


Figure 5. The Product Life Cycle. Source EC IPP Green Paper 2001

The European Commission’s recent Green Paper is the result of a three-year process that included basic research and multi-stakeholder consultations. (see Figure 6)

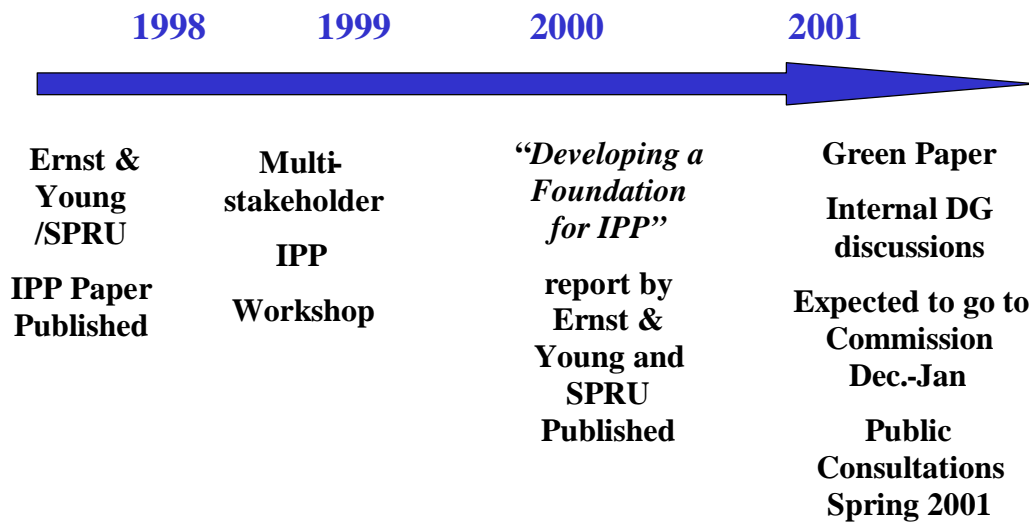
A key element of the EU’s IPP strategy proposed in the Green Paper is to promote a gradual improvement in the environmental performance of products throughout their life cycle using market forces. Examples of possible actions include:

- Making use of “taxes and subsidies that help to **“get the prices right”**, to internalize external costs. This may include more rigorous application of the polluter pays principle (including producer responsibility) and preferential treatment in regards to taxation and state aid for greener products. The strategy explicitly favours “*reduced VAT rates on products carrying the European eco-label*”;
- Stimulating market demand by educating consumers on green products, developing labeling programs (e.g., for 3rd party verification of product labels) and increasing green procurement in the public and private sectors; and
- Enhancing the supply of green products through eco-design programs, the development of standards for environmental design, developing life cycle tools

for small and medium-sized enterprises and promoting research and development on environmentally friendly products and services

In their initial background work on IPP, Ernst and Young and the Science and Policy Research Unit (SPRU) at the University of Sussex in the UK, identified a number of challenges to implementing IPP (see Box [WHICH BOX?]). The most significant challenge is that products are a somewhat unfamiliar focal point for policy makers and they are complex.

Figure 6: Timeline - IPP Activity in the EU



Currently, there is a fairly inconsistent application of IPP in Member States of the EU. A follow-up analysis prepared by Ernst and Young prior to the release of the Green Paper found²⁰:

- The majority of Member States are not yet active in this field at all and there are widespread gaps in knowledge about the potential benefits of pursuing IPP;
- National policy rationales for IPP are inconsistent among Member States where they exist, and most do not address challenges in developing IPP;
- There was a reasonable consensus among Member States that the key principles that underpin IPP “are *market-facing, life cycle based and integrated*”;
- There is limited insight into the effects of previous product-focused measures on which to base projection;
- EU’s thinking on IPP is viewed by non-EU countries as being more developed than their own;
- Many Member States are keen for the Commission to take a lead role in encouraging IPP and ensuring that it is applied consistently across the Community.

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²⁰ *Developing a Foundation for IPP*. Ernst & Young and SPRU. 2000

There will be significant challenges in implementing an IPP strategy in the EU. According to the first IPP report, these challenges include: managing the transition from relatively simple facility/substance approaches to complex product orientation; the lack of awareness and understanding of products as environmental policy targets and the global scope of product systems and environmental impacts. There are also many stakeholders involved in the product chain, and products are much more diverse than companies or facilities. A final challenge is that this is a new role for government, with new objectives, and new policy instruments²¹.

4.1 Examples of IPP Initiatives

While not formally described as IPP initiatives, the following two examples are illustrative of policy initiatives that are consistent with IPP.

4.1.1 The European Electrical and Electronic Equipment Directive

There are three proposed Directives in the EU targeted at electrical and electronic equipment. The first is the Directive on Waste Electrical and Electronic Equipment (WEEE). The aim of this Directive is to make producers of this type of equipment responsible for its end-of-life management. The second Directive is on the restriction of the use of certain hazardous substances in electrical and electronic equipment. The restrictions (on lead, mercury, brominated flame-retardants, cadmium and hexavalent chromium) are imposed to “contribute to the environmentally sound recovery and disposal of WEEE”²². Both of these proposed directives are EPR type policies, in that they deal primarily with the management of EEE waste and the harmonization of legislation regarding the reduction of hazardous substances.

Following these first two Waste Electrical and Electronics Equipment Directives, the European Commission proposed a third Directive in June 2000 on the premise that the manufacturer should design electrical and electronic equipment so as to minimize environmental impacts throughout the life cycle of each product²³. This Directive is, in the authors’ opinion, more indicative of the type of legislation that can be expected under an IPP strategy. Together the three Directives aim to make producers responsible for taking back and recycling their products, for redesigning their products upstream to reduce environmental impact, and for minimizing the heavy metals and brominated flame-retardants in EEE that may adversely impact the environment if they are not managed properly.

²¹ *Developing a Foundation for IPP*. Ernst & Young and SPRU. 2000

²² Commission of the European Commission. Proposal for a Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment. COM (2000)/0159 (COD) Brussels

²³ WEEE is now working its way through the EU in two parts. The first Deals with take-back issues recycling etc. The second addresses the use of hazardous substances.

The third EEE Directive fits with an IPP strategy in that it focuses on products before they even enter the marketplace. Manufacturers are required to conduct conformity assessments of all new products in relation to the guidelines set out in the Directive. Manufacturers can choose either an internal design control process or an environmental management system to carry out the assessments. Products that end up satisfying the requirements through improved design will be granted an EU label, indicating their conformance to the Directive.

Basic Requirements of the EEE Directive for Manufacturers

- Electrical and Electronic Equipment shall be designed and manufactured in such a way that overall adverse impacts on the environment are minimized during its entire life cycle.
- Environmental impact assessments and other environmental principles shall lead to specific design choices for equipment concerned.
- Manufacturers shall avoid undue use of devices, components, materials or substances presenting threat to the environment as disposable waste.
- Manufacturers shall minimize the adverse impact on the environment of equipment by facilitating maintenance, repair, disassembly, reuse and waste management.
- Manufacturers shall minimize or control pollution and energy consumption during normal use of the equipment.

Specific Design and Material Selection Requirements for Manufacturers

- Design shall optimize life cycle duration of equipment
- Design shall allow for upgrading of equipment, design for maintainability (devices should be easily repairable or replaceable), design for disassembly (disassembly should be possible with normally available tools), design for material recyclability, incorporation where possible of recycled material in new products in as far as equipment performance is not adversely affected²⁴.
- Pollution during use and maintenance shall be minimized through the following hierarchy:
 - Reduction at the source;
 - Substitution of processes generating toxic waste with less hazardous alternatives;
 - Recycling of waste generated during life cycle, which could not be prevented; and
 - Disposal of waste should be facilitated and ways clearly indicated²⁵.

Manufacturers must also use best available technology where economically viable and cost-effective and continually review new knowledge developments that might result in more environmentally friendly design. The first WEEE Directive is expected to come into law by 2002, and the adoption of the other two directives is expected soon afterward.

²⁴ European Commission, Proposed Directive on the Impact on the Environment of Electrical and Electronic Equipment. Europe. June 2000.

²⁵ European Commission, Proposed Directive on the Impact on the Environment of Electrical and Electronic Equipment. Europe. June 2000.

4.1.2 US Environmentally Preferable Purchasing Program

In the U.S., Executive Order 13101 requires government agencies to procure products and services that “have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose²⁶.” The U.S. federal government is the single largest consumer in the U.S., and probably the world. It spends over \$200 billion annually on a wide variety of products and services. Through its purchasing decisions, the US federal government attempts to minimize environmental impacts while giving a boost to manufacturers that produce environmentally preferable products and services.

The U.S. Environmentally Preferable Purchasing Program (EPP) was established to facilitate the implementation of the Executive Order, and it provides tools and information to help government agencies consider environmental impacts along with price and performance and other traditional factors when procuring goods. It is also designed to support manufacturers that produce environmentally preferable products and services. The EPP program does not describe itself in relation to IPP, but in practice, it is focused on consumer information and choice, green procurement and consideration of the environmental attributes of products. These aspects of the program are consistent with the IPP strategy put forward in the European Commission’s Green Paper.

Through the program, the US EPA is recognizing the tremendous purchasing power of the United States, and in particular, the U.S. government’s ability to influence what products and services are produced. EPP is an attempt to leverage that influence to minimize environmental burdens of products and goods. The expected benefits of environmentally preferable purchasing are:

- Improved ability to meet existing environmental goals;
- Improved worker safety and health;
- Reduced liabilities; and
- Reduced health and disposal costs.

All federal procurement officials are required by Executive Order 13101 and Federal Acquisition Regulation (FAR) to assess and give preference to those products and services that are environmentally preferable. The role of the US EPA is to develop principles, and provide insights into how the different government agencies should implement the Executive Order. In August 1999, the US EPA developed principles for use in implementation of this Executive Order (See Box 2).

²⁶ EPA established the Environmentally Preferable Purchasing (EPP) program in response to President Clinton’s 1998 Executive Order 13101 on Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition. EO 13101 supercedes the 1993 Executive Order 12873 but retains a similar requirement for EPA to develop guidance to “address environmentally preferable purchasing.” EO 13101 and Section 23.704 of the Federal Acquisition Regulation (FAR) requires Executive agencies to identify and purchase environmentally preferable products and services.

It is government agencies (e.g., Department of Energy, Defense, General Services Administration) that have direct responsibility for meeting the requirements in Executive Order 13101. The EPP Program requires each agency to develop a policy that promotes environmentally preferable purchasing. Agencies are encouraged to evaluate the principles and concepts in the publication *EPA Guidance on Acquisition of Environmentally Preferable Products and Services* through the development of pilot projects. An example of how one agency is adding contract specification language to its request for proposals is illustrated in Box 3.

Box 2—EPP Principles developed by the US EPA:

Principle 1: Environment + Price + Product Efficacy = Environmentally Preferable Purchasing—*environmental considerations should become part of the normal purchasing practice, consistent with traditional factors of product safety, price, performance, and availability*

Principle 2: Pollution Prevention—*Consideration of environmental preferability should begin early in the acquisition process and be rooted in the ethic of pollution prevention, which strives to eliminate or reduce, up front, potential risk to human health and the environment.*

Principle 3: Life Cycle Perspective/Multiple Attributes—*A product or service's environmental preferability is a function of multiple attributes from a life cycle perspective.*

Principle 4: Comparison of Environmental Impacts—*Determining environmental preferability may involve comparing environmental impacts. In comparing environmental impacts, Federal Agencies should consider:*

- reversibility & and geographic scale of the environmental impacts,*
- the degree of difference among competing products or services, and*
- the overriding importance of protecting human health.*

Principle 5: Environmental Performance Information—*Comprehensive, accurate, and meaningful information about environmental performance of products or services is necessary in order to determine environmental preferability.*

www.epa.gov/opptintr.epp

The program has also been working with the National Institute for Standards and Technology to develop a life cycle assessment software tool that makes these comparisons easier. This software tool, called "Building for Environmental and Economic Sustainability" (BEES), allows users to compare environmental and economic costs of competing products under different scenarios. Businesses, non-profit organizations, and state & local government agencies have also used the tools and services of EPP.

Box 3: included in the request for proposal (for purchasing of uniforms for the US Fish & Wildlife Service).

“Environmental Performance has been included in the scope of work and will be an evaluation factor considered in the contract award, as well, as an incentivized performance requirement”.

USF&W defined environmental performance as *“the combined attributes of the environmental preferability of the uniform components and the environmental compliance of the facilities used to manufacture the uniform components”.*

Environmental preferability refers to the following elements:

- Use of recycled materials
- Use of materials that require less-toxic garment care
- Minimization of pesticides, persistent toxic chemicals and carcinogens
- Pollution prevention
- Recycling of materials
- Reduction/elimination of hazardous waste
- Maximized energy efficiency and water conservation
- Application of the EPA’s Guiding Principles for Environmentally Preferable Purchasing to the lifecycle of the uniforms
- Documentation of recommendations to increase environmental preferability

Another Executive Order, which was signed in 2000, is Greening the Government Through Leadership in Environmental Management²⁷. This Executive Order requires federal agencies to:

- Reduce reported TRI releases and off-site transfers of toxic chemicals for treatment and disposal by 10% annually or 40% overall by December 31, 2006;
- Reduce its use of selected toxic chemicals, hazardous substances and pollutants, or its generation of hazardous and radioactive waste types at its facilities by 50% by December 31, 2006;
- Promote the sustainable management of federal facility lands;
- Establish pilot programs to apply LCA and environmental cost accounting principles;

²⁷ - <http://www.epa.gov/opptintr/epp/eo13148.pdf>

- Ensure that funding policies promote the use of pollution prevention to achieve and maintain environmental compliance;
- Prepare directives, policies and documents to reflect the nature, scale and environmental impact of the agency's activities, products, and services;
- Within 24 months, implement EMS through pilot projects at selected agency facilities; and
- Encouraged to incorporate environmental leadership goals into its Strategic and Annual Performance Plans required by the Government Performance and Results Act of 1993

Both of the above-mentioned Executive Orders clearly illustrate that the US government is taking EMS and product-oriented programs (i.e., EPP) more seriously. It will be interesting to see if this trend continues under the Bush administration, but early indications are that voluntary initiatives will take precedence over regulatory approaches. If they remain, these new programs will likely roll over to suppliers who provide products and services to the US federal government. This may still take a few years, but companies that are positioned to respond to these trends may gain competitive advantage.

5. Market Implications and Conclusions

The release of the EC Green Paper on IPP demonstrates a further commitment on the path of the European Union to refine and implement product-related environmental policies. The EU is focusing on the life cycle of products while simultaneously engaging stakeholders in helping to identify eco-efficient solutions both for the environment and business development of the region. Integrated Product Policy and product tools such as environmental product declarations (detailed eco-labels) will be a focal point of environmental activity during Sweden's presidency of the EU (January–June 2001). Sweden has also indicated that it wants a decision on how to move forward on this issue in their term.

At the time of writing, the OECD had just released its *Guidance Manual for Governments on Extended Producer Responsibility*. The release of this document may stimulate the development of EPR programs in OECD member states. While EPR is not a new concept in North America, product take-back is not typically regulated here (with the exception of some minor provincial and state initiatives). By taking the lead, companies like Sony are positioning themselves competitively and lending their own initiatives to be a potential "standard" in defining the future regulatory climate for North American electronic producers. This is a strategic approach that is also founded on gaining business benefit from recovering value from products at the end of their useful life. This type of activity is slowly spreading. For example, Ford has been buying up dismantlers and auto shredders perhaps in anticipation of having to manage the end of life of its products.

It is important to note that, while significant, the EPR and IPP activity described in this paper is only a small sampling of international product policy activity. At Five Winds International, we have been tracking activity ten leading jurisdictions over the last three

years and have observed a definite increase in policy activity related to products. Based on this tracking, the following observations can be made:

The emergence of EPR, IPP and other product-focused policies and tools will have a **profound impact on producers and supply chains;**

Within leading governments there is a shift in terminology occurring. Many product-based programs are being promoted as contributors to **competitiveness and innovation** as well as environmental improvement;

As governmental and non-governmental organizations move forward with the implementation of IPP, EPR and other product approaches such as eco-efficiency, the **relationship among these approaches will need to be more clearly defined;**

Each of these approaches has a product focus, each is based on a life cycle approach and each recognizes, either explicitly or implicitly, the **importance of a systems perspective** in identifying opportunities for improving the environmental performance of product systems;

In some cases, the **trade implications of product policies** will need to be examined in more detail, for example the proposed labeling requirements in the EEE Directive and the IPP Green Paper; and,

The challenge for corporations will be to position their organizations to **be in front** of this trend. For example, a number of European companies are already examining their product development processes and labeling initiatives to determine if they are IPP-ready. Companies that do not respond to these trends may lose **market access**.

A key first step for companies who wish to get in front of the shift to product policy is the integration of environmental considerations into their product development processes.

There are a number of governments (Japan, Netherlands, Sweden) that are actively working with their industries to prepare for product-focused policies such as EPR and IPP. It would be prudent for Canadian companies exporting into Europe and the United States (particularly those that sell to the US government) to be aware of product policies and prepare accordingly. It is also important for governments to work with industry and the research community to develop capacity to examine the environmental performance of product systems. This activity, in our view, should be focused on building capacity for DfE in the manufacturing sector and on improving the environmental performance of our natural resources sector. This latter activity is necessary to keep in step with customers who are improving the environmental performance of their products and examining the burden associated with the materials and energy utilized in creating those products.

If Canada does not begin this work, Canadian companies may find themselves losing market access, but more significantly they may be out-competed by companies that have used product approaches to derive business benefits such as reducing costs and liabilities and stimulating innovation.

About Five Winds International

Kevin Brady and James Fava are Directors of Five Winds International. Jennifer Clipsahm is a Research Analyst with the firm. Five Winds International is a management-consulting firm that helps organizations improve the business, environmental and social performance—the sustainability—of their products and services. Our strength is helping integrate environmental and social considerations into the core business activities of organizations.

- For private sector companies, these activities include strategy development, product design, operations, supply chain management and capital investment.
- In the public sector, core business activities include policy and program development, service delivery, operations and procurement. By integrating environmental and social considerations into their core business activities, organizations can design better products and services, save money, develop better relationships with their stakeholder communities, and create new market opportunities.

Five Winds' international team has expertise in business strategy, engineering and material science, industrial design, environmental science, resource economics, and government policy. Our team helps companies build knowledge and understanding of the competitive opportunities associated with sustainability. We work in partnership with our clients to develop and implement the strategies, management systems, programs and tools necessary to effect long-lasting and meaningful change. The firm provides a global perspective through its offices in the United States, Germany and Canada and an established network of experts throughout the world.

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