Executive Summary

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OECD has identified extended producer responsibility (EPR) as an important policy approach for environmental protection, and in particular, the prevention and better management of waste. Work on EPR started in 1994 and an important landmark was the publication of the EPR Guidance Manual for Governments in 2001.

While the Guidance Manual provides a systematic and practical analysis of EPR policies and advice on policy design and development, the Manual crystallised the need for further information and insight into the implementation and assessment of current EPR programmes. To collect further information and data on the implementation and effects of EPR policies, OECD held a seminar on EPR Programme Implementation and Assessment, 13-14 December 2001.

A key outcome from the seminar was that an in-depth analysis of the economic dimensions of EPR was a crucial link for developing and implementing more effective and economically efficient EPR policies. On the basis of this finding, OECD organised a workshop on the Economics of EPR. The purpose of this workshop was twofold: first to acquire further insight into the economic aspects of EPR; and second, to identify outstanding issues that OECD should investigate further.

Workshop on the Economics of EPR

The workshop on the Economics of EPR took place in Tokyo from 10 to 11 December, 2002. The Japanese Ministry of Environment kindly hosted this workshop at which the following topics were addressed:

- The economic efficiency and environmental effectiveness of EPR policies;
- The evaluation of EPR programmes;
- The impact of EPR policy on the direction of technological innovation; and
- The political economy of implementing EPR policy.

Participation

About 50 government officials and industry representatives from 14 countries, including representatives from China and the Philippines, attended the workshop. The workshop had a well-balanced mix of environmental economists and EPR policy experts, which facilitated rich and informative discussions under each session.

Outcome

As EPR policies develop in OECD countries, a systematic economic analysis and assessment is required more than ever. Some important questions answered by the workshop concerned how we set economically sound objectives, how do we devise cost effective EPR policy instruments? and what can we do to ensure that appropriate evaluation and feedback mechanisms are in place to verify?

The political economy has a significant influence over the design and implementation of EPR policies and with the types of product categories or waste streams selected. Most EPR scheme involves multiple levels of governments, multiple actors and multiple products. A key point of discussion focused on how to keep EPR schemes easy to manage (to reduce transaction cost), with a limited number of actors with clear responsibilities that have sufficient incentives to stimulate change in product design for waste prevention. This is an important challenge for governments with EPR schemes in place or in the process of developing a new scheme.

This publication contains selected papers and discussant commentaries from the workshop. These papers address:

- EPR policy goals
- performance of four national EPR schemes
- technical innovation and EPR policies
- political economy for implementing EPR policies; and
- EPR and cost sharing along the production chain

Policy goals

Margaret Walls discusses that the goal for EPR should be to maximise social welfare; the same as any other environmental policy goal. She emphasises that EPR policy objective should be to reduce the volume of solid waste disposal. However, other participants viewed that the reduction in the impact of waste may be a more appropriate target, steering the policy focus towards the reduction in volume and potential harm or toxicity from the waste.

She notes that when production and consumption cause negative externalities like pollution and waste, governments should intervene in private markets and attempt to attain the level of the waste or pollution where the marginal social benefit of reducing it by one or more unit is equal to the marginal social cost for reducing it. Most OECD governments view the negative externalities from certain products at their post-consumption stage to be a growing environmental problem and at a level in which an intervention is needed. The four maxims described in her paper should help guide policymakers evaluate alternative instruments to EPR.

The paper raises the issue of when EPR policies are preferred over non-EPR policies. The result of her research shows that EPR policies would be preferred when there are illegal disposal problems and/or when poorly functioning markets exist. Thus, a key argument for selecting an EPR policy mechanism over alternative policies with similar objectives would be in those situations in which illegal dumping or poorly functioning recycling markets exist.

The issue of how EPR influences product design - or design for the environment (DfE) - is addressed in the paper. There was a rich and robust discussion on this particular topic with some government participants stressing that they have explicit evidence that EPR improves collection and sorting of post consumer products, but less evidence of any upstream changes to a product that can be directly attributed to EPR policy. Other participants strongly emphasised that EPR policies do stimulate producers to change the design and resource input to products. It was also noted that the type of instrument used to implement EPR policy will strongly influence the results achieved. This discussion pointed to the need for further research and data collection on this topic and the policy instruments that tend to stimulate technical change in product design and resource inputs.

EPR programme evaluations

The trend across OECD is to implement more EPR schemes. With an increase in policies being implemented to address different waste streams, the need to evaluate the performance of EPR policies to determine their environmental effectiveness and economic efficiency is crucially important. Yet, as illustrated at the workshop, there are a limited number of EPR policy evaluations completed.

Four papers on EPR programme evaluation are included under Part 2. These papers provide an indication of the current state of evaluation of EPR schemes, methods used and the results achieved. The first paper describes the environmental performance of Alberta Canada's Used Oil Programme. The second paper discusses the system for handling packaging waste in Germany - the Duales Systeme Deutschland (DSD). The third paper describes the revised stand on producer responsibility in waste policy in the Netherlands, based on an evaluation of their 13 EPR Covenants. The fourth paper provides an assessment of EPR schemes in Japan.

Policy instruments used and products addressed under EPR schemes can differ greatly from one scheme to the next, making any real comparisons between the programme difficult. While the methodologies used for each evaluation are not clearly defined in each paper, the papers do contain good information on the range of assessment methods used by countries and highlight the different EPR policies currently in place.

The Alberta Canada programme is a Provincial programme with the goal to reduce the impacts from used oil. Two important features of this programme is the return incentive that is paid to private sector collectors, transporters and processors to recover used oil material which is paid by consumers at the point of purchase as an Environmental Handling Charge. The paper contains a thorough description of the programme and its performance since it began in 1997.

Joachim Quoden discusses the German producer responsibility for packaging. This paper focuses on the impact of the system for packaging, and it describes the development of the scheme, technical innovations resulting from the implementation of this mandatory programme and other soft effects.

Kees Veerman describes an evaluation carried out on the use of producer responsibility as an integral part of Dutch waste policy. A key conclusion of the study was that the introduction of producer responsibility has resulted in a notable increase in the collection and recovery of products in the 13 waste

streams covered by EPR policies. While the Netherlands has voluntary covenants in place for producer responsibility, they found that producer responsibility, as it is currently designed in the Netherlands, does not drive waste prevention. This waste prevention finding raised questions by participants on the effectiveness of voluntary approaches of driving upstream changes to products or their resource inputs.

Eiji Hosoda discusses the situation of waste disposal in Japan and describes the recycling-oriented laws that have been implemented to address the country's increase of waste. A fundamental aspect in each of these laws is extended producer responsibility. The paper provides a series of examples of incremental innovation achieved in products covered stemming from the implementation of these laws.

These four performance evaluations illustrate the positive effects derived from the implementation of EPR policies irrespective of the policy instrument used. But, the available information and data concerning the results are not sufficient to clearly distinguish whether the environmental effectiveness are from the policy by itself, or as part of other policy or regulation packages, such as waste volume charges or a material tax. More consistent measuring and reporting of performance and costs of EPR schemes is needed to have a more comprehensive evaluation of EPR polices and monitoring mechanisms should be built into polices from the start.

Technical innovation

Candice Stevens reviews the state of technical innovation and EPR policies and provides a framework for analysing the relationship between extended producer responsibility and innovation. The paper emphasises that extended producer responsibility can lead to far–reaching design changes that are beneficial to the environment; however, innovation effects depend on the stringency of the EPR policy instrument used.

A positive effect of EPR, as seen through the country evaluations, is the incentive for producers to alter the design of their products to reduce their impacts at the post-consumer stage of the product's lifecycle. The extent of the innovation - incremental or radical - will be moderated through firm-specific factors relating to their motivations. Incremental changes include those made to simplify a product or modify components for easier disassembly or reuse, whereas radical innovation would be considered as a more holistic approach such as green product design or design for environment (DfE). In most cases, radical innovation will generate future profits for the producers.

What are the incentives and drivers in an EPR scheme that will stimulate action by producers to reduce the environmental impacts from their products at the post-consumer stage? Before we can answer this question at the international level, it is first necessary to discern which policy incentives are driving product design changes in an EPR scheme. Further study and identification of the incentives and drivers for innovation and results achieved amongst the different EPR schemes in OECD countries could provide important information to help governments increase the effectiveness and efficiency of their EPR schemes.

Political economy

Naoko Toja and Lars Hansson give a comprehensive review of the political economy for implementing EPR based policy instruments and reviews some of the factors related to the choice of instrument used and other issues associated with the context in which it is implemented. The paper analyses the relationship between various institutional and market factors surrounding EPR policy instruments that have been widely used by OECD governments. It stresses the importance of incentives to motivate actors along the product chain to actively participate in a scheme and provides an in-depth review of the issue of product diversity and how it can affect the management and effectiveness of the EPR scheme in reducing environmental impacts.

This paper states that producer responsibility organisations can be an effective way of organising a collective EPR scheme and could be useful in promoting innovation in cases where fees and charges are differentiated. Yet, there is sometimes a conflict with local governments when they wish to secure employment and continue to be involved in the collection of waste. The governance of producer responsibility organisations is critical to the costs and effectiveness of EPR. Careful consideration of the product, market and other structural and institutional aspects need to be fully reviewed before a collective and/or individual responsibility is designated.

The paper attempts to describe some of the different policy mixes used for implementing EPR, for instance, mandatory take back schemes with recycling targets. There may be certain policy mixes that are more effective and efficient for certain types of product categories. To provide more conclusive evidence on the performance of EPR policy mixes, the different policy mixes in OECD countries should be documented and assessed to determine their economically efficiency and environmentally effectiveness.

EPR, society and cost sharing

Kazuhiro Ueta describes the effect of EPR policy on segmented society and emphasises how EPR can be an important stimulus in the establishment of a recycling-oriented society, an important environment policy priority in Japan. He notes that economic agents make individual decisions based on their own preferences and profitability. However, to reduce the impacts of waste, it is necessary to integrate this segmented socioeconomic system. Incentives and signals to economic agents across the product chain to take into consideration the environmental impacts of the product are not self-generating and need to be created institutionally.

In his analysis, he finds that EPR is a policy promotes information about the environmental impacts of the product to producers, distributors and consumers, sending appropriate signals across the chain to take into consideration appropriate waste disposal and recycling. He also emphasises that a particular aspect of EPR policy is that EPR not only changes the allocation of responsibility, but can stimulate the sharing of responsibility and costs across the product chain. But before making any conclusions on the performance of EPR policies, he underlines the need for ex post evaluations of EPR schemes and suggests that further research should be carried out to better clarify the position of EPR within the system of public policy and in reducing the environmental impacts of certain products.

Main Findings and Conclusions

Based on the papers presented and the discussions at the workshop, several key findings and conclusions emerged. The OECD could provide further practical work in the future on many of the findings and conclusions.

- The objectives of EPR policy should be clearly specified, e.g. reducing the volume and/or the toxicity of waste, however, the ultimate goal should be to maximise social welfare by reducing the environmental impacts from post-consumer products to the optimal level.

- Economic agents involved in EPR (for example, producers, retailers, and waste recycling facilities) should be subject to appropriate economic/financial incentives to stimulate participation and to reduce the impacts of waste. For instance, producers being required to pay advance disposal fees and providing financial

assistance for recycling can be an effective approach for stimulating producers to reduce the impacts at the waste stage.

- EPR policies should be subject to continuous monitoring and evaluation and an appropriate economic evaluation framework should be developed that can be used for both *ex ante* and *ex post* evaluations. More consistent measuring and reporting of performance and costs is needed

- The range of policy mixes for implementing EPR should be defined and thoroughly analysed in terms of their economic efficiency and environmental effectiveness

- EPR policy can promote technological innovations such as new production process and stimulate producers to design products that are more environmentally compatible (i.e. design for the environment).

- EPR can work effectively if there are well functioning markets for recyclable products and materials. Recycling market failures should be identified and measures to overcome them deployed. This is currently being assessed in the context of the OECD project on "Improving Recycling Markets".

- As more countries develop EPR policies for different waste streams and product categories, it was found that the benefits and opportunities for co-ordinating action and sharing information when EPR systems operate in different countries for similar consumer goods, and across borders, should be investigated.

The workshop demonstrated the need for further work on the economic aspects of EPR. The findings and conclusions listed above underline the need for better evaluation on the environmental effectiveness and economic efficiency of EPR policies. The first challenge is to obtain more systematic information and data on the performance of these policies through the development of an analytical framework tailored to EPR schemes and to apply the framework though country-specific case studies. This would help provide more consistent and comparable data and help to better understand the performance of EPR policies and their results achieved. This work could be carried out in conjunction with further research into the direction and rate of innovation in products resulting from the implementation of EPR. A key question needing a response is: How do the different EPR policies influence

product redesign and waste prevention? What EPR policy instruments are more effective in driving upstream changes in product design and resource inputs?

With the trend towards an increase in the application of EPR in OECD countries, there is a strong need to better define the role of EPR in public policy.

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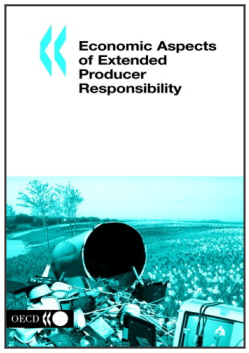

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