

5. Extended Producer Responsibility: Design and implementation

A frequent objective of Extended Producer Responsibility (EPR) schemes is to ensure secure and safe collection and disposal of substances or products that would otherwise be hazardous or harmful within the general waste stream. Another frequent motivation is to reduce public waste management costs by shifting the burden of collecting and managing significant parts of the waste stream away from tax-financed municipal operations. This section discusses commodity coverage of EPR schemes as well as issues of design, constitution and financing of Producer Responsibility Organisations (PROs). It also addresses the establishment and enforcement of EPR performance targets as well as costs borne by industry and consumers.

5.1 Incentives for behavioural change

Like deposit-refund systems, most EPR policies aim to encourage separate collection of products to permit cost-effective re-use, or higher rates of recycling or materials recovery. A frequent objective of EPR schemes is to ensure secure and safe collection and disposal of products that would otherwise be hazardous or harmful within the general waste stream. An additional motivation is often to reduce public waste management costs by shifting the burden of managing significant parts of the waste stream away from tax-financed municipal operations.

Some EPR schemes have a more ambitious objective, to stimulate the production and sale of “greener” products with lower end-of-life disposal costs. In principle, when producers are made responsible for these costs, they have a reason to take them into account in product design and manufacture. However, it is difficult to design a practical scheme that achieves this effect without excessive complexity. For firms to face a meaningful incentive for waste-reducing innovation in product design, the costs borne by each producer participating in the scheme would need to be very accurately related to the waste management costs generated by its *own* products. Most schemes in international practice involve simple cost-sharing rules between firms, and these do not provide strong incentives for waste-reducing product innovation.

Unlike deposit-refund systems, EPR typically leaves producers, either individually or collectively, with more flexibility to determine how they achieve the objectives of the policy. This flexibility can reduce the burden on producers, but it also means there is a greater risk that the policy could fail to achieve the intended outcomes. For this reason, it is essential that policy design start from a clear assessment of the objectives of the policy and the elements needed to ensure their achievement.

5.2 Design issues

EPR schemes vary, but the following features are common to many schemes:

- Producers are assigned certain obligations concerning the collection (“take-back”) of product packaging or end-of-life products, either at the level of individual firms or, more commonly, through one or more industry-sponsored collective agencies (Producer Responsibility Organisations or PROs);
- Producers are required to bear the costs of collection, recycling and waste management of the collected products and materials, either individually or by sharing the operating costs of a collective PRO;
- Rules or targets are set either for individual firms or for the collective PRO, governing the methods of waste management of recovered products and/or specifying minimum required rates of re-use or recycling.

5.2.1 Commodity coverage

EPR can be introduced for individual products or for a whole category of products manufactured by a particular industrial sector. No country has introduced legislation imposing EPR obligations across the whole of manufacturing and retail business, and there would be major practical difficulties in doing so.

Examples of EPR applying to individual products are seen in many countries. The products to which EPR has been successfully applied are much more varied than those

subject to deposit-refund systems. Many countries have more than one EPR scheme, each of them designed to meet particular objectives relevant to the product concerned. Thus, for example, the purpose of an EPR scheme for batteries or for waste oil may be primarily to ensure that hazardous materials do not enter the general waste stream, while a scheme for used car tyres may aim to reduce the hazard of fires in large-scale tyre dumps, and a scheme for packaging waste may be primarily concerned with promoting reductions in the quantity of such waste.

It is desirable to focus EPR on a tightly-defined product or product group. This ensures that the number of firms involved is manageable and that the scheme can be designed in the best way to achieve the specific objectives relevant to that product.

Different objectives typically require different organisation and operating rules. Where the aim is to prevent hazardous materials entering the waste stream, a high priority should be given to ensuring a high level of participation and to monitoring and enforcement. Some public funding may be desirable to ensure that incentives for non-participation are low. On the other hand, where the aim is incentivising waste reductions, the most important element in the scheme is the financial burden placed on participants, as this is what will encourage waste reductions.

Nevertheless, even where separate EPR schemes are introduced for different products, there may be advantages in introducing various common elements in design and operation. It may be possible for a number of schemes to be covered by a single piece of legislation, reducing the risk that the effectiveness of the scheme could be undermined by lobbying by an individual firm or industry. Common design also makes implementation easier, and those involved in each scheme can see other examples in operation, providing benchmarks against which performance can be judged.

5.2.2 Producer Responsibility Organisation

Most of the wide range of EPR schemes that have been implemented across OECD countries do not require individual firms to directly manage their own end-of-life waste products, but instead assign this role to a Producer Responsibility Organisation, which frequently is a not-for-profit firm owned and run by industry. The PRO may collect and process end-of-life products from retailers who have collected them from consumers, through its own network of collection points. Alternatively, the PRO may subcontract collection to municipal services and then handle the waste management, either directly, through its own sorting, dismantling and recycling activities, or by contracting with specialist waste management and recycling firms.

In principle, PROs could take a number of institutional forms:

- A private non-profit company, owned by an industry body, by firms or by a public agency;
- A private profit-making company, with individual or corporate shareholders; or
- A public agency. If the PRO takes the form of a public agency, it is particularly important that its operating rules require it to operate on a non-subsidised basis, covering its operating costs from the revenues it obtains from firms.

PRO “membership”

There are different schemes concerning the rules for participation in the PRO. In some schemes, a single PRO is established, and all collection and waste management

activities are required to be channelled through this organisation. In other schemes, firms may have the option of opting out of the PRO and conducting the take-back and recycling activities individually. In other cases, more than one PRO may be established, competing for business from individual firms.

In some countries that have employed EPR, the design and operating constitution of the PRO has been specified through legislation. In others, the PRO has been established on a negotiated voluntary basis through discussion between public authorities and the relevant industry organisation. How far the latter route is practicable will depend, amongst other factors, on the existence of an industry organisation capable of making long-term commitments on behalf of its members. There are significant risks of “free riding” in any scheme of EPR involving an element of voluntary action by firms, because EPR is generally costly for firms, and a firm that neglects its obligations will gain advantage relative to its competitors (thereby undermining the effectiveness of the scheme).

The most efficient organisation of collection and recycling activities within a sector may take some time to emerge. The competitive pressure that arises when firms have the option of leaving existing bodies and setting up new arrangements will be an important part of the process of innovation and market adjustment, and EPR schemes should offer the maximum possible scope for this – consistent with adequate monitoring and compliance. However, it is important that a scheme start with workable structures capable of achieving the initial objectives and covering the products of all firms within the sector. The most effective way to do this may be for EPR legislation to include provisions to set up an initial PRO, to which all firms would initially be required to subscribe. This would become the “default” PRO within the scheme and may, for a time, be the only operator of collection and recycling. Over time, a more diverse range of PROs – and, possibly, single-firm collection and recycling operations – may emerge, leading to greater efficiency.

There are some important conditions for this process of institutional development to contribute to greater efficiency. One is that all PROs, and any opt-outs based on single-firm collection and recycling operations, should be subject to equivalent targets and effective monitoring of compliance, with meaningful sanctions for non-compliance. “Opting out” should not offer an opportunity for non-compliance. A second key condition is that PROs should face equivalent financial conditions, based on cost-sharing by the participating firms. The initial PRO should not be given competitive advantage by public subsidy, nor should it be burdened with responsibilities that are more onerous than those applying to opt-out firms and alternative PROs.

Flexibility in operation

A key policy decision is how much flexibility to permit the PRO in the methods it uses to achieve the required amount of collection and recycling. The legislation may require the PRO to operate a DRS to recover items. This ensures that households have a clear financial incentive to return items to the appropriate collection point, but the arrangements for collecting deposits and subsequently returning them can be complicated and costly.

In some countries it has been demonstrated that significant rates of separation and recovery can be achieved even without providing households with a direct refund incentive. Separate return for recycling is often encouraged by forbidding the disposal of certain items within general household waste. PROs may also be able to achieve high

rates of voluntary return through public education campaigns, and by ensuring that households can return items through convenient collection sites.

Leaving the PRO and its member firms to choose how to achieve the required outcomes may encourage desirable innovation and the adoption of lower-cost solutions. In some countries, PROs contract with municipalities to collect WEEE and other items on the PRO's behalf. Municipalities may be able to do this cheaper than the PRO itself by combining collection with regular collection of household garbage. The incentives for cost-saving efficiency are further enhanced in some countries by the presence of multiple PROs, which compete for members (i.e. for producers) by offering a more cost-effective achievement of the collection and recycling targets, and hence a lower subscription cost. In general, this efficiency-enhancing competition is highly desirable, but it needs to be backed up by rigorous public monitoring of compliance, to ensure that the competing PROs offer low charges through greater efficiency rather than through fraud or inadequate achievement of collection and recycling targets.

PRO financing

Typically, a PRO levies charges on participating firms to cover the net costs of its operation. The latter usually include costs of collection and subsequent treatment of waste products. Where the waste products are to be recycled, there may be significant costs of separation, sorting and transportation. In some cases, where commercially profitable recycling operations exist, the PRO may receive significant income from the sale of recyclable materials to recycling companies. In other cases, when recycling is required by the rules of the scheme but is not commercially viable, the PRO may need to pay to have recycling undertaken. The PRO will make a trading loss if its operating costs exceed any income received from recyclers, and this will need to be covered by contributions from members.

Financial contributions levied by a PRO to cover its net operating costs are usually proportional to the current and/or past sales volumes of participating firms. In some cases, the contributions include both a fixed amount, unrelated to market share, and a volume-related component. A fixed element in the charge levied on each firm may be justified if each additional firm imposes a significant additional cost on the PRO, regardless of its scale of activity, but it can impose a disproportionately heavy burden on small firms. The charge levied on firms could also be based on the characteristics of the products, especially those affecting waste management costs such as the use of composite materials that cannot be recycled. Then firms making “dirtier” products in terms of end-of-life waste management have to contribute more towards PRO costs for every unit sold than a firm making a product that is more easily recycled or re-used.

It is clear that these are crucial issues for individual firms participating in the PRO, in terms of both long-term environmental incentives and the impact of the EPR scheme on the pattern of competition within the industry. There are two key aspects:

- First, the incentives for a producer to design products that will have low waste management costs will be sharper if the waste management cost savings translate directly into lower contributions to the running costs of the PRO. If all firms share PRO costs equally, without regard to the waste management costs of their products, the incentive for an individual firm to make waste-reducing product changes may be small. Devising a scale of charges which reflects end-of-life waste costs for different products is difficult and potentially controversial between member firms. Nevertheless, it has been done in a number of cases in France,

where, for example, charges for packaging materials have been differentiated to penalise material that is disruptive to the recycling process, and where charges for WEEE are levied according to the content of hazardous materials.

- Second, the competition within the industry may be affected by the relationship between PRO charges and product volumes. There are dangers in allowing the firms involved too much freedom to determine the rules of the PRO because dominant firms can use these rules to enhance their dominant position at the expense of new entrants and other competitors.

The practical arrangements for collecting the contributions from firms could take a number of forms, including:

- A public agency collecting contributions from firms and paying them over to the relevant PRO. This may have the advantage of using the tax authorities' enforcement information and powers.
- A public agency collecting and auditing firms' data on sales/imports of the product in question to ensure that the firms have provided honest data, and then supplying the PROs with information on the relative contribution they should levy on each of their members;
- An entirely PRO-run operation, in which the PRO requests information from each firm on its sales/imports, takes whatever measures it can to verify the accuracy of this information, and invoices each firm for its appropriate contribution. Since firms share the costs of the PRO, any shortfall in revenues due to dishonest reporting by one of its members is borne by the other members, who can exert pressure for accurate reporting, and have the option of leaving a PRO that is badly undermined by dishonesty.

The choice between these options should be judged on the basis of an assessment of what is most likely to work effectively in the given context.

Imported and "orphan" products

A PRO which collects and recycles all products of a specified type (e.g. batteries) will find that some of the products which it handles were not originally produced by its current members. These will include two major categories: imported products and "orphan" products, made by manufacturers that have since gone out of business. It is generally desirable that the PRO accept these products from consumers on the same basis as others, especially if they would be hazardous if discarded in the general waste stream.

An EPR scheme can require large-scale commercial importers to contribute to the PRO on the same basis as domestic manufacturers and producers. However, it may be harder to ensure that smaller scale importers have any involvement in the PRO, especially when these are individuals purchasing foreign-made products either directly across the border or on internet sites. These are likely to be minor issues, but they can become a focus of considerable irritation for participating firms.

In some cases covering the costs of handling "orphan" products could become a problem. In some industries that have undergone major restructuring, a high proportion of current wastes may be the products of manufacturers who are no longer in business. These products, being older, may have relatively high waste management costs. Requiring existing producers to foot the bill for managing these wastes is likely to meet with a lot of opposition on the grounds that the burden is excessive and unjust. The best

solution is probably some element of public subsidy to the operating costs of the PRO, based on the proportion of uncharged imported products and orphan products that it handles. This avoids the risk that a large bankruptcy or a sudden rise in imports will increase the contributions required from the PRO's member firms.

5.3 Legal and institutional issues

EPR legislation needs to specify the obligations which the EPR scheme will place on the relevant producers. These obligations usually cover end-of-life waste management, including disposal methods. EPR legislation should be clear and explicit, otherwise it may create uncertainty for business and lead to costly and wasteful litigation disputing the scope of application of the policy. In particular, it should specify the products covered by the scheme (as with deposit-refund systems) and the categories of firms subject to its requirements (only manufacturers or wholesale or retail firms involved in selling the product as well).

Firms covered by EPR obligations

In general, most schemes place the obligation on domestic producers and on importers. This ensures that someone is responsible for all sales made within the country concerned, and that only one firm is responsible for the end-of-life costs of each item sold. Some EPR schemes (especially those for packaging) share the responsibility among a number of market participants including producers, wholesalers and retailers, especially when it comes to financing its operation.

Shared responsibility in this way may be seen as “fair”, and it may be a way of reducing the financial burden placed on any individual firm. It may also be a way of raising the awareness of all market participants of the costs of end-of-life waste management. However, it has the danger that it can blur and weaken responsibility, and hence reduce incentives for action, since no firm faces the full burden of responsibility for end-of-life costs. Whatever decision is made about firms to be covered by the obligations set up under the legislation, a choice will have to be made about how far this applies to firms with only a small involvement.

Nature of the obligations placed on firms

In some EPR schemes, the obligations for end-of-life costs are borne and carried out at the level of the individual producer. A firm may recover its own products and take responsibility – both physical and financial – for recycling and disposing of the wastes arising from its own products. Firms face individual targets and individual penalties if they fail to meet these targets.

If EPR is operated through an industry-wide PRO, the producers' primary responsibility is financial, and the targets and any penalties for non-compliance would apply to the PRO. Firms would share financial liability for non-compliance with the performance targets.

Targets or outcomes which firms are expected to achieve

One key aim of EPR is to ensure that producers manage the wastes from their end-of-life products in a way that contributes to higher environmental standards. The legislation, therefore, needs to contain a clear specification of the standards of waste management that producers are expected to achieve, either through individual management of their

wastes or through the operations of the PRO which they finance and control. What proportion of their waste products should be collected through the EPR scheme, and what should then happen to the collected wastes? What proportion of the waste should be recycled?

The legislation may specify the targets directly or define a clear process for subsequent target-setting by the government. The latter option has the advantage that waste recovery and recycling targets can be adjusted more flexibly in the light of experience, though firms may fear that it increases the risks that they will face sudden and unrealistic demands to meet more stringent targets.

However the target is set, this is an important decision both for the environmental outcomes that the scheme will achieve and for the costs that EPR will impose on firms. The higher the rate of collection and the higher the rate of recycling required, the greater is likely to be the financial burden on firms.

Requirements for record-keeping, reporting and audit

Given the burden that EPR imposes on firms, it should not be expected that all firms will willingly comply with the requirements placed on them. EPR legislation should contain clear provisions for monitoring compliance so that firms that fail to meet their obligations can be clearly identified, and corrective action taken.

Both the public authorities and any collective industry-run PROs need to collect regular information on the performance of the scheme and on the relevant activities (sales, etc.) of individual participating firms. Both also need effective powers of audit and verification.

Mechanisms for enforcement action

EPR legislation also needs to specify the consequences for firms of failing to achieve the outcomes set in the legislation. An EPR scheme will only operate effectively with clear sanctions for non-compliance. In some countries, a significant part of the sanction for non-compliance is the potential reputational damage to firms which are seen to be failing to meet their obligations. However, a realistic judgement needs to be made about how much reliance can be placed on this as an incentive for compliance. The public authorities need to be able to apply appropriate sanctions for non-compliance, including financial penalties that are significantly higher than the potential profits that firms could make through non-compliance.

5.4 EPR performance targets and costs borne by industry and consumers

With a product tax, the crucial policy decision that governs the effectiveness of the scheme, and the costs imposed on producers and consumers, is a simple one – the choice of the rate of tax. Likewise, with a deposit-refund system, the effect is largely driven by the deposit rate that is set. With EPR, the crucial policy decisions that determine the effectiveness and the burdens borne by producers and consumers are less transparent but no less important. These decisions govern two aspects of the operation of the EPR scheme in particular:

- **Collection rates:** What is a realistic target to set for the percentage of the relevant waste stream to be recovered?

- **Recycling and recovery rates:** Should targets be set for the proportion of the collected waste to be recycled or for the percentage of materials recovery, and on what basis?

The higher is the target set for waste recovery, and the higher is the percentage of recovered items that must be recycled, the greater will be the operating cost of the scheme. A very high target for recovery risks requiring the PRO to incur high costs of collecting a relatively small number of additional units, probably well in excess of the social and environmental benefits of the additional recovery.

Where EPR obligations are imposed on individual firms, their costs of compliance will be most likely subsumed in the operating accounts of the company concerned and difficult to observe. Firms may assert that they bear excessive burdens in operating the scheme, but these claims will be almost impossible to verify. An EPR scheme run through a collective PRO offers, by contrast, greater scope for monitoring the costs of operation imposed on firms, since the turnover of the PRO, as measured in its accounts, is essentially the financial burden which firms must share. Institutional arrangements for EPR which require the PRO to produce and publish externally audited accounts provide a sound basis for assessing the burden placed on firms by EPR and for weighing this burden against the public benefits of safer disposal or recycling of the recovered materials.

The costs borne by consumers also need to be considered in assessing the overall cost of achieving waste management improvements through EPR. These consumer costs may include costs of separating items from the general waste stream and of transporting them to collection points. Very similar consumer costs are typically involved in the operation of deposit-refund systems, although an EPR scheme which aims to increase the rate of collection will need to seek innovative ways of reducing the costs to consumers of returning items. Ultimately, public understanding and support will be crucial to the successful operation of EPR. If consumers understand the reasons for EPR, they are more likely to be motivated to separate and return their waste products within the EPR scheme.

References

- EC (2005), *Concerning issues of competition in waste management systems*, http://ec.europa.eu/competition/sectors/energy/waste_management.pdf.
- Öko-Institut (2002), *The Green Dot and its benefits for the environment: life cycle analysis of scenarios for the future*. Report to DSD.
- Porter, R. C. (2002), *The economics of waste*, Resources for the Future Press, Washington D.C.
- Smith, S. (2005), *Analytical framework for evaluating the costs and benefits of extended producer responsibility programmes*, OECD, Paris.
- Walls, M. (2006), “*EPR Policies and Product Design: Economic Theory and Selected Case Studies*”, paper prepared for OECD Working Group on Waste Prevention and Recycling, OECD, [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=env/epoc/wgopr\(2005\)9/final](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=env/epoc/wgopr(2005)9/final).



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