

PART II

Chapter 4

Competition and extended producer responsibility

This chapter investigates the effect of EPR schemes on competition in markets. While consensus exists between different jurisdictions on how to assess these effects, there are also differences. Among other things, the chapter demonstrates widespread agreement that: i) EPR policies should be as pro-competition as possible, ii) monopoly should not be the default structure for producer responsibility organisations (PROs), iii) agreements among competitors to establish PROs should be assessed externally; iv) competition authorities should not distinguish between voluntary and government-sponsored agreements; v) waste collection, sorting and treatment services should be procured by transparent and competitive tender.

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4.1. Introduction

The concept of “Extended Producer Responsibility” (“EPR”) has become a widely-established principle of environmental policy towards certain products. EPR may be promoted through a range of tools. These tools may affect competition in the markets for the products themselves as well as markets for waste management. How can EPR schemes be designed both to achieve environmental objectives and to protect competition in markets?

EPR makes producers responsible for the cost of managing their products once they become waste. EPR policies have been adopted in many OECD countries for packaging waste, electrical and electronic waste, batteries, tires and end-of-life vehicles. Pharmaceuticals, furniture, and agricultural-veterinary chemical containers are other examples. A take-back requirement imposed on producers appears to be the most commonly used instrument, with advance disposal fees and deposit/refund schemes used less frequently (OECD, 2013).

Competition laws in OECD and many other countries typically aim to promote economic efficiency, often along with other objectives. The laws define and prohibit anticompetitive conduct. Some also prohibit distortion of competition by state subsidy or state grant of exclusive rights. EPR policies have been the subject of competition authorities’ advocacy for more competition-friendly regulation. Companies and consortia engaged in the fulfilment of EPR have sometimes infringed competition law:

“The provisions most commonly examined by competition authorities concern limitations on independent collection and recycling services, quotas allocating recycled product to users based on historical market shares, and exclusivity-type provisions that prevent participants from dealing with third parties, thus preventing the development of rival waste management and recycling schemes.” (OECD 2010, p. 13).

The purpose of this chapter is to investigate the effects of EPR schemes on competition in markets. It follows up on the competition chapter of the 2001 OECD Guidance Manual for EPR.

The remainder of this chapter is structured as follows. The introduction describes the EPR measures, focussing on collective take-back systems. The second section briefly introduces the competition concepts that have been applied to EPR systems. The third section examines the competition issues that EPR schemes have or may generate in four

markets – for the collective schemes, waste collection, waste recovery and disposal, as well as products. The last part identifies those areas where there appears to be consensus on how to address competition issues. It also identifies some areas where there are apparently differences in views. These differences can arise because of differences among competition laws, as well as among the products themselves.

4.1.1. EPR instruments

The competition concerns of collective take-back systems are the focus of this chapter. Two other EPR policies – advance disposal fees and deposit/refund schemes – are sometimes considered, too. A recent survey found take-back requirements to be the most common policy (72% of those EPR schemes surveyed) and applied to a wide variety of products. The other two instruments are used less frequently, 16% and 11%, respectively among those surveyed (OECD, 2013). A related concept, “product stewardship,” encompasses not only systems where producers have responsibility, but also where municipalities retain their waste management responsibilities and extend them to include recycling and reuse. In this paper, the term “collective take-back systems” includes systems where municipalities perform some waste management against payment from a collective of producers subject to EPR. In general, illegal collection, trade, recovery, and disposal of waste is not a subject of this paper; illegal handling can, if less costly than complying with laws, undermine legal markets and legally compliant businesses.

A product take-back policy requires “producers” in a jurisdiction (a term which includes anyone who puts a product on the market in that country) to take back the product at the end of its life. Product take-back is often accompanied by regulations that impose targets for reuse, collection or recycling. Take-back may be organised in different ways: Producers may take back the products themselves, or organise a cooperative system for doing so, or purchase the service. An advance disposal fee is an additional fee imposed at the point of sale; funds are used for disposal costs. A deposit/refund policy entails the purchaser paying a fee at the point of sale and, if the product is subsequently brought to a collection point, the fee being refunded.

EPR policies are not mutually exclusive, e.g. producers may charge an advance disposal fee to cover the cost of a take-back obligation. For example, with respect to waste collected from households, it is not uncommon for different fractions to be subject to fees, quotas on recycling, and bans on landfilling. Indeed, a well-established result in economics is that at least as many policy instruments – such as fees, quotas and bans – are needed as there are policy objectives – such as shares of different waste to be recycled or re-used (Tinbergen, 1967). Consequently, it is neither surprising nor inherently inefficient to subject waste streams to multiple instruments.

4.1.2. Markets and actors

EPR schemes may affect competition in several markets. One of these is the market for the organisation of systems or solutions to fulfil EPR obligations, that is, the market for PROs. Producer responsibility organisations (“PRO”) are frequently established to fulfil producers’ product take-back obligations. In some cases, a PRO may be created by groups of producers or waste management companies, or it may be an independent and unrelated company. A PRO frequently procures the services of waste collectors, sorters, and treatment companies, as well as monitors the fulfilment of the contracts so as to provide proof of fulfilment of the EPR responsibilities. Thus a PRO has several groups of users:

producers, collectors, sorters, and treatment service providers. Alternatively, a PRO may procure some services, such as waste collection, from municipalities. The structure of markets for PROs differs; many are monopolies although some are oligopolies or competitive markets. PROs may or may not own the waste, a distinction that affects who gets the residual value of the waste. In some instances PROs themselves perform some waste management services, whereas in others they contract for the services. Differences between national legislation tend to make markets for PROs no larger than national.

A second set of markets are those for waste collection and sorting. These tend to be local up to national in scope, depending on what is collected and from whom. One option for collecting packaging waste subject to EPR from households is kerbside collection; a further option is to require households to deposit such waste at designated facilities. A third option is for informal but not illegal actors to collect recyclable waste. Kerbside collection of waste from households is usually a local natural monopoly in OECD countries. A natural monopoly is a market where the conditions of cost and demand imply it is cheaper for one entity, rather than two or more, to supply the market. Consequently, this kerbside collection service is often performed by a regulated private monopoly or a municipal monopoly. Collection from designated deposit facilities may exhibit different scale and density economies.

By contrast, the collection of recyclable waste from businesses tends to be subject to competition from a handful of rivals, that is, to be oligopolies. The geographic extent of these markets varies from local to at least national. E.g. markets for collecting waste lead batteries are national in Italy and Poland, local for end-of-life vehicles in the Netherlands, and provincial for recyclable materials from Dutch end-of-life vehicles. The geographic extent of markets for collection from businesses depends on a number of individual factors, including legal restrictions and transport costs.

Waste is sorted after it is collected from households. The sorting is done in relatively capital-intensive plants, which therefore enjoy scale economies. Experience suggests that the minimum efficient scale for sorting is larger than for collecting (see paragraph 106). That is, the scale at which the cost of sorting is minimised is larger than the scale at which the cost of collecting is minimised. Commercial packaging waste is usually sufficiently sorted at source and needs no further sorting. Sorted waste is often transported to a consolidation point, where the heterogeneous arriving loads are rearranged into homogenous loads and dispatched to be transported to specialised waste treatment facilities. A consolidation point enjoys economies of scope. This implies that a PRO established in one waste stream would find it easier to enter a new waste stream in the same geographic area than would a PRO without an appropriately located consolidation point.

A third set of markets are for waste recovery and disposal. The geographic extent of these markets may be national or even international, with *inter alia* legal restrictions, transport costs, and scale economies affecting their extent. For example, evidence from one case suggests that although international trade in end-of-life vehicles is restricted by legal barriers, spare car parts are increasingly traded internationally (European Commission decision No. 2002/204/EC (ARN) OJ L 68/18, points 17, 18, 72). Hazardous waste is subject to stricter international trade conditions than non-hazardous waste. The market in which secondary material is sold may also include primary raw materials: This appears to be the case for glass for containers and for lead.

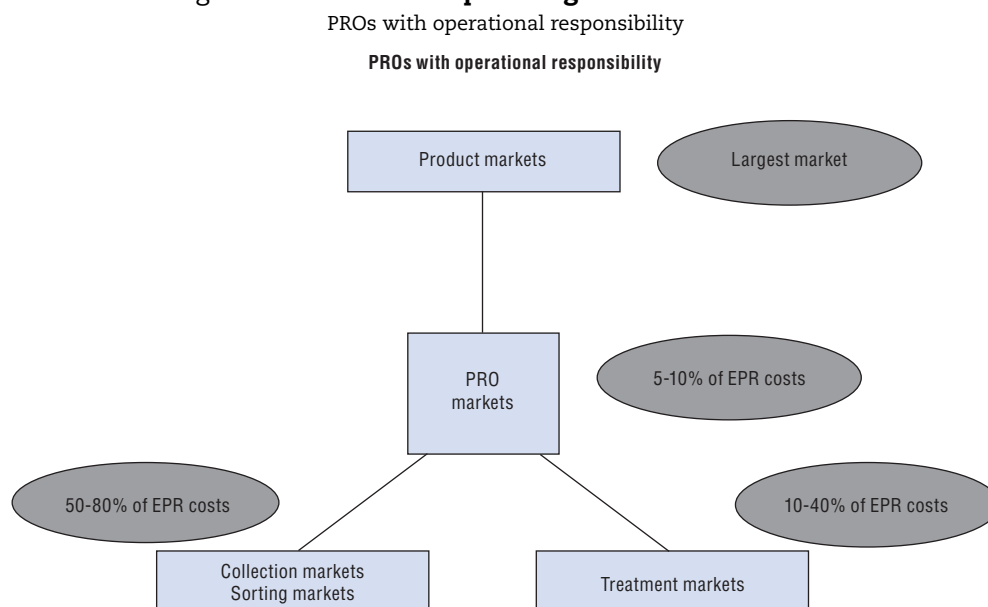
The three markets account for very different shares of the cost of handling waste for recycling or reuse according to EPR. One estimate is that PRO services approximately

account for 5% to 10% of the total cost of EPR, whereas collection and sorting account for 60-80%, and recovery and disposal for the rest.¹

A fourth set of markets are the product markets, that is, the markets for tyres or cars or consumer goods within packaging. The geographic extent of markets for products such as tyres, cars and electronics are usually national if not global. Suppliers to a product market may be of vastly different sizes. Depending on the waste stream, a given PRO may serve suppliers on many different product markets.

The relationship between these markets is a focus of this chapter. Figure 4.1 places these markets in relation to each other, and to the types of businesses or entities that act in them. If monopoly is the most efficient way to organise collection, then when is competition among PROs efficient? Are monopoly PROs subject to incentives to maintain competition in the markets where they procure services? When is it efficient for companies engaged in the different activities to contract exclusively with a single trading partner? Can competition in product markets be harmed by the conduct of PROs?

Figure 4.1. **Relationship among markets and actors**



Note: In some countries collection, sorting and sometimes recycling is the responsibility of municipalities. As a consequence they decide with whom to contract for these services not the PROs.

4.1.3. The 2001 OECD Guidance Manual

The 2001 OECD Guidance Manual for EPR (OECD, 2001) identified a number of potential competition effects. Several of these concerned the effect on competition in product markets. First, to prevent a take-back obligation from serving as a barrier to entry into the product market, PROs need to be open to any producers of the products under a PRO's purview. Indeed, the Guidance Manual warned against not only denial of access but also discrimination because of the potential for discrimination or denial to disadvantage certain competitors in the product markets. Such disadvantage could distort the product markets. Second, the Manual identified the risk that producers could use their co-operation in the context of a PRO as a cover for collusion regarding product markets. Relatedly, producers could use the PRO as a means to pass on unnecessary costs of the EPR programme,

or they could attribute excess costs to the PRO in order to raise the price of products and recoup the funds as excess dividends in their role as joint owners of the PRO.

Some of the other potential competition effects identified in the Manual concerned the market for PROs, themselves. The Manual urged governments to keep the regulatory barriers to entry into the PRO markets as low as possible, for example by refraining from giving official status to one particular PRO. As an additional measure to limit PROs' market power with respect to producers as well as with respect to sellers and buyers of collected materials, the Manual urged governments to allow for competition between PROs and producers' individual arrangements.

Another set of concerns in the Manual was the effect of PRO procurement on competition in collection services. It urged PROs to use open, competitive and fair procedures, to sign contracts that are not excessively long, and to not preference municipalities or incumbents.

The Manual also identified potential competition concerns with respect to secondary or recycled materials. One concern was the possibility that excess material may be sold at "below market values," harming competing recycled materials. A further concern was that mandates to preference local materials or that the specification to use particular materials could raise barriers to entry. The Manual also pointed out that requiring physical inspection of recycled materials can raise barriers to entry for recycled materials.

After more than a decade, the Guidance Manual's competition concerns continue to be relevant. Experience shows that some of the identified concerns did indeed come to pass, as did unanticipated competition concerns.

4.2. Brief introduction to competition concepts

Competition laws apply to the behaviour of undertakings. The laws restrict *inter alia* what agreements may be entered into and what information can be exchanged and, for undertakings in a dominant position in a market, the conduct they may engage in. The laws typically prohibit mergers and acquisitions that lead or may lead to a restriction of competition. Competition laws in the European Union, but in few other jurisdictions, have rules on state aid: These rules govern state subsidies as well as the grant of exclusive rights. The interaction of competition laws with other, e.g. environmental, laws is governed by national legal frameworks.

Most competition laws aim to prevent reductions in consumer welfare. Competition often leads to lower prices, increased variety or more innovation, each of which increases consumer welfare. Competition law aims to prohibit conduct that impedes competition, while subject to national frameworks as to how to take the objectives of other laws into account. National competition laws often have other objectives, too, and these vary from one jurisdiction to another. Although most competition assessments consider only economic costs and benefits, some competition laws include a general public interest objective, and in at least one jurisdiction this enables environmental costs and benefits to be taken into account.

Competition laws in many jurisdictions, including the European Union and United States, apply to undertakings regardless of their ultimate ownership – state, municipal or private – or profit/non-profit status. Under EU law, for example, any entity engaged in an "economic activity" is subject to competition law.²

The "relevant market(s)" is a fundamental concept in competition law and policy. It is a conceptual tool to structure the identification of the competitive constraints to which a

firm or firms involved in an investigation are subject. When the competition concerns centre on a firm's supply – rather than purchasing – conduct, the competitive constraints include other firms that supply goods or services which customers consider to be good substitutes. Relevant markets are defined anew for each competition investigation. For the purposes of this chapter, a relevant market is a collection of products that are sufficiently close substitutes that customers switch among them and their suppliers compete. “Market” is used here, more loosely, to refer to collections of relevant markets that have something in common, such as physically similar services, even if those services are provided in different geographic areas. Also, “markets” are where transactions occur; they punctuate the physical process. Here, if it is relatively common for transactions to occur at a particular stage in the physical process, a “market” is referred to.

Certain terms recur in this chapter, and it may be useful to define them. A monopoly is a single supplier to a market. Compared with perfect competition, a monopoly will set higher prices, produce a lower output, and earn above-normal profits. It may also have less incentive to minimize costs or adopt new technology. A firm free-rides when it benefits from the actions of another without paying or sharing the costs. Free-riding could be inadvertent, e.g. when a consumer buys a product subject to EPR from a foreign supplier, but neither consumer nor supplier pays for the waste handling. One definition of a barrier to entry is a factor that prevents or deters the entry of new firms into a market despite the incumbents earning excess profits. (OECD, 1993, paragraphs 134, 91 and 14) A change in cost is with reference to an unchanging good or service; if the quality declines but nominal cost remains the same, the cost has risen.

The next three sub-sections briefly describe three aspects of competition law and policy: The assessment of agreements and of single-firm conduct, and, for European countries, state aid rules. Mergers are not addressed here since the EPR context does not seem to present unique issues and merger assessment is well described in guidelines issued by the various authorities. The final subsection briefly addresses how competition laws interact with other laws.

The third main section of this paper describes the competition concerns that have arisen or may arise in EPR schemes. Examples illustrate the application of several aspects of competition laws. They also illustrate the differences among assessments of agreements between competitors as well as in the trade-offs between environmental and competition objectives.

4.2.1. Agreements

Agreements are categorised by the relationship between the parties involved. Agreements among competitors – horizontal agreements – are generally considered a greater risk to competition than agreements between suppliers at different links along the supply chain – vertical agreements. Agreements between competitors about price, the allocation of markets or customers, and bid-rigging – collectively termed “hard-core cartels” – are generally presumed to be anticompetitive. The exchange of information that could help to form or monitor a cartel is also generally viewed as anticompetitive. However, an agreement among competitors may also generate economic benefits, and analytical frameworks have been developed to aid the assessment of effects on competition under these circumstances. In the competition law context, “agreement” has a broad meaning well beyond a signed document and, in some jurisdictions, includes tacit understandings.

An agreement among producers to establish a PRO to fulfil producers' EPR would usually be assessed as a joint venture to provide waste management and recycling. In contrast to hard-core cartel agreements, these agreements are assessed on a case-by-case basis, examining the facts of the individual situation to make an overall assessment. In many jurisdictions, these agreements are assessed under a two-step analytical framework, first to determine whether the agreement is anticompetitive, second to assess proponents' evidence that the benefits from the agreement outweigh the negative effects, and that these benefits could not be achieved by less anticompetitive means.³

An example of a two-part analysis is contained in one of the two central competition articles in the law of the European Union, Article 101 of the Treaty on the Functioning of the European Union ("TFEU"). The EU competition law is particularly relevant since many EPR agreements concern markets within the European Union. Article 101(1) prohibits anticompetitive agreements and decisions of associations of undertakings. If an agreement is found to violate Article 101(1), then Article 101(3) becomes relevant. Its purpose,

"[I]s to determine the pro-competitive benefits produced by that agreement and to assess whether those pro-competitive effects outweigh the restrictive effects on competition. The balancing of restrictive and pro-competitive effects is conducted exclusively within the framework laid down by Article 101(3). If the pro-competitive effects do not outweigh a restriction of competition, Article 101(2) stipulates that the agreement shall be automatically void." (European Commission, 2011, para. 20, *footnotes omitted*).

Although many jurisdictions follow a two-step analysis, they differ in what benefits they take into account. For many OECD jurisdictions, the benefits must be economic, e.g. cost savings, better quality, greater variety or faster innovation, and they must accrue to the users of the good. For example, better waste management has been included in the concept of "technical or economic progress," one of the pro-competitive benefits listed in Article 101(3), in the VOTOB and DSD decisions, described below. By contrast, the competition laws of a few jurisdictions apply a public benefit standard that recognises non-economic benefits and detriments, such as environmental damage, that accrue to non-users of the good.⁴ Where costs – such as restrictions of competition – are significant, this raises questions of how to measure non-economic detriments such as environmental damage, and whether the competition authority has the expertise to do so (OECD 2010).

Horizontal agreements in the United States

Two other large jurisdictions, the United States and Canada, follow different processes. An agreement among competitors is, under the United States antitrust laws, first assessed as to whether it falls into the category of agreements that are illegal *per se* (US FTC and DOJ, 2000). Agreements in this category always or almost always raise price or lower output, so do not warrant investigation. Agreements to fix prices or output, rig bids, or to allocate customers, suppliers, territories, or lines of business are examples of agreements in this category. All agreements falling outside the illegal *per se* category fall into the category of those assessed under a rule of reason. This is a factual inquiry into the agreement's overall effects on competition. The inquiry is flexible, depending on the nature of the agreement and the market circumstances.

Rule of reason analysis compares the state of competition with the agreement to the state of competition absent the agreement. The main question is: Does the agreement increase the ability or incentives profitably to raise price, lower output or quality, or delay innovation?

In the first stage of a rule-of-reason analysis, the absence of market power and the nature of the agreement can lead to the conclusion that the agreement is lawful. Market power for a seller is the ability to raise price above the competitive level for a significant period of time. Market power is unlikely if the cumulative market share of the parties to the agreement is small or if conditions of entry make it likely that a new entrant can compete effectively. Some agreements concern matters that have little effect on competition. By contrast, if harm to competition is evident from the nature of the agreement or if the agreement has already caused harm to competition, then the agreement is unlawful.

If the initial examination indicates there may be competition concerns, then the agreement is examined in greater detail. If this more-detailed examination finds that there is no potential for harm to competition, then the agreement is lawful. In the opposite case, then the question is whether the agreement is “reasonably necessary” to achieve “cognizable efficiencies.” “Cognizable efficiencies” are efficiencies that have been verified by the [competition] Agencies, that do not arise from anticompetitive reductions in output or service, and that cannot be achieved through practical, significantly less restricted means” (US FTC and DOJ, 2000). “Reasonably necessary” does not imply “essential”. Finally, to assess the overall competitive effect of an agreement, the magnitude and the likelihood of both the anticompetitive harms and the cognizable efficiencies are considered.

Environmental costs and benefits, like other non-competition public policy objectives, do not enter into the analysis.

Horizontal agreements in Canada

Canadian competition law divides agreements among competitors into two categories corresponding to, respectively, Sections 45 and 90.1 of the law (Canada Competition Bureau, 2009). In the first category are those that fix prices, allocate markets, or restrict output. These are illegal *per se*. However, an agreement in the first category may benefit from the ancillary restraints defence if it is directly related to, and reasonably necessary for giving effect to, a broader, lawful agreement. It need not be the least restrictive alternative to promote the objective of the broader agreement to qualify for this defence.

The second category of agreements consists of other forms of competitor collaborations. These are prohibited only if they are likely to substantially lessen or prevent competition. An agreement is assessed on the basis of a factual investigation. If it is anticompetitive, then it is illegal. However, if cost savings and other benefits from efficiency gains are “greater than and offset” any anticompetitive effects from the agreement, then the agreement is legal. Like in the United States, cost savings from reductions in output, service, quality or variety, or gains that are merely redistributive, or gains that will be attained if the agreement is prohibited or ordered to be modified, are excluded from consideration.

This brief description of how agreements among competitors are assessed under three different competition laws illustrates their subtle but important differences. Where, for example, competitors agree to charge a small fee to pay for recycling, these differences can generate different decisions on whether the agreement is legal.

Vertical agreements

Vertical agreements are assessed, under most competition laws, for their effects on consumers and competition on a case-by-case basis.⁵ Vertical agreements usually facilitate better co-ordination by suppliers of complements, to the benefit of consumers. However,

they may exclude, or significantly weaken competition from, rivals. In the context of PROs, a PRO may enter into a network of parallel vertical agreements with a number of other, e.g. collecting, companies. Some vertical agreements require one party to deal exclusively with the other. An exclusive agreement can give incentives for parties to make efficiency-enhancing investments. On the other hand, an exclusive agreement or network of such agreements can harm competition: This can occur if rivals need access to products that are unavailable for long periods due to the exclusive agreements. There is a greater risk of harm if a large share of the market is foreclosed, the exclusive agreements have long durations, and simultaneous entry into both markets is difficult (ICN, 2013).⁶ Several cases have considered the competition effects of dominant PROs' networks of exclusive agreements.

To summarise, horizontal agreements to fix price, allocate markets or customers, or rig bids – collectively called “hard-core cartels” – are generally presumed to be anticompetitive in many competition laws. The exchange of information that can help to form or maintain a cartel is also anticompetitive. But a horizontal agreement, for example, to establish a PRO to provide waste collection and recycling that did not exist earlier, would generally be assessed on the basis of its overall effect. The case-by-case assessment of the specific facts of the agreement and its context would aim to identify the agreement's likely benefits and detriments. Jurisdictions differ in terms of which benefits and detriments can be considered. Vertical agreements are assessed on a case-by-case basis; although they usually generate cost savings to the benefit of consumers, they can nevertheless harm competition and consumers in some circumstances.

4.2.2. Single-firm conduct

The conduct engaged in by a single undertaking, acting alone, may violate competition laws. The terminology differs between laws e.g. “abuse of dominance” in European countries, “monopolisation” in the United States and “misuse of market power” in Australia, among others. The definitions also differ, although they all require at least that an undertaking have significant market power, which could be indicated by having a persistently high share in a market that is difficult to enter. An undertaking in a dominant position that abuses its dominance violates competition law. Whether conduct is abusive or not is determined case-by-case. Most often, abuse consists of conduct that excludes competitors or that increases the difficulty of market entry, although exploitation of customers, e.g. excessive pricing, constitutes an abuse under some competition laws. In order not to deter competition, “abuse” is not defined too broadly.

4.2.3. State aid

State aid, or government subsidy, as well as exclusive rights, may distort competition by allowing inefficient firms to remain in a market or to supply more to a market than they otherwise would.

Article 107(1) TFEU defines state aid as, “[A]ny aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods,” with a requirement that it affect inter-State trade. In the context of EPR instruments, in particular advance disposal fees, a key question is whether the charge is compulsory (European Commission, 2012, para. 34-35). Even if funds are administered by a private consortium that is independent of public authorities, if the funds are financed through compulsory contributions and managed according to legislation, then they are considered to be State resources within the meaning

of the state aid rules. This point is relevant in two decisions involving advance disposal fees for environmental purposes, one on meat and the other on new cars.⁷

The process by which the level of fees is determined could also affect whether an advance disposal fee constitutes state aid. The service for which compensation is received has to actually be performed, the compensation cannot exceed what is necessary to cover the costs, and the way the compensation is calculated has to be established in advance and be objective and transparent. The level of “necessary costs” may be determined through the use of a public procurement procedure or by an analysis of the costs of a well-run, typical undertaking, including reasonable profit (European Commission, 2012, para. 42-43).

A threshold, EUR 200 000 per undertaking over any three year period, can eliminate state aid concerns for very small schemes (European Commission, 2012, para. 41).

In summary, state aid rules aim to ensure that subsidies and legal monopolies do not distort competition. State aid is not generally a topic in competition laws outside the European Economic Area, which includes the EU, or EU candidate countries.

The next topic, however, arises in every jurisdiction with a competition law: How can other social objectives and competition objectives accommodate each other?

4.2.4. Competition as one of several laws

National legal frameworks govern how laws with different objectives, such as environmental and competition laws, interact. In European Union countries, the interaction with Union-level competition law is also relevant. Conflicts in a particular case can be resolved by pursuing, for example, the environmental objectives in the least anti-competitive way.

When examining an instance where, for example, environmental law affects the conduct of an undertaking, a key distinction is made between conduct that is allowed and conduct that is compelled by the environmental law. In many jurisdictions anticompetitive conduct can be shielded only if the “other” law requires the anticompetitive conduct, or precludes any other conduct.⁸ Advocacy for competition during the preparation of legislation or other policy measures can influence the design of those measures to achieve the policy objectives at lower cost to competition.

An undertaking that performs a public service is, like other undertakings, subject to competition laws. Within the European Union, Article 106(2) TFEU addresses the situation of undertakings operating services of general economic interest or that have been granted a revenue-producing monopoly. Member States may not enact measures contrary to *inter alia* the competition rules. These undertakings are subject to the competition rules insofar as the application of the competition rules does not obstruct the performance of their assigned tasks. Legislation must define the obligations of the undertakings and of the authority granting the special task (European Commission, 2012, para. 51).

An Italian case illustrates the resolution of a conflict between competition and a public service law. Article 8, 2 of Law 287/90, says that the provisions of the Italian competition law,

“...do not apply to undertakings which, by law, are entrusted with the operation of services of general economic interest or operate on the market in a monopoly situation, only insofar as this is indispensable to perform the specific tasks assigned to them.”

The competition authority had found that COBAT, the consortium for collecting used lead batteries, had infringed the competition law through *inter alia* allocating quotas of used batteries to recycling companies. The First Instance Administrative Tribunal found that COBAT had been established to serve public interest objectives and thus its conduct fell under the provision cited above. Upon further appeal, the Council of State found that the restrictions on competition were not indispensable to the public interest objectives, and thus confirmed the infringement (OECD, 2010, pp. 64-5).⁹

The OECD Council Recommendation on Competition Assessment (2009) says, in the section on revision of public policies that unduly restrict competition, that “Governments should adopt the more pro-competitive alternative consistent with the public interest objectives pursued and taking into account the benefits and costs of implementation.”

4.3. Experience with competition in EPR

EPR schemes can affect competition both in waste management markets and in markets for the products subject to EPR. This section describes and illustrates many of the competition issues that have, or may, arise. Following along the scheme outlined in section 4.1, markets for PROs are addressed first, followed by markets for waste collection and for waste recovery and disposal. The final section focusses on markets for products, e.g. tyres, cars, and batteries. Product markets can have very large volumes of trade, and harm to competition in these markets that raises price – or reduces quality or choice – by only a small amount can imply large losses of consumer welfare.¹⁰

Although not a complete inventory of EPR schemes, the extensive list compiled by Kaffine and O’Reilly (OECD, 2013) indicates that EPR schemes are used more commonly in European and North American countries than elsewhere. Of the 385 schemes listed, 167 are at a national level in Europe and 179 in Canada at the provincial or federal level or in one of states of the United States. Of the 284 take-back schemes, the corresponding figures are 144 and 115, respectively. Nevertheless, the experience with competition cases involving EPR schemes appears to be largely European, with some cases from other jurisdictions. The reason for this disparity is not clear. Reflecting this disparity, much of the discussion of experiences focuses on markets within Europe.

4.3.1. PRO markets

PROs fulfil producers’ EPR by organising *inter alia* the necessary collection, sorting and treatment of the specified waste. A PRO may be a monopoly, or it may compete against other PROs. Producers may also organise the fulfilment of their own EPR, but this is uncommon in practice. Many PROs were originally organised as monopoly joint ventures, fulfilling EPR for all producers selling specified products into a given country. This section first addresses some of the factors that influence whether monopoly or competition are more efficient. Three arguments that are often put forward to support monopoly for PROs are that the activity enjoys economies of scale, that a monopoly makes it easier to control free-riding, and that a monopoly is easier for regulators to oversee. But monopolies are subject to diminished incentives for efficiency and, where a monopoly service is legally required, buyers who have no choice but to deal with the monopoly can be exploited. This review of the arguments for and against monopoly is based largely on theory; the empirical experience comparing competition and monopoly among PROs in similar markets is limited to the few instances where competition replaced monopoly. If competition provides better outcomes than monopoly, then high barriers to entry or high switching

costs can protect a monopoly or dominant firm. These are the second and third topics of this section. If it is difficult for new PROs to enter into competition with the incumbent(s), then competition may not develop. If any type of user – producers, collectors, sorters or treatment providers – finds it difficult to switch to a different PRO from its current PRO, then competition is dampened directly and, by making entry more difficult, indirectly. Conduct that raises barriers to entry and switching has been subject to competition proceedings.

Their key insights into the competition concerns that PRO markets have generated are the following:

- The first is linked to the question of whether and when a monopoly PRO is the most efficient way to organise the fulfilment of EPR. The cost of handling waste packaging in Germany fell significantly with the introduction of a number of changes including competitive bidding for collection and sorting, as well as competition among PROs and competition to supply services to PROs. Some argue that the quality fell as well. However, studies comparing PRO market structures in different countries and waste streams do not provide a clear answer, and the individual characteristics of markets likely lead to different answers. Key arguments concern scale economies, suppression of producer free-riding and regulatory oversight. A different argument – that temporary monopoly may be necessary to induce investment – may apply at the outset of an EPR scheme, particularly where future costs and revenues are very uncertain.
- Second, competition in PRO markets can be suppressed by difficult conditions of entry by rival PROs. Some of these may be structural, but others may be strategic, i.e. entry being made more difficult by the conduct of incumbent PROs. Competition investigations have identified long-term exclusive contracts with waste collectors as raising barriers to entry. Sharing of collection infrastructure has been identified as one way to make entry easier, including entry at national scale. Prohibiting contracts with collectors that are long-term or exclusive are another way.
- Third, difficulty in switching PROs can harm competition among PROs. The cost of switching can be influenced by *inter alia* vertical integration, the structure of fees, long-term exclusive vertical agreements, and non-portability of financial reserves.
- Finally, although the experience to date is limited, clearing rules can directly affect competition among PROs.

Monopoly

Whether EPR for a set of products is most efficiently implemented by a monopoly depends on a number of factors. Each case is different, but some factors to consider are whether the activity benefits from significant economies of scale, and how the number of PROs affects the cost of free-riding and cost and effectiveness of regulatory oversight. In general, the main argument against monopolies is that they are often economically inefficient: Being free of competitive pressure – the risk that users will switch to a better offer – monopolies tend to be slower to seek more user-friendly solutions or lower costs, and are under less pressure to pass cost savings on to customers. It is unfortunate that the question, under what conditions are monopoly PROs more efficient than competitive ones, cannot be answered empirically. Although data has been collected, too many important cost factors differ among waste streams and countries to answer the question.¹¹ In line with the Council Recommendation on Competition Assessment quoted above, many

competition authorities take the view that any restriction on the establishment of multiple PROs or on new entry should be examined critically during the design phase, and if any restrictions are put into place, they should be phased out as soon as possible¹² (OECD, 2013, p. 126).

Where producers jointly establish a monopoly PRO to handle their EPR, the PRO can be viewed as a joint venture to produce an input. An input production joint venture (“IPJV”) would normally be assessed under competition law on a case-by-case basis, as described above. Although there are potential cost savings, economic theory also points to potential negative effects: An IPJV may be used as a tool to enable the parent companies to charge cartel prices, or parent companies may free-ride on the efforts of others, resulting in inefficiency of the IPJV.¹³

This section finds that three arguments are often put forward to support monopoly in PRO markets, and a fourth argument in favour of temporary monopoly. These are: 1) the activity exhibits significant economies of scale compared with the size of market demand, 2) monopoly makes it cheaper to limit free-riding by producers, 3) monopoly makes regulatory oversight cheaper, and 4) temporary monopoly gives greater incentives to make risky investments.

Where there are significant scale economies, e.g. for some collection, this need not imply monopoly along the entire supply chain: Collection infrastructure may sometimes be shared, or allocated to different PROs at different periods. The amount of free-riding depends on both the incentives to engage in it and to suppress it. The benefits of free-riding would be lower if PRO fees were lower, which in theory is the case when PROs compete. Some of the methods used to suppress free-riding in PROs have been studied, but the studies did not allow a comparison of their effectiveness in monopoly versus competitive PRO markets. Regarding regulatory oversight, some direct costs may rise with more PROs, but so would the amount of information available to the regulator.

The arguments in favour of a temporary monopoly at the outset are somewhat different. If establishing a PRO incurs high sunk costs and there is uncertainty about the future costs and revenues of a PRO, then a temporary monopoly may be more efficient. Concentrating early-stage demand can reduce some of the uncertainty of a new venture. The consensus among competition authorities is that any restriction on the establishment of multiple PROs or on new entry should be examined critically during the design phase, and if any restrictions are put into place, they should be phased out as soon as possible (OECD, 2013, p. 126). In general, a monopoly not subject to economic regulation can exercise market power in the form of higher prices or lower quality, and is under less pressure to seek lower costs. These result in lower efficiency and lower consumer welfare.

Market power – monopoly and monopsony. The problem with monopolies stems from their not being subject to competitive pressure, that is, the risk that users will switch to a better offer. Even where monopolies are owned by their users, the absence of competitive pressure allows them to be inefficient (Ross and Szymanski, 2006). Where demand is obligatory, a monopolist’s market power is even greater since users cannot choose to do without (see example in Box 4.1).

One consequence of weak competition is that suppliers do not pass on cost savings to buyers. Passing on any cost savings generated by the above-mentioned merger to waste-holders was considered “extremely doubtful.” In addition, monopoly collecting-recycling

Box 4.1. Bargaining position when buying obligatory service

The weakness of waste holders' bargaining position vis-à-vis a monopoly was part of the analysis that led to the denial of a merger. The two lead collecting-and-recycling firms in Poland proposed to merge. The merger was found to be anticompetitive and denied. It was reckoned that the monopoly would have faced almost perfectly inelastic demand since the waste-holders had no alternative but to deal with the lead collector-recyclers at any price. Given this, the monopolist would have profitably raised price substantially (Acquisition of Baterpol Sp. z o.o. by Orzel Bialy S.A., 5 March 2009, cited in OECD, 2010, p. 81). Producers subject to EPR may have additional options not available to waste-holders in this market, so may be in a better bargaining position.

firms have little incentive for efficiency since they can recover any losses through higher fees. The Norwegian competition authority identified several examples where producer-importer owned collecting-recycling monopolies incurred excess costs and suggested this formed a pattern of inefficiency (OECD, 2006, p. 135). A further consequence of weak competition is that suppliers are under less pressure to adopt new, cost-saving technology. The adoption of better sorting techniques is attributed to opening of competition among German packaging PROs: "While new sorting techniques were already available during DSD's monopoly, they became widely established only after competition was introduced" (OECD, 2013b, p. 107). In practice, however, it is difficult to estimate whether technological change is inefficiently slow or rapid.

Monopsony, or single buyers (typically the case of single PROs that procure services), generates analogous efficiency problems. Compared to a situation where they could negotiate with a number of potential buyers, suppliers facing a single buyer must accept worse terms. In the extreme, monopsony low prices can lead to suppliers exiting the market.

If self-provision of EPR were a feasible alternative for producers, then the threat of self-compliance might restrict the exploitation of market power by PROs. The Swedish competition authority investigated whether an individual firm could realistically satisfy its EPR without joining a PRO. It noted that PROs tended to be controlled by "the major actors in the market." The investigation "found that the chances [of self-provision] tend to be either remote or non-existent" (OECD, 2006, p. 146). This finding suggests both that the self-compliance option places no meaningful restraint on the conduct by PROs, and that suppliers who compete against the major actors depend on their rivals for a necessary input.

In summary, a monopoly that is not subject to a real competitive threat – or regulation – can exercise market power by *inter alia* charging high prices and not tackling inefficiency. Such a monopoly is under less pressure to lower costs, to adopt cost saving technology, and to pass on any cost savings to users. Similar arguments apply to single buyers, or monopsonists. While these have been more theoretical arguments, there is some empirical support. One study found that self-provision of collection-recycling was not a realistic threat (OECD, 2006, p. 146). Another study found that certain monopoly PROs incurred excess costs. (OECD, 2006, p. 135) A merger decision found that a monopoly provider of a legally required service would be able to raise prices to an extreme level (Baterpol Sp. Zoo by Orzel Bialy S.A., cited in OECD 2010, p. 81). Together, these suggest that, if a PRO is a

monopoly, it will have and exercise market power. Where a monopoly PRO is owned and run by the obligated industry, then there is a risk that it be used to exercise market power by raising prices, and a risk that free-riding by individual firms within the obligated industry will reduce the PRO's efficiency.

Economies of scale. Monopoly may, however, be the least-cost structure to supply a market. If technology is stagnant and products are fairly homogeneous, and there are significant economies of scale, then the market might be supplied at least cost by a monopoly. Economies of scale means that average cost is minimised at a scale that is large compared with the size of the market. An example where scale economies might be significant would be the treatment of waste that requires highly specialised systems with onerous permitting procedures (both of which imply high fixed costs), but that arises in relatively small quantities. If the international movement of waste is restricted, then demand may be sufficiently low that these services are provided at lowest cost by a monopoly.

One potential source of economies of scale is high fixed costs. A key question is how large are the fixed costs incurred by a PRO from organising the collection, transport, and treatment of waste, and on-going monitoring costs. If these constitute a relatively small share of total costs, then this would not imply scale economies. Collection frequently enjoys substantial scale economies. Collection could therefore be a source of scale economies for a vertically integrated PRO. However, if shared access to the collection infrastructure is feasible, then the scale economies in that activity need not imply scale economies for integrated PRO services. The Swedish competition authority pointed out that separating the financing of producer responsibility from the collecting part would aid in assuring equal access to infrastructure (OECD, 2006, p. 146). Collection infrastructure has been shared in different ways.¹⁴ Economies of scale at smaller scale can limit the feasibility of producers fulfilling their EPR obligations themselves, since individual producers usually generate smaller quantities of waste than the entire national market.

Free-riding. Reducing the cost of free-riding is another argument made in favour of monopoly PROs. Free-riding is where one firm benefits from the actions and efforts of another without paying or sharing the costs. It arises when it is difficult to exclude users who do not pay. Free-riding reduces the incentives to provide the good or service, and in the extreme may result in it being withdrawn. In the PRO context, the main concern is that producers may not pay for all of the collecting-recycling services they use. They may, for example, under-report quantities or not know the movement of their products, so not know which quantity to report in which market. In addition, producers may split their EPR among more than one PRO in a given market. Relevant factors in assessing this argument include how the structure of PRO markets affects the incentives to free-ride, the difficulty of detecting it, and the effectiveness of suppression tactics. A separate concern is that competitive PROs may shirk their obligations with respect to public information campaigns, or to inspect the quality of the sorted material. Regulatory oversight can detect the former type of free-riding, and independent inspection the latter.

Lower fees would lower incentives to free-ride, all else equal. In principle, more competition leads to lower costs and lower prices. However, as pointed out in the introduction, the effect of number of PROs on collection-recycling fees is not proven in the limited empirical literature. It is, however, argued that PROs in competitive markets have incentives to target free-riders, since these producers would incur no switching costs.

It is argued that detecting free-riding is easier if there is a single PRO. Where multiple PROs provide the same service in a market, a system is required to ensure that the total quantity of collected waste from individual producers does not exceed the total quantity reported to PROs as having been put on the market. National registers, operated by Member States of the EU, is one mechanism that has been put into place too recently to evaluate their effectiveness.

A study was carried out on the effectiveness of tactics to suppress free-riding on PRO services (Marbek, 2007). A four-case study on efforts to reduce producer free-riding in European packaging waste and WEEE take-back systems found a number of common elements: First, the programmes were mandatory, without free-riding by design: Even small producers had to pay something. Second, the programmes were operated by monopoly PROs. Third, government failure to enforce was identified as the key determinant of remaining free-riding. Closer reading of the case studies shows that members were made at least partly responsible for detecting free-riders, e.g. retailers agreed with the PRO to monitor whether suppliers had audited proof of having paid the recycling fee, and to charge them if not. Also, members were given incentives to monitor compliance, e.g. collectors were paid only for the weight of material for which a fee had been paid, and not for all material they might collect. In the case of bottle-collecting machines, they could detect whether a deposit has been paid, and did not pay out if it had not (Marbek, 2007). Whether the effectiveness of the tools mentioned – retailer monitoring of suppliers, monitoring of collected material, paying collectors only for fee-paid collected waste – would be reduced by multiple rather than monopoly PROs was not studied, since all the case studies concerned monopoly PROs.

Regulatory oversight. Ease of regulatory oversight is another argument made in favour of monopoly PROs. Regulators incur higher costs to award multiple licenses, monitor data from multiple sources, and hold multiple PROs to account, it is argued. Regulators may therefore prefer to deal with only a single entity. Experience shows, however, that regulators do not face insurmountable difficulties in licensing non-monopolies (RPS et al., 2014, pp. D-13, 14, 16). However, where the incremental cost of regulation is high, the consumer benefits from additional entry – e.g. lower costs or higher quality or quicker innovation – need to be weighed against those costs.

Regulatory oversight may be enhanced by having multiple regulated firms. In particular, the multiple sources of information represented by multiple firms (in this case PROs) may provide more information to the regulator. More information can allow better regulation.

In summary, the cost and effectiveness of regulatory oversight may be affected by the number of firms regulated. Costs of licensing and inspection may be lower with fewer firms, but the regulator would have access to more information, and perhaps different points of view, where there are more firms subject to its oversight. This can lead to better regulation.

Incentives to invest. An argument for a temporary monopoly at the outset of an EPR scheme is to give incentives to make risky, irrecoverable investments. Where there is uncertainty, the fact that sunk costs cannot be recovered if the venture turns out badly can make the initial investment uninviting. Guaranteed monopoly and, with legal obligations to buy the service, guaranteed demand reduce the risk of an unprofitable venture.

Monopoly may also be used to aggregate early-stage demand in order to exploit scale economies, which in turn gives incentives to make sunk investments. Although it does not

concern a PRO, the Sydhavnens Sten and Grus decision illustrates these dynamic considerations for a new waste recovery facility. In the decision, the European Court of Justice considered whether the grant of exclusive rights to process non-hazardous building waste arising within Copenhagen violated European competition law (Case C-209/98, *Entreprenørforeningens Affalds/Miljøsektion (FFAD) v Københavns Kommune*, judgment of the ECJ of 23 May 2000, ECR [2000] I-3743). The court found that although the grant of an exclusive right led to a restriction of competition, it could be regarded as necessary for the performance of a task serving the general economic interest. (*ibid.*, point 81) The restriction enabled the chosen undertakings to receive a sufficiently large flow of waste for them to be interested in expanding the limited processing capacity. (*ibid.*, pt. 83, 79) In this case, the benefit of the restriction – the establishment of capacity to manage building waste which would not otherwise be built – was seen to outweigh the cost in terms of restricted competition for the duration.

A temporary monopoly may be efficient at the outset of an EPR programme. Relevant factors to compare costs and benefits include uncertainty, the size of sunk costs, and the existence of significant scale economies over the size of demand. Although it may be more efficient to establish a temporary monopoly, the basis for the decision should be reviewed critically at the design stage, and subsequently reviewed regularly to learn whether conditions have changed. Restrictions on competition should be removed as soon as possible.

Barriers to entry

The exercise of market power can be limited by new entrants. But if entry is not likely, or timely, or sufficient in size or scope, then the entry of new competitors cannot be relied upon to keep market prices low or quality high. Consequently, an examination of barriers to entry is very often part of a competition analysis and comments on barriers to entry are very often part of the assessment of the impact of regulation on competition in a market.

A barrier that simply slows entry, without preventing it entirely, can affect competition in a market. Entry barriers are often divided into structural and strategic. Structural entry barriers are cost and demand factors. They include economies of scale and, usually, the time and cost to meet legal requirements. A law that grants an exclusive right to serve a market is an entry barrier. Strategic barriers are barriers that have been deliberately created or enhanced by the market incumbent. They can include long-term exclusive agreements or certain pricing practices that give buyers incentives not to switch suppliers. It may be difficult to distinguish legitimate business conduct from conduct to raise barriers to rivals' entry. This subsection examines some of the conditions in PRO markets that may delay or even prevent entry.¹⁵

Structural barriers to entry. Sunk costs are investments that cannot be recovered once committed. Costs to meet legal requirements are an example. The riskiness of entry depends on the interaction between sunk costs and uncertainty about future market conditions. If sunk costs are high, then more uncertainty about future profits in the market makes entry less attractive.

An obligation to enter a market nationwide, increases sunk costs if the best entry strategy absent the obligation would be to enter at small scale in a limited area. A universal service obligation is often imposed to prevent new entrants from “cherry picking” the most profitable areas. Substantial experience with ensuring universal service in, e.g. postal delivery and tele-communications, shows that these obligations are often unnecessary and

may protect inefficient incumbents. Changing the service obligation can considerably shrink the sunk costs of entering, which improves the prospects for entry. Among the questions to be considered in assessing a universal service obligation is whether the service, as well as the price, need be the same in high- and low-cost areas (OECD, 2004b). An example where sharing certain waste collection infrastructure lowered the cost of nationwide coverage is provided in Box 4.2.

Box 4.2. Shared collection infrastructure

Access to the incumbent's collection infrastructure was at issue in Sweden. Regulation required waste packaging PROs to serve the entire country. An entrant was unable to duplicate the incumbent's collection infrastructure: In rural areas, it was very costly, and in urban areas the incumbent used municipal sites that could not be duplicated. The incumbent was accused of denying access. The entrant complained to the competition authority, accusing the incumbent of abuse of dominance. After consultations with the competition authority, the parties entered into commercial negotiations that led to a solution whereby the two firms shared the collection infrastructure at issue, and shared the costs. This enabled both PROs to offer nationwide service (Nordic Competition Authorities, 2010, pp. 51-2; Plastkretsen/FTI dnr 152/2008, decided 10 July 2009)

Subsidy to enter a market reduces the level of sunk cost. In some instances in Norway, the first PROs established in a waste stream received direct economic support or other services from the state (OECD, 2006, p. 122).

Two other structural barriers to entry that could be relevant for PROs are economies of scale and network effects. The former are entry barriers because entrants typically operate at smaller scale than incumbents, so have higher average costs than incumbents. Network effects arise when the value a user gets from a product depends not only on his own consumption but also on the number of other users who also consume it. In the case of different types of users, A and B, then the value a user of type A gets depends on the number of users of type B. An example is newspaper readers and advertisers. An entrant would need to attract not just users of type A, as it must in markets for products without network effects, but also simultaneously attract users of type B, e.g. both producers and collectors are necessary to the success of a PRO.

Strategic barriers to entry. Strategic barriers, in contrast to structural barriers, are deliberately created or enhanced by the market incumbents.

Denying entrants access to “essential facilities” or strategically increasing users’ switching costs are strategic entry barriers that have featured in competition cases in the PRO market. Although the definition of “essential facilities” differs somewhat between jurisdictions, the basic idea is that there is something to which access is necessary to compete in a market, it cannot be feasibly duplicated, it can be feasibly shared, and it is controlled by a monopolist or a dominant firm. If a competitor is denied access, then the monopolist may be ordered to grant access under reasonable conditions – itself hard to define. The recognition that ordering access can diminish incentives for private investment in such facilities has limited the frequency with which mandatory access is ordered under competition laws.

Collection infrastructure has several times been found to be an essential facility for packaging PROs. Leading examples are the European Commission's decision on DSD agreements, as well as its decisions granting exemptions for the French Eco-Emballages and for the Austrian Altstoff Recycling Austria AG ("ARA"). These decisions essentially prohibit long-term exclusive contracts between PROs and waste collectors. An exclusive contract means that one or both parties agree to deal, in a certain product, only with the other party. The decisions restrict the duration of contracts (EC DG Competition, 2005, point 81). And they prohibit any requirement that collectors send all their waste to a single PRO (Commission Decision No. 2001/837/EC DSD 2001 OJ L 319/1, confirmed by Case T-289/01 DSD, judgment of 24 May, 2007; Commission Decision No. 2004/208/EC ARA, ARGEV, ARO 2004 OJ L 75/59; Commission Decision No. 2001/663/EC Eco-Emballages, OJ 2001 L 233/37). However, the Commission's decision on DSD explicitly accepts the necessity of a countrywide network of long-term exclusive contracts for collection and sorting in order to incentivize the investments for the first-ever extensive take-back system (Commission Decision No. 2001/837/EC DSD 2001 OJ L 319/1, point 156).

More recently, the statement of objections sent to ARA by the European Commission in 2013 concerns *inter alia* an alleged refusal by ARA to grant access to its household collection infrastructure. This infrastructure consists of containers and bags, as well as the contracts with waste collectors and municipalities. Austrian law requires PROs to offer collection nationwide, but duplicating the infrastructure is impossible. Thus, any competitor would depend on access to ARA's infrastructure. If proven, denial of access to an essential facility would constitute an abuse of dominance (European Commission, 2013). At writing, proceedings are ongoing. In Austria, a new law would allow the nationwide coverage requirement to be met by a combination of own and shared collection infrastructure (OECD, 2010, p. 72).

Conditions of entry are important determinants of competition in markets. Some barriers erected by incumbents, such as denial of access to essential facilities, can be addressed under competition law. In some instances, this implies sharing of infrastructure or limiting the extent and duration of exclusive contracts (see Box 4.2). Regulation may inadvertently make entry more costly or time consuming or, if imposing numerical restrictions, impossible.

Switching costs

Switching costs can be a barrier to entry and directly dampen competition. Although some switching costs are inevitable, a dominant firm can make entry more difficult if it can increase the costs that suppliers of a necessary input incur when they switch customers. High switching costs can also dampen competition directly: If, for example, it is costly to switch suppliers, then other suppliers are viewed as less substitutable for a buyer's current supplier.

Several elements that raise switching costs are reviewed here. One is vertical integration, i.e. ownership links between producers, collectors or treatment providers and a PRO. Second, the structure of fees charged by a PRO has been found to raise producer switching costs. Third, operating in the same way are requirements that a producer channel all its EPR through a single PRO. Fourth, the non-portability of a PRO's financial reserves can raise the cost of producers switching. Long-term agreements that make one PRO the exclusive trading partner of waste collectors, reviewed above as a strategic barrier to entry, can also be viewed as raising collectors' switching costs.

This section finds that vertical integration can make entry by new PROs more difficult: Ownership links between producers, collectors or treatment providers and a PRO discourage them from switching their custom to a rival PRO. Also, the structure of the fees charged by a PRO, non-portability of financial reserves built up in a PRO, and requirements contracts can raise the cost of producers switching. Long-term exclusive agreements between a PRO and waste collectors can raise collectors' switching costs.

On the other hand, these ownership arrangements and agreements can have positive effects, such as encouraging investments that pay off only if the relationship is maintained. Therefore, as indicated in the following, these types of arrangements and conduct need to be assessed case-by-case.

Vertical integration. Vertical integration between users and PROs may hinder users' switching to rival PROs. For example, the acquisition from producers by a financial investor of the German packaging PRO, DSD, was seen as freeing producers to choose the best waste solution on a purely economic basis. This promoted entry by new providers of waste solutions, as well as made DSD no longer subject to interference in favour of shareholders. Earlier, waste management companies had ended their ownership of DSD. As a consequence of the sale, the German competition authority ended a proceeding against DSD (OECD, 2006, p. 105). The Norwegian competition authority, also, has expressed the view that "splitting the waste-management value chain and differentiating the various recycling sub-markets can resolve the problems of today's waste recycling systems" (OECD, 2006, p.138).

On the other hand, producers on whom the EPR are imposed may find that joint ownership of a PRO is the best way to ensure that the organisation and infrastructure will be in place when those responsibilities have to be executed, and that producers would have the best incentives to ensure that the EPR are fulfilled in the most efficient manner. Producers may also be concerned that an independently owned PRO may exercise market power against them in the form of inefficiency and higher fees.

Whether vertical integration results in a more or less efficient provision of EPR is an empirical question. One relevant comparison is the liquidity of the market for the shares of a producer-owned PRO and the liquidity of the market for PRO services: If the capital market is less liquid, then it impedes producer switching. Not only is its effect on switching costs and therefore competition among PROs relevant, but also other effects on competition in product markets. These are addressed in a later section.

Fee structures. The structure of fees can raise switching costs. A loyalty discount or rebate means that the price depends on the quantity or proportion of purchases from the given supplier in a way that discourages buying from a different supplier. The economic incentives from a loyalty discount or rebate bind the buyer to the supplier, having the same effect as an exclusive contract.

Requirements contracts. A requirement that a producer use a single PRO within a waste stream rather than splitting the service among several PROs can make entry into the PRO market more difficult. A newly-entered PRO may be unable to provide the range of services required by a given producer. The European Commission has regarded the practice as "necessary to encourage vital investment in...collection and recycling infrastructure," but it would no longer regard it with such leniency if recovery and recycling targets had been reached (DG Competition, 2005, points 72-5).

Box 4.3. Fee structure raised switching costs

The structure of fees initially charged by the German packaging PRO, DSD, was found *inter alia* to raise producer switching costs to exclude rivals in the PRO market. More detail is provided in Box 4.14. The European Commission found that DSD had abused its dominant position by charging customers according to the volume of packaging bearing the Green Dot™ trademark rather than according to the volume of packaging for which DSD provided the take-back and recycling service. This discouraged producers from switching PROs or self-complying since such actions would not reduce the fee owed DSD and would increase costs, e.g., fees paid to a different PRO. DSD was ordered to modify its pricing formula so that fees were payable only on packaging benefiting from the PRO services (European Commission Decision No. 2001/463/EC (DSD) 2001 OJ L 166/1, points 114-116, 154).

Financial reserves. Non-portability of financial reserves has been identified by some as an impediment to competition among PROs for producers. In some jurisdictions, producers who switch PROs cannot take with them the share of the contingency reserves which they have paid in, although they do take their EPR responsibility with them to the PRO which they newly join. This imposes a high switching cost on producers. A report commissioned by the Irish environment department recommends that a switching code be developed for Ireland “to facilitate the transfer of the producer’s contribution to the contingency fund from one PRO to another.” It points out that, although potentially complex, other sectors such as pension funds manage such transfers. The proposal anticipates payments made by a producer who withdraws from the market would remain in the PRO to pay for treatment of the orphaned products. And it recognises that a PRO’s financial reserves need to be sufficient to cover the cost of collecting and treating waste in the event the PRO ceases operation (RPS et al., 2014, pp. 61-6).

The Norwegian competition authority takes a similar position on the portability of financial reserves. The authority recommended that two features of national environmental regulations for PROs be changed: The absence of an upper limit on the size of financial reserves a PRO may accumulate, and members of a PRO having no right to take “their” share of the reserves with them when they switch PROs. Non-portability of PRO financial reserves has arisen in Norway in the case of end-of-life vehicles and WEEE (Konkurransetilsynet 2008c; Nordic Competition Authorities, 2010, p. 51).

Non-portability of financial reserves is not universally viewed as an impediment to producers’ switching. An Oslo district court heard the complaint of a large WEEE producer who had switched to a new PRO without taking a share of the previous PROs’ financial reserves. The producer later asked for a share of the reserves to be paid out and was denied. The court noted that the producer had indeed switched to a new PRO, and that several smaller producers had earlier departed the PROs without asking for a share of the financial reserves. The court ruled in favour of the PROs.¹⁶

Other competition issues

A few other competition issues have arisen in PRO markets. One is the effect of clearing rules on competition. Second is an agreement for two PROs to specialise in different areas, and not to compete to serve the same waste stream. A third issue is the possibility of predatory pricing: In this abusive strategy, prices are initially low to encourage exit but later, after rivals have exited, prices are exploitatively high.

Clearing. Where there are multiple PROs in a market, “clearing” is needed to ensure that the legal threshold for taken-back waste has been met (Bio, 2014, p. 105). Clearinghouses collect and aggregate data from the various PROs to ensure the data is fair and accurate, liaise with public enforcement authorities, and may allocate costs for, e.g. reimbursement of local authorities for help desks and provision and maintenance of areas for waste collection containers. The design of the clearing system should take into account the incentives of firms to create and exploit market power; and it should avoid becoming a tool for cartelisation through information exchange. One of the ways regulation can increase market power is for the penalty for non-compliance to be high, so that firms have little real alternative than to deal with an exploitative monopoly.

Although it has now been changed, and appears to be an isolated example, the former system of WEEE clearance in the United Kingdom illustrates how monopoly can be created in an apparently competitive PRO market. Under the former regulation, the treatment of every kilogram of WEEE collected from households had to be financed by a PRO. However, the actual obligation of each PRO was revealed only after the end of each compliance period (one year). At the end of a compliance period, the different PROs would settle up, with those in surplus selling “evidence” of compliance to those in deficit. The regulation guaranteed that there would be demand for 100% of the obligated WEEE: A PRO who did not fulfil its obligation would be subject to criminal sanctions. Thus, it was advantageous for a PRO to have access to WEEE that exceeded its forecast obligation, since it could predict with certainty that another PRO would require that surplus in order to meet its obligations. At this point, the PRO in deficit was subject to exploitative pricing by the PRO in surplus. In addition, this system dis-incentivised PROs from attracting producers/importers from their rivals (United Kingdom Department for Business, Innovation and Skills, 2013, points 21, 43, 38).¹⁷ All in all, these regulations provided little incentive to reduce the cost of collecting and treating WEEE. The new regulations make a number of changes. First, they reduce the penalty for not meeting the obligation: A PRO in deficit at the end of a compliance year must pay a compliance fee, rather than be subject to criminal sanctions as before. Second, producer/importers may not withdraw from a PRO during the course of a compliance year (United Kingdom Department for Business, Innovation and Skills, 2014, p. 13). The first change reduces the market power of PROs who over-comply, and the second change removes disincentives to compete for producers.

Specialisation agreement. An agreement between competitors to share markets is, in general, presumed to be anticompetitive. However, an agreement between competitors to concentrate on different parts of a market may in some circumstances be viewed as a specialisation agreement that is assessed under the two-step general framework for horizontal agreements falling outside the hard-core cartel category (see Box 4.4). If an agreement generates economic efficiencies, they would result from the parties bringing together complementary skills and assets. If there are few complementary skills or assets, these efficiencies are unlikely to arise. Similarly, if there is not effective competition, for example from third parties active in the market, then any cost savings are unlikely to be passed onto consumers.

Predatory pricing. Predatory pricing is a strategy that involves charging low prices for a period in order to force small rivals from the market, and charging higher prices after the rivals exit. The definition of predatory conduct – price is just one tool that may be used – differs

Box 4.4. Specialisation agreement

A market sharing, or reciprocal specialisation, agreement between two WEEE PROs was authorised by the Swiss competition authority in 2005. The two PROs agreed that each would specialise in the collection and treatment of specific categories of equipment. For example, one withdrew from handling electrical appliances and the other office equipment. The authority found that this agreement may be authorised on the basis that it increased economic efficiency. In particular, it reduced transactions costs and allowed the firms to realise economies of scale. Potential competition – the threat of entry by new suppliers – was viewed as sufficient to ensure that the agreement did not suppress effective competition. Under the legislation, producers could self-comply (OECD, 2006, pp. 149-150; *Swico/Sens DPC 2005/2*, p. 251).

between jurisdictions and over time, but the essential elements are that the predator engages in some conduct – e.g. price low, expand capacity – that encourages rivals to exit or to behave meekly, and that the predator can gain extra profits – e.g. later or in other markets – to recover at least what it lost through predation. In many jurisdictions, pricing below the alleged predator's average variable cost is suspect, but the "right" test to use in a given circumstance is often debated. And barriers to re-entry or poorly-funded, easy-to-expel rivals can make recoupment of the profits more likely. The competition analysis is case-by-case and quickly becomes complex. The recognition that lower prices and more capacity benefit consumers, and that over-enforcement against predatory conduct can discourage competition means that allegations of predatory conduct must exceed a high bar in many jurisdictions. An example of predatory pricing is provided in Box 4.5.

Box 4.5. Allegation of predatory pricing

Predatory pricing by a PRO was alleged in the market for the organisation of collection and handling of WEEE in Norway. Ragn-Sells alleged that a rival, Elretur, engaged in predatory pricing. Elretur had built up financial reserves, and decided in autumn 2005 to reduce the reserves by temporarily cutting the fees it charged by 75%, a level it maintained for 18 months. The competition authority recognised that similar circumstances had arisen in other PRO markets. The authority pointed out to the pollution control authority that its regulations, including those related to financial reserves, could restrict competition, but took no action in the individual cases (*Konkurransetilsynet, 2008a, 2008c*).

4.3.2. Waste collection services markets

Markets for waste collection and waste sorting range from geographically small up to national in scope. Collection is done differently for different waste streams in different places. Recyclable waste from households may be collected from the kerbside by a formal operator or by informal but not illegal actors, or it may be deposited by households at designated facilities. Collecting involves visiting pick-up points and transport to a sorting facility, or if sufficiently sorted at collection, to a consolidation point. Thus the density of the pick-up points and transport costs are important in determining the geographic extent of these markets. Legal restrictions on trade in waste can prevent these markets from extending across national borders.

Some collecting markets are local natural monopolies. A natural monopoly is a market where the conditions of cost and demand mean it is cheaper for one, rather than two or more, entity to supply the market. In particular, the kerbside collection of waste from households is usually a local natural monopoly in OECD countries. The economic characteristics that tend to make it so are economies of population density and economies of scale. Economies of population density relates to the fall in average cost as population density changes. Higher population density allows shorter travel between pick-up points. Economies of scale means that average cost falls as quantity of output increases, over a relevant range of output. Kerbside collection of household waste is often performed by a regulated private monopoly or municipal monopoly in OECD countries. Although the economics of the collection of household packaging waste has not been studied as much as the collection of all household waste has been, the two activities have a similar number and density of collection points and the quantity per pick-up point is smaller for packaging. These characteristics suggest that kerbside collection of household packaging waste is, also, a local natural monopoly. In any case, it, too, is often done by a single entity, indeed often by the same entity as collects residual household waste.

Waste that is collected in larger quantities or requiring special handling does not exhibit as strong economics of population density. This is illustrated in Sweden where the collection of recyclable fractions of solid waste from multi-family apartment buildings is subject to competition, but collection from individual households – which involves smaller quantities at each pick-up point – is done by a municipal monopoly.

Markets for the collection of waste from businesses are generally subject to competition from a handful of rivals. This waste is usually collected from fewer collection points so does not enjoy significant economies of population density. While recyclable waste is similar to residual waste in terms of location and pick-up frequency, the former has specific reporting rules whereas the latter does not (EC, 2005, points 38-9). If anything, more reporting requirements would increase fixed costs and therefore tend to reduce the number of competitors.

Two key insights that have been gained from recent experience are:

- Economic characteristics determine whether a market for waste collection is, or could be competitive, or whether it is a natural monopoly. Economies of population density and economies of scale imply that some collection markets, e.g. kerbside collection of waste from households, are usually local natural monopolies. In this situation, these markets are most efficiently served by a single entity. But many other collection and sorting markets tend not to have these characteristics and therefore tend not to be natural monopolies. The geographic extent of collection and sorting markets depends *inter alia* on transport costs and on legal restrictions on trade in waste. They vary from local to national.
- Many PROs procure waste collection and sorting services. Procurement by fair and competitive tenders can result in provision by the most efficient provider at a cost that reflects no excess profits. There is evidence that the use of competitive tenders significantly reduces collection costs. However, discriminatory tenders, tenders with inappropriate duration, or tenders that do not attract enough qualified bidders, do not have these efficient results. Even weak bidders can strengthen competition in tenders. Changes in the tender rules and procedures can attract more potential bidders. Consequently, the tender rules and procedures used by PROs can have an important impact on the cost of services they procure.¹⁸

Markets can be local, national or international, depending on the waste type

The geographic extent of markets for the collection of recyclable waste from businesses varies. Markets to collect commercial packaging waste were thought likely to be regional or national (EC, 2005, point 45). Markets for the collection of waste lead batteries were found to be national in both Italy and Poland (OECD, 2010, pp. 64, 81). Evidence from a Dutch case suggests that markets for the collection of end-of-life vehicles are local, but for the collection of recyclable materials from car wreck dismantlers are provincial.¹⁹ Others suggest that WEEE markets are regional or national, limited by the cost of transport to consolidation points.

Sorting seems to operate at larger scale than collection

Waste is sorted after it is collected from households. The plants exhibit economies of scale, and the costs of getting planning permission further increase scale economies (United Kingdom Office of Fair Trading, 2006, p. 58; EC 2005, points 39, 40). The experience of the German DSD in procuring packaging waste sorting and collection both bundled and separately, in 2003 and 2004 respectively, suggests that the minimum efficient scale – the scale at which average unit cost is lowest – for sorting is larger than for collecting. Commercial packaging waste is often pre-sorted at source, so need not be further sorted (DG Competition, 2005, point 40). Transport costs influence the geographic extent of markets. The trade-off between transport costs and scale economies plays an important role in determining the number of competitors.

Competition can be induced through competitive tendering of concessions

Even where it is a monopoly, waste collection may be subject to competition “for” the market. That is, there may be competition for the right to be the monopoly supplier for a specific period of time. Often, the competition takes the form of a formal bidding contest, where different firms submit bids and the winner is the one who makes the best offer. In the best case scenario, the temporary monopoly is won by the firm that can provide the service at least cost and consumers do not pay excessive prices. Competition “for” the market may lead to efficient provision if several conditions hold. Among these are that the procurement be fair and competitive, which means *inter alia* that incumbents are not advantaged, potential bidders receive the same information at the same time, with sufficient time to prepare their bids, and that a sufficient number of potential bidders submit bids.²⁰ The extent and duration of the contract are other factors that affect efficiency. Of course, the efficiency of awarding a temporary monopoly by competitive bidding is undermined by bid-rigging, or if excessive formation of bidding consortia reduces the number of independent, qualified bidders.

A PRO may procure waste collection services by holding a tender. ARN, the Dutch end-of-life vehicles PRO, held such tenders and contracted with a single collector per province. In choosing the winner, ARN took into account not only the collection price bid but also the technical quality and organisational suitability of the bidder. Bidders had to qualify to enter the tender, for example, they had to hold an environmental transport license (European Commission decision No. 2002/204/EC (ARN) OJ L 68/18, point 17).

Competition for the temporary monopolies can lead to significant cost savings. The introduction of competitive tendering is one change to which the dramatic fall in the cost of collecting and recycling packaging waste in Germany is attributed. Previously, DSD had

procured collection and sorting services in a bundle and without competitive tenders. In 2003, DSD began to procure collection and sorting in separate competitive tenders (OECD, 2013, p. 104). The amount it paid for certain collection and sorting fell immediately by more than 20% (DG Competition, 2005, point 81). Presently, each collection area has a single collector for a three-year term which is chosen by competitive tender. Since there are now several packaging PROs in Germany, the waste is shared amongst the PROs in accordance with the quotas for which they have been contracted by producers (OECD, 2013, p. 104).

Alternatively, municipalities often have a monopoly to collect or collect and sort recyclable waste from households. As a consequence, PROs can then not hold competitive tenders, but must instead negotiate with municipalities regarding the terms for collection and sorting. To limit municipalities' exercise of monopsony power, the price at which municipalities perform this service is sometimes regulated. One form of regulation used in some markets is the use of "reference cost," a variation of "yardstick competition".²¹ Belgium uses a reference cost system for waste batteries and oils. (Bio Intelligence Service, 2014, pp. 92-3) A reference cost is established by examining the cost of collection in municipalities across the country and then applying this cost to the collection contracts that PROs have with municipalities. Yardstick competition can provide incentives for efficiency since cost reductions yield greater revenues. However, heterogeneity among regulated entities can be difficult to take into account, and it can be difficult to prevent reductions in quality that are not measured or not measurable.

Discrimination in the tender process can distort competition

Discrimination in the tender process may distort competition to provide waste collection services to a PRO. The Spanish competition authority authorised ECOVIDRIO, the glass packaging PRO, in 2005 subject to it abiding by certain conditions. One of these conditions was that it must procure collection, sorting, recovery and disposal services through competitive bidding, and apply objective, transparent and non-discriminatory conditions. In 2010, the authority found that ECOVIDRIO had faked the competitive bids for collection and treatment services, favouring associated undertakings and managing to exclude at least one competitor from the glass packaging collecting market (OECD, 2010, p. 85).

The incentive to discriminate among waste collectors can be eliminated by excluding such firms from owning a PRO where they engage in collecting. In Germany, for example, after the competition authority announced it would no longer tolerate the restrictive agreements within the packaging system, DSD, waste management companies withdrew from partial ownership in 2003. DSD was sold to a financial owner a few years later (OECD, 2010, p. 53).

Non-discrimination between private and publicly-owned firms, or "competitive neutrality," is important where firms of the two ownership types compete against one another (OECD 2009b, pp. 35-42). There is a risk that a less-efficient publicly-owned firm may outbid a more-efficient privately-owned firm. A publicly-owned company has a lower cost of capital – since lenders realise it cannot be declared bankrupt – and it can cover any revenue shortfall from general tax funds. In the case of collection services, it may also have been granted a legal monopoly from which, if oversight is poor, it may cover revenue shortfalls arising from a competitive market. These advantages allow a publicly-owned firm to bid lower and thus can discourage equally efficient private companies from bidding against a publicly-owned firm.

The duration of contracts plays an important role

The duration of contracts between waste collectors and PROs can affect competition in both markets. The length of time required to recover sunk costs should affect the duration of collection contracts. Too short, and prices are higher to enable the costs to be recovered more quickly. Too long, and some of the benefits of competition, e.g. the adoption of more efficient technology, are lost. Further, future competition is harmed if those waste collectors who do not win a PRO contract in one year find it difficult to “survive” and be a viable bidder in the next procurement opportunity. In its decisions on DSD and ARA, the European Commission decided that a duration of three years for contracts between waste packaging collectors and PROs was indispensable (DG Competition, 2005, points 80, 81).

The number of bidders affects competition for concessions

Attracting a sufficient number of bidders is important to the success of a competitive tender. Where there are only a handful of potential bidders, then the loss of a single one has a substantial effect on the outcome of a competitive tender, even where the excluded bidder is a weak one (OECD, 2006b, pp. 32-4). Bidders can be discouraged if two separable services are bundled together or if contracts are large. An example can be bundling collection and sorting. If they are procured together, rather than separately, then only bidders who can perform the two services – or perform one and buy the other – may bid. If one service has significantly larger minimum efficient scale, then there would in general be more potential bidders if the two services were tendered separately (see example in Box 4.6).

Box 4.6. Separate procurement of collection and sorting yielded more competition

An example of how changes in tenders can attract more bidders is provided by the German packaging PRO, DSD. Its first call for tenders in 2003 did not result in much real competition in many contracting areas. Indeed, in around half the contracting areas, only one bid was received. In contracting areas where a single bid was received, prices averaged 70% higher than the lowest price offered in contract areas where two or more bids were submitted (Bundeskartellamt, 2003). DSD modified the tender conditions to attract bids from more small- and medium-sized companies, and in 2004 it succeeded. By 2005, DSD had reduced its costs of collecting and sorting by more than 20% as compared with 2003 (OECD, 2007b, p. 98). More recently, the German competition authority has expressed the view that “ensuring the separate tendering of collection services is particularly important. This safeguards that competition in sorting are not distorted” (OECD 2013, p. 107).

4.3.3. Waste recovery and disposal markets

Competition concerns have arisen in the markets for waste recovery and disposal services. There can be concentration in the markets, making it profitable to charge high prices. In addition, the practice of allocating waste according to historical product market share can harm competition in product markets. Purchasing cartels distort the market for waste by lowering the price below the competitive level. Both of these latter phenomena can be linked to the closed nature of some collection-and-recycling systems, where firms at the different levels of collection, sorting and treatment are obliged to deal only within the PRO. A further competition concern arose when increased collection for recycling to constituent

materials could reduce the input available for producers of “recycled” or “re-conditioned” products, where the post-consumer product is re-used; re-filled printer cartridges might be an example. These competition issues are illustrated by cases that all, it turns out, concern waste with a positive market value. Concern has also been expressed that, in markets where EPR is introduced, existing small-scale waste treatment providers will be forced to exit the market if they cannot offer treatment on the scale required by PROs.

A number of insights can be drawn from recent experience. The first is that concentrated treatment markets may result in high costs of recovery and disposal, or alternatively low prices for waste to be treated. For example, a purchasing cartel is easier to organise if there are fewer competing treatment companies. Concentration combined with vertical integration into a PRO can also lead to discrimination. Charging high prices for treatment, or paying low prices for waste, reduces incentives to recycle waste beyond the legal minimum. Competitive tendering can reduce the market power of treatment companies.

The second concerns the importance of allowing trade outside the closed circle of a PRO. If collectors, for example, can deal directly with recovery firms, then those recovery firms who value the waste the highest, perhaps because they are more efficient, will gain access to more waste than under a central allocation scheme. Removing restrictions on trade in waste outside members of a PRO can be key to promoting entry by competing PROs – the new entrants thereby gain access to collected waste and to firms that can treat it. However, vertical dis-integration may require additional monitoring to ensure that the environmental targets are not undermined.

The third concern is the way waste is allocated within a PRO. Where the allocation is at below-market prices, then an administrative system based on historical market shares has the effect of retarding shifts in product market share. This dampens competition in the product market. Instead, regular competitive tenders to provide recycling services are one means to provide incentives for this service to be provided efficiently (Netherlands, OECD 2010, p. 76).

The fourth concern focuses on the competition between “new” raw materials and secondary or recycled materials. Where secondary materials are cheaper or cheaper to use, then competition from new raw materials limits the market power that can be exercised by recovery firms. But where competition occurs between re-conditioned or re-used products and new products, then the re-used products often limit the exercise of market power by new product producers. In these cases, the collection of waste to be recycled into secondary materials can soften the competitive pressure exerted by suppliers of re-used products on suppliers of new products.

Market power

Waste treatment markets can be concentrated. In Spain, for example, the competition authority concluded that “the main concern for competition stems from the ownership and access to treatment infrastructure – mainly waste recovery and disposal plants.” Owners of treatment plants can charge abusive prices to undertakings that are legally obliged to manage their waste but have no access to alternative treatment facilities. Where the treatment facility owners form collective systems, they may discriminate against undertakings who choose to fulfil their EPRs through the systems (OECD, 2010, p. 87).

The use of competitive tenders can reduce the market power of waste treatment firms. A 2006 review of WEEE PROs found that those who used multiple recyclers and transport

firms, chosen by competitive tender, reported that they had managed to reduce costs substantially. This contrasts with those that had chosen a single supplier (Savage et al., 2006, p. 38). The introduction of competitive tendering reportedly also contributed to the development of new recycling technologies, suggesting that large scale guarantee of demand helped to encourage investments (Veerman in OECD, 2004, p. 145).

Where small scale waste treatment providers were established prior to the introduction of EPR, its introduction can stimulate demand for large-scale, nationwide treatment solutions. PROs may see a trade-off between the lower costs resulting from greater competition in un-concentrated markets and higher costs due to non-realisation of scale economies and the requirement to contract with more providers.

Anticompetitive quotas

The allocation mechanisms used by PROs for waste glass and waste lead have been found to be anticompetitive in several cases. In these instances, valuable waste was allocated according to producers' historical market share at prices below the market value (see example in Box 4.7). The effect is to protect incumbent producers, distorting competition in the product market, as well as to hinder the development of independent collection-recycling systems (OECD, 2010, p. 13).

Box 4.7. Anti-competitive quotas for allocation of waste for recovery and disposal

The method employed by COBAT (Consorzio Obbligatorio Batterie al Piombo Esauste e Rifiuti Piombosi), the exclusive consortium for the collection of used lead batteries in Italy, to allocate used lead batteries among recycling companies was found to be anticompetitive. The batteries were allocated according to the productive capacity of each producer company, thereby maintaining historical market shares. If a recycling company got batteries directly from a collector, then COBAT would reduce its quota by the same amount. The Italian competition authority found that the practice restricted competition both by discouraging the development of new collection systems alternative to COBAT and by blocking recycling independent of COBAT's system (Case 1697 COBAT cited in OECD, 2013, p. 127).

Collusion in the recycling of used lead batteries was also uncovered in the COBAT case. The recycling companies regularly exchanged information about the quantities of used batteries they received from COBAT and reached an agreement about the allocation of used batteries. They also hindered attempts to develop recycling independent of COBAT's system, which deprived battery manufacturers of a less costly alternative.

Quotas assigning waste packaging containing cellulose by the consortium COMIECO, was the subject of an Italian competition authority case. Waste paper was assigned to each paper manufacturer in proportion to the amount it had put on the market in the previous year. This tended to maintain shares in the paper markets. After the investigation began, COMIECO presented commitments to assign 40% of its waste paper by competitive auction, and retain the old system for the remaining 60% so as to fulfil the consortium's public interest objectives. The auctions revealed that waste paper had a market value, which led many producers to leave the consortium to seek better prices in the market. This, in turn, led to the consortium lowering its participation fee by more than two-thirds (1730 Gestione dei rifiuti cartacei COMIECO, case closed 16 March 2011, cited in OECD, 2013, p. 128).

An earlier liberalisation of trade within the German packaging PRO, DSD, led to the entry of new PROs. Initially, recyclers received the sorted material from DSD at no cost. Under the modified system, DSD charged recyclers when the market price was positive and allowed the sale of recyclable materials outside the DSD system, provided rebates were paid to DSD. The vertical separation of collection and recycling opened up the market for competing packaging PROs (see example in Box 4.8).

Box 4.8. Purchasing cartel

The joint purchase of all waste glass collected in Germany was found to constitute a buying cartel and pronounced illegal. German glass container producers established Gesellschaft für Glasrecycling und Abfallvermeidung (“GGA”) in 1993 to jointly purchase all waste glass collected from households from waste management companies. It organised the delivery of the waste glass to recycling plants, from which the producers received a secondary material that was cheaper, and cheaper to use, than primary raw material. The German competition authority found that the purchasing cartel eliminated competition over a substantial part of the waste glass market, and that the cartel was not necessary to the achievement of the environmental goals – the recycling target was easily overachieved – but rather they could be achieved by a less-anticompetitive means. Thus, the cartel was found to be an infringement (OECD 2013, p. 105, citing OECD 2010).

The combination of prohibitions on trade with collectors and recovery firms outside a PRO, as well as price-fixing on trade within the PRO, was found to be unnecessary to the achievement of the environmental goals for which the PRO was established in Turkey (see Box 4.9).

Box 4.9. Exclusivity agreements and price-fixing

In Turkey, two rival associations for collecting and recycling lead from batteries and accumulators were established. One has members who are producers accounting for about 90% of accumulator sales. The other has members who are importers. Agreements within the larger association prohibited sales of accumulators collected by its collectors to others, nor could recovery firms take accumulators from collectors from outside the association. The prices at which waste accumulators were traded within the large association were set by the association. The smaller association had no such exclusivity or price control restrictions. The Turkish competition authority found that the founders of the large association, large producers, were using the association “to secure the supply of waste accumulators at price determined by themselves.” Further, the exclusivity provisions put importers at a competitive disadvantage in the accumulator market because it hindered importers in fulfilling their extended producer responsibilities. The price-fixing and exclusivity provisions were found not indispensable to the achievement of the environmental goals for which the associations were established (Accumulator decision 08-34/456-161 of 20.05.2008, OECD, 2010, pp. 90-4).

The above cases illustrate the importance of exclusivity provisions in a PRO. Restricting trade between collecting and recovery firms to those who are “in” a PRO can disadvantage non-members who cannot achieve minimum efficient scale in fulfilling their

legal responsibilities, as in the Turkish accumulator case. Agreements that limit dealing with third parties may also prevent the development of alternative collection and recovery systems, whether in the form of a PRO or in the form of markets. Where trade is restricted, it does not necessarily take place at market prices. The Italian waste paper case illustrates the use of markets to “discover” the true value of waste. And the German waste glass case illustrates how trade restrictions may yield a cartel outcome. The next case raises the issue of whether take-back systems, by removing some of their input, could erode competition from manufacturers of re-conditioned products.

Impact on product market competition from reconditioned products

Box 4.10. Competition from reconditioned products

The Japan Fair Trade Commission engaged in a confidential consultation concerning a proposed joint collection of containers by five information equipment manufacturers. The firms make and sell consumables B for their information equipment A. The B of one company is not compatible with the A of the other companies. Third parties collect and manufacture recycled B products. The five firms proposed to place containers for the used B in post offices, sort them according to manufacturer, and return them to the respective plants for recycling into materials. The fee charged would be less than 1% of B's sales price. The firms were free to decide whether and how much of the fee to pass on. This was considered not to affect competition. A second issue was whether competition from manufacturers of recycled products would be harmed. The conclusion was that collection by third parties, which was largely done at mass retailers, would not be significantly affected (OECD, 2013, pp. 136-7).

4.3.4. Product markets

The formation and operation of PROs may have spill-over effects that harm competition in product markets. Product markets are large, so a small increase in inefficiency due to a lessening of competition can have large effects on economic welfare. Producers may use PROs for collusion, either as a cover for collusive meetings or by using excess fees to raise the price of products. Discrimination by PROs can distort competition in product markets. Specific spill-over effects are discussed below. First addressed is, under what circumstances is it anticompetitive for producers to agree to charge a “visible” fee for waste management?

The protection of competition in the product market is an important focus of competition policy towards EPR schemes. Cases involving PROs have identified collusion, exploitation, and discrimination/exclusion from the product market as potential or actual anticompetitive effects. Agreements to form and operate a PRO are often assessed under a general competition framework for assessing horizontal agreements that may have pro- as well as anticompetitive effects. These frameworks differ, as described later. The application of these frameworks to instances where producers agree to charge a small “visible” fee has yielded different outcomes. In some instances, the small “visible” fees are found to be necessary and not to cause a discernible harm to competition. In others, they are viewed as not necessary to the broader co-operation agreement and anticompetitive.

Other concerns regarding the effect of PROs on competition in product markets are collusion, exploitation, reduced variety, discrimination, and allocation of secondary

materials that freezes changes in market share. The exchange of competitively-sensitive information within a PRO may facilitate price-fixing or market allocation. Mechanisms to avoid this have included the use of reliable independent firms to collect information and then release to each firm only the information it requires to fulfil its own obligations. If a monopoly PRO's fees are large, perhaps because the recycling of certain waste is very costly, then the scope for competition in the product market can be reduced. In other circumstances, producers can be incentivised to gravitate towards common designs. Although this could dampen competition, it may not: Consumers may be indifferent to the dimension along which variety is falling. Excess recycling fees can be used to help to raise consumer prices charged by all suppliers when they otherwise would not be able to do so. If a monopoly PRO discriminates among producers, for example in the structure of fees it charges, it may distort competition in the product market or even force some competitors to exit. The allocation of valuable post-consumer material can also distort product market competition.

A second set of competition concerns arises from the power of the state to subsidise or to grant exclusive rights. Key factors in determining whether competition is distorted by an advance disposal fee are whether it is voluntary, whether the scheme favours certain undertakings or certain goods, and whether the payment exceeds the cost of disposal.

Agreement to charge a “visible” fee

A number of factors determine whether an agreement among competing producers in a collective collection-recycling scheme to pass-on a fee violates the applicable competition law. First, does legislation specifically require passing-on a “visible” fee? If not, then agreements to pass-on a fee would be seen as illegal price fixing in some jurisdictions. In other jurisdictions, the entire collection-recycling agreement, of which the fee agreement forms a part, would be assessed within the general national frameworks outlined above. Whether an agreed fee is necessary or small has been relevant in these assessments.

An agreement to pass onto consumers the fee charged by a PRO is typically viewed as illegal price-fixing. This is the case even if making a fee “visible” is perceived as necessary to induce consumers to change their behaviour. An agreement to pass on the PRO fee reduces the scope for competition: Absent the agreement, competitors would decide individually what fraction of the PRO fee to pass on to customers.²² However, if an agreement to pass on fees forms just one part of an agreement concerning a collection-and-recycling scheme, then the entire agreement is likely to be assessed for its overall economic effect under the general frameworks described above. From the decisions, it appears that a very small agreed fee is often viewed as foreclosing competition to a lesser degree than a large agreed fee. In some instances, other legislation requires producers be allowed to pass-on an agreed, “visible” fee. This is illustrated in an example concerning Dutch WEEE (Box 4.11).

Despite the typical view, agreements to charge a “visible” fee have been exempted in some jurisdictions where the fee was very small compared with the total price of the product. Examples are a EUR 45 fee on new cars and a five-JPY fee on plastic shopping bags, described in Box 4.12. As very small fractions of the total price, these fees were viewed as unable to discernibly affect competition in the product market.

Australian competition law allows the competition authority to authorise an anticompetitive agreement – but not an exclusionary one – if it results in a public benefit and the public benefit outweighs the public detriment from the lessening of competition.

Box 4.11. Unnecessary fee agreements denied**Batteries in the Netherlands**

Provisions to pass-on the fee for battery recycling as a separate invoice item were found to be neither necessary nor beneficial to consumers by the Dutch competition authority. The obligation to recycle batteries prompted the association of Dutch battery makers and importers to establish Stibat to handle their collection and recycling obligations. Battery producers and importers paid fees to Stibat to cover the system's estimated costs. However, the proposed plan also included an obligation to pass on the fee to the next distribution stage and to show the fee on the invoice. These latter provisions were found to be unnecessary to the scheme and not beneficial to consumers (Batteries, case 51 and case 3142, cited in OECD, 2010 p. 76; OECD 1998, pp. 4-5).

Plastic in Japan

An agreement on a levy on raw materials to fund recycling would have been found to be anticompetitive under Japanese competition law. A Japanese trade association of raw material producers, processing companies, and moulding equipment manufacturers established a recycling centre. The scheme as proposed in the consultation with the Japan Fair Trade Commission was considered not to affect competition. However, according to the competition authority, if the trade association had decided to add a certain mark-up to the selling price of raw materials, then it would have constituted a price restriction under the Antimonopoly Act (OECD, 2006, p. 112).

Box 4.12. Fee agreements found to be necessary and small**Dutch end-of-life vehicles**

An agreement to pass on a "visible" disposal fee of EUR 45 for end-of-life vehicles was found not to violate the Dutch competition law. Automobile companies established a collective system to recycle end-of-life vehicles before the adoption of the European directive on end-of-life vehicles. At the time, it was less costly to shred and dump end-of-life vehicles than to recycle them. The new recycling system would reverse the hierarchy, thus resulting in environmental gains. According to the assessment, the agreement would lead to the creation of a market for recycling end-of-life vehicles, and the individual parties were not able individually to create such a market. In addition, the car wreck disposal fee of EUR45 charged consumers was found to be such a small harmonisation of a cost component as not to increase co-ordination in market conduct. For these reasons, the competition authority found the agreement did not infringe the Dutch Competition Act (OECD, 2010, p. 76; European Commission 2001c, 2002).

Shopping bags in a Japanese city

An agreement to fix and charge a "visible" fee on plastic shopping bags was found not to infringe Japanese competition law. A committee composed of nearly all the retailers in a city and of resident groups agreed that consumers would be charged five-JPY for each plastic shopping bag in order to reduce their use. The city government adopted an act recommending the fee's introduction. Fixing a minimum fee was deemed necessary to prevent participating retailers from charging a lower or no fee, as had occurred after an earlier initiative. Proponents consulted the Japan Fair Trade Commission, which found that a fixed fee would be effective in attaining the goal of reducing the use of plastic bags, that an agreement was necessary to ensure the fee was sufficiently high to reach the goal, and that the fee was not unacceptably high. Also, the fee cannot be considered a burden: Plastic bags are not indispensable – shoppers may bring their own – and the resident groups agreed to it (OECD, 2013, pp. 137-8; OECD, 2010, p. 149).

In Australia, the test has been interpreted to allow the authority to take into account all detriments and benefits likely to result from the relevant conduct. The case in Box 4.13 illustrates the competition authority taking environmental benefits into account directly in a decision on whether to re-authorise a collecting and recycling scheme. This contrasts with the approach more typical in other jurisdictions, where the assessment concerns economic benefits and detriments.

Box 4.13. Public benefit from agreement including a “visible” fee

Farmers, suppliers of agricultural and veterinary (“agvet”) chemicals, and others in Australia asked the competition authority to re-authorise a recycling scheme. The scheme imposed a levy of four cents per litre/kilogram of agvet chemicals on manufactures and suppliers, to be passed onto end-users, to finance the collection and recycling of empty agvet chemical containers. The competition authority found the levy would likely raise the price to end users of agvet chemicals, but that the levy was reasonable compared with the cost of collection and recycling. The authority compared the future with and without the scheme and found that the scheme would generate significant environmental benefits. Without the scheme, it figured that agvet chemical users would need to organise individual solutions at higher cost than the present scheme, and that the high cost may result in environmentally damaging disposal such as on-farm storage, burning and burial. The vast majority of interested parties submitting comments supported the re-authorisation of the scheme. The authority found that the public benefits “in the form of significant environmental benefits” likely outweighed the public detriment, and granted a five year authorisation (Australian Competition and Consumer Commission, 2009).

Other considerations – voluntariness and requirements of other laws. The Japan Fair Trade Commission’s 2001 “Guidelines Concerning Joint Activities for Recycling under the Antimonopoly Act” points out that agreeing a specific fee for recycling, added onto the existing product price, could become a problem under the Antimonopoly Act (OECD, 2006, p. 111). A voluntary fee would not be seen as an infringement. In one instance, a Japanese trade association of office equipment manufacturers set a voluntary standard according to which members should charge a fee when collecting used products. When consulted, the competition authority viewed the standard as not infringing the competition law because the standard was voluntary (OECD, 2006, p. 112).

In contrast with the above examples, sometimes other legislation requires producers be allowed to pass-on an agreed, “visible” fee. In one instance, the Dutch competition authority exempted from the national competition law an agreement to pass on a “visible” fee for WEEE because of the 2003 European Directive on WEEE. This Directive required Member States of the European Union to allow, during a transition period, producers to show purchasers the cost of environmentally responsible disposal²³ (OECD, 2010, p.76).

However, competition laws vary, and not all can be described here. For example, the Turkish competition authority authorised the fixing and separate invoicing to consumers of a fee to cover the cost of a PRO to collect and recover end-of-life tyres. The PRO’s founders together accounting for about 60% of the tyre market in Turkey. The fee on new tyres amounted to 0,6% to 0,7% of the price. The authority accepted that the fee should be invoiced separately so as avoid any collusion to increase the price of new tyres (OECD, 2013, p. 218).

Exchange of competitively-sensitive information that aids collusion

The key message in this section is that PROs and national registers require accurate information to be able to operate. In line with the general framework for assessment of agreements, the design of information processes should take into account what is necessary for the scheme to efficiently achieve its objectives as well as the possible detrimental effect on competition, such as cartelisation in the product markets.

A PRO operated jointly by producers may harm competition in the product market by facilitating the exchange of competitively-sensitive information. This exchange can facilitate collusion. The joint operation of a PRO can entail regular meetings between competitors where topics may not be restricted to the PRO but also veer into product market topics. In addition, to ensure a fair allocation of costs, a PRO may collect more detailed or timely sales information than would otherwise be available to competitors.²⁴

Competition agencies consider a number of factors in assessing information exchanges within the context of a broader competitor collaboration. First, how concentrated are the markets, and what will be the extent of the information exchange? Greater market concentration and greater coverage by the information exchange mechanism are more problematic. Second, what is the nature of the information? More recent, more disaggregated information is more problematic. Third, what is the modality of the information exchange? Private information exchange is generally viewed more sceptically (OECD, 2010b).

Co-operation in a PRO may be used as a cover for collusion in the product market. The Swedish competition authority warned of the potential in 2003 (OECD, 2003b, p. 12), and a few years later cited two instances where companies in the same industries had received an exemption to co-operate on environmental issues, but also took the occasion to engage in anticompetitive co-operation (OECD, 2006, p. 147). The German competition authority found that the corporate structure of DSD, the German packaging PRO, permitted trade association representatives who set the license fees paid by trade and industry and waste disposal firms in DSD's supervisory board to co-ordinate the disposal fees (Bundeskartellamt, 2005, p. 38).

An institutional solution applied by some registers, e.g. the WEEE Register Society in Ireland, is to use a credible, independent entity to collect, collate, and communicate confidential data. Each PRO sends the required information, and gets information only about its own obligations. In this way, the information necessary to the achievement of the national register function is made available, but not more. In particular, company-specific information is not available to other companies. PROs may also use a similar institutional fix to maintain confidentiality between individual producers.

Increasing cost commonality

If a PRO significantly increases the commonality of producers' costs, this may harm competition in the product market. If a PRO is a monopoly or dominant, and if the fees constitute a substantial part of producers' variable costs, then the intensity of competition in the product market could be reduced. This potential concern was mentioned in connection to certain types of light bulbs (DG-Competition 2005, point 158 citing ELCF 2003, p. 12).²⁵ Where common costs account for a substantial part of variable costs, then the product market would be examined for whether it has other characteristics that make collusion feasible, "such as, for example, transparency, stability and the level of concentration" (EC 2011, point 187). If collusion appears feasible, then any advantages and detriments of a monopoly PRO would need to be weighed against the harm to competition in the product markets.

Alternatively, a PRO may harm competition in the product market by giving competitors incentives to increase the commonality of their designs. This may reduce variety – itself a dimension of competition – and raise barriers to entry. It also potentially makes collusion easier, though this risk “will largely depend on the level of homogeneity of the product in question” (Kienapfel and Miersch, 2006, p. 54). The risk to competition in variety would seem to depend on whether any harmonisation with respect to waste treatment implies harmonisation with respect to characteristics that influence consumer choice. For example, packaging harmonisation would seem not to affect competition in markets where products are chosen only on the basis of their technical characteristics. Where packaging affects buyers’ choices, harmonisation with respect to waste treatment need not imply harmonisation of design. Packaging may be more or less attractive yet have the same recycling costs.

In principle, increased harmonisation of cost or design can diminish competition in the product markets. A key factor is whether common costs constitute a high share of producers’ variable costs.

Excessive fees for recycling

Excess recycling fees may be used as a tool to raise prices to consumers and increase suppliers’ profits. If market demand is fairly inelastic, then it is profitable to increase price if rivals can be blocked from undercutting the price. If product suppliers pass on the recycling fee to consumers in the form of higher prices, then consumers experience a price increase. In several instances in Norway, a producer-owned PRO has made lump-sum payments to owners, typically after the PRO has built up sufficient reserves. The reserves were built up because the recycling fees exceeded the costs (OECD, 2006, p. 123). Whether this conduct in fact constituted exploitative abuse of dominance was not established.

Discrimination among producers

Competition in the product market may be harmed by discriminating among producers. If some producers receive advantageous terms from a PRO, then their competitors may be weakened or even forced out of the product market. The structure of PRO fees may be discriminatory, for example against foreign suppliers or small suppliers. If the fixed costs of participating in a PRO are high, and self-compliance is infeasible, then small producers may exit and entrants be discouraged (see Box 4.14). If incumbents form the unique PRO, and the PRO imposes unfair terms that exclude competitors, then the PRO’s terms may be assessed as to whether they deny access to an essential facility (OECD, 2006, p. 118).

Box 4.14. Potential for discrimination to harm market competition

Mineral water bottle pool not harmful

The *Chambre Syndicale des Eaux de Source ou Minérales* (Belgium) complained to the European Commission about conduct by the German Cooperative for Spring Water (*Genossenschaft Deutscher Brunnen*, “GDB”). The GDB had established a standardised packaging pool for returnable bottles. The complainant was unable to show limited or restricted access to the German market. The Commission established that German distributors did not in general object to mineral water in containers different from those in the GDB pool. It found that the cartel did not significantly harm third parties or trade between Member States, so rejected the complaint (Decision of 22 December 1987, unpublished; Commission of the European Communities, 1987, point 75).

Box 4.14. Potential for discrimination to harm market competition (cont.)**Packaging fee structure discriminatory**

The initial fee structure for Duales System Deutschland AG (“DSD”), the first German packaging PRO, was found to discriminate among producers. DSD had abused its dominant position by charging customers according to the volume of packaging bearing the Green Dot trademark rather than according to the volume of packaging for which DSD provided the take-back and recycling service. The European Commission felt that this compelled producer/importers who wished to not use DSD for some of their packaging to separate their packaging and distribution channels. This would be impractical for some and disproportionate for others, and was found to be an exploitative abuse of dominance. The fee structure also harmed competition in the PRO market. DSD was ordered to modify its pricing formulae so that fees were payable only on packaging benefitting from the PRO services. Note that PROs in other countries do usually not use a trademark on packaging to indicate that a fee had been paid.

Anticompetitive allocation of secondary materials

The allocation by quota of valuable secondary material to producers at prices below the market price can distort competition in the product market. This effect was described above in connection with waste recovery and disposal markets.

State aid

State aid, or government subsidy, may also distort competition. Advance disposal fees, one of the tools of EPR, have been the subject of at least two state aid decisions where the concern centred on competition in the product market. The first is a European Commission Decision on *inter alia* the state aid aspects of the agreement, discussed above, to impose a EUR 45 disposal fee on new cars in the Netherlands. The second is a preliminary ruling from the Court of Justice on a disposal tax imposed on meat in France (Box 4.15). The decisions provide a clear structure for determining whether state aid exists.

Box 4.15. State aid and advance disposal fees

The European Commission investigated the 2001 agreement to pass on a EUR 45 disposal fee for end-of-life vehicles in the Netherlands to ascertain whether the disposal fee might overcompensate for the cost of collecting, dismantling and recycling. The fee was calculated to equal the average cost of dismantling a car wreck. Key points of the assessment included:

- ❖ Was the fee obligatory? Manufacturers or importers could establish individual systems or use alternative systems to fulfil their EPR, and these were real alternatives, at least for manufacturers and large importers. Therefore, the fee was voluntary or at least optional. Consequently, the proceeds of the fee were not state resources.
- ❖ Even if the proceeds of the fee had constituted state resources, the system would not have been considered as state aid because it did not favour certain undertakings nor the production of certain goods. Car makers and importers were not favoured since the charge and the payment relate to the same good, albeit at different times. Further, the system ensures that car makers and importers pay a significant part of the collection costs, consistent with the EU Directive on End-of-Life Vehicles.

Box 4.15. State aid and advance disposal fees (cont.)

❖ Although not part of the conclusion, the Commission also assessed whether the fee was higher than the minimum needed to handle the wrecks. The answer was negative, both because of the process (the system manager used competitive tenders to get the lowest possible prices for the services) and the outcome (only one dismantling company received payments exceeding its costs, and the excess was small).

The Commission concluded there was no state aid because no state resources were involved and, even if there had been, the system favoured no undertakings nor certain products (Commission Decision No. 2002/204/EC (ARN) OJ L 68/18; European Commission 2001c).

Fee on meat to fund disposal of unfit meat

The second state aid matter concerned a tax on meat to finance environmentally-appropriate disposal of dead animals. A French law imposed a tax on the purchases of meat and products, including animal feed made from meat or offal, by persons who engage in retail sales of meat and products. The purpose of the tax was to finance the collection and disposal of animal carcasses and of slaughterhouse waste that was unfit for human or animal consumption. These services are provided free of charge to the slaughterhouses and farmers. Holders of animal carcasses exceeding 40 kilograms are legally obliged to use a carcass disposal service. While it is not immediately obvious that this is an instance of an advance disposal fee, the unfit-to-consume carcasses and waste are a co-product of meat, and meat is the product that has a value available for taxation. From an economic perspective, if the waste and meat are produced in constant proportion, a tax on one is equivalent to a tax on the other.

The European Court was asked to issue a preliminary ruling on whether the scheme constituted state aid.

- ❖ Was the state's intervention to relieve holders of carcasses of the cost of disposal an economic advantage liable to distort competition? Yes, since the scheme relieved farmers and slaughterhouses of an inherent expense of their economic activities.
- ❖ Did the state measure favour "certain undertakings or the production of certain goods"? Yes, since Law No. 96-1139 essentially benefits farmers and slaughterhouses.
- ❖ Was intra-Community trade affected? Yes, since the scheme advantages French meat producers over others, who must normally pay carcass disposal costs. And foreign-reared meat sold in France was subject to the tax.

Therefore, "[A] system such as that at issue in the main proceedings, which provides farmers and slaughterhouses with the free collection and disposal of animal carcasses and slaughterhouse waste, must be classified as State aid." (Ministre de l'économie, des finances et de l'industrie and GEMO SA, Case C-126/01, 2003, ECR I-13769; see also the Opinion of Advocate General Jacobs).

Whether the fee was voluntary was an important question in the analyses. In the car wreck case, the fact that there were real alternatives to paying the fee, making it voluntary, immediately brought the scheme out of the state aid box. The second main question is whether the scheme favoured certain undertakings or the production of certain goods. In the car wreck case, the fee was imposed on the same objects as received the service, albeit at different points in time. In the meat case, the tax was placed on the sale to French retailers of meat for human or animal consumption but the proceeds were paid to French farmers and slaughterhouses for the disposal services of something different, carcasses

and waste unfit for human or animal consumption. Because there was international trade in meat, the meat and the unfit-carcasses were not necessarily co-products: Foreign-reared meat was taxed when sold in France, and exported French-reared meat escaped the tax but benefited from the disposal services. This non-coincidence of tax and benefit is a key distinction from the car wreck case, and contributed to a different finding. A further key point in a state aid assessment is whether the proceeds exceed the minimum necessary to pay for the assigned tasks.

Although not all competition laws have state aid provisions, the potential for government subsidy or exclusive rights to distort competition make them topics for competition advocacy.

4.4. Key measures to address competition issues

The OECD Council has, on several occasions, addressed the relationship among different economic policies, including between competition and other policies. In addition, OECD competition authorities have discussed the application of competition law and policy to environmental agreements and more specifically to PROs, both in principle and in specific cases. Indeed, many of the cases here were presented at those discussions. It is evident that there is a degree of consensus on how to address many competition issues that have arisen, but also that there are some relevant differences between competition laws and policies. Based on these and other materials, points about which there appears to be consensus include:

- EPR policies should be as pro-competitive as possible while achieving their environmental policy goals. This is in line with the OECD Council Recommendation on Competition Assessment (2009). EPR policies should be subject to competition impact assessments, a process consistent with the Council Recommendation on Regulatory Policy and Governance (2005).²⁶ Competition authorities should help to formulate less anticompetitive policies. EPR policies that, *inter alia* limit the number of market participants or their incentives to compete, can reduce the intensity of competition, which imposes costs on society.
- Monopoly should not be the default market structure. While there may be a case for a monopoly PRO at the outset, the arguments for a single system should be assessed critically at the design stage. Once underway, restrictions that prevent new entry should be phased out as soon as possible. A temporary initial monopoly may be sensible if sunk costs are high and there is uncertainty about the future costs and revenues. Concentrating early-stage demand can reduce some of the uncertainty.
- Agreements among competitors to establish a PRO should be assessed under the jurisdiction's general framework for assessing horizontal agreements that may have pro- and anti-competitive effects.²⁷
- Competition authorities should not, in their analyses, distinguish between purely voluntary agreements and government-sponsored agreements.²⁸
- The procurement of services such as waste collection, sorting, and treatment, should be performed by transparent, non-discriminatory and competitive tenders. Relevant factors include contract duration and scale to provide incentives to invest, and scale and level of aggregation to facilitate bidding by all qualified firms. Where ownership links exist between service providers and PROs, providing an incentive for discrimination, special scrutiny may be required to ensure fair competition in the tenders. At least one

competition authority goes further, finding that separate tending of collection is particularly important to insulate competition in sorting and processing from distortion.

- ❖ Contracts between service providers and PROs should be assessed on a case-by-case basis within the general framework for assessing vertical agreements. These assessments include the benefits as well as the competition detriments. For example, the duration and recovery of sunk costs are related. One guideline,²⁹ for example, says that contracts between packaging waste collectors and dominant PROs exceeding three years duration are not indispensable, and that collectors and recyclers should not be obliged to contract exclusively with one PRO.
- ❖ Post-consumer materials should not be allocated in a way that raises barriers to entry or expansion in the product market. An example of an allocation system that restricts competition is one where material is allocated at below market prices according to historical product market share.³⁰
- ❖ PROs, national registers or other clearing houses should avoid sharing confidential market information with users that may aid cartelisation.
- ❖ Competition authorities should issue up-to-date guidelines or provide other easily accessible guidance. National competition laws are heterogeneous and change over time. Up-to-date guidelines can help both private actors and government officials to design environmental schemes that are compatible with competition law and avoid inadvertent infringements.

There is no consensus on a few issues where there have been a sufficient number of decisions or comments to detect differences.

The general frameworks for assessing horizontal co-operation agreements differ. Many limit consideration to those benefits and detriments that are economic, and that occur within the same market as the competition harm occurs, or at least to the same set of consumers. Others consider also non-economic benefits and detriments, for example environmental ones. And they may consider benefits and detriments that occur more widely than the consumers who suffer from harmed competition.

Competition laws differ with respect to the legality of agreements fixing a small, “visible” fee for fulfilling EPR. The practice in a number of jurisdictions appears to be that fees that are both necessary and very small compared with the total price of a product would not be prosecuted. The detrimental effect on competition of agreement on a small component of total price is viewed in these analyses as small as compared with the benefit of the collection-recycling system that is made possible. By contrast, in other jurisdictions such agreements would be illegal price-fixing.³¹

Other issues have an insufficient number of decisions or comments to conclude whether or not there is consensus.

- The vertical separation of producers, waste collectors and waste treatment firms has been promoted in several jurisdictions. The experience in Germany, where first waste management companies and then trade and industry companies sold their holdings in DSD, is viewed positively by *inter alia* the German competition authority. The French competition authority has expressed its opposition to vertical integration by PROs into waste collection, sorting, recovery and disposal. The Norwegian competition authority is of the opinion that vertical dis-integration in the waste-management value chain would promote efficiency.

- An obligation to provide collection services nationwide hinders entry by new PROs. Duplication of infrastructure in areas that generate little recyclable waste is wasteful or impossible. In these instances, the incumbent may be required to grant access to its infrastructure. This was a solution in Sweden, for example, and a mixture of own infrastructure and shared infrastructure would be allowed under a new Austrian law. Where sharing is not feasible, then lifting the universal service obligation would offer a way for competition in parts of the market.
- The non-portability of financial reserves has been identified by some as an impediment to PRO competition for producers. Financial reserves of a certain level are necessary to ensure that the obliged services can be paid for. Some observers see portability as feasible and non-portability as raising the cost of producers switching to a different PRO. Others see non-portability as not in practice limiting producers switching PROs, so not anticompetitive.

Notes

1. Estimate from OECD Secretariat, based on discussions and expert judgements.
2. Case C-41/90 Höfner and Elser v Macrotron [1991] ECR I-1979 (“Höfner and Elser”), paragraph 21, cited in United Kingdom Office of Fair Trading (2011). Although, for example non-profit entities may have differing objectives, at the margin they have an interest in exploiting any ability they may have to raise prices because they use the profits thereby generated to fund their objectives. (Philipson and Posner, 2009) A review of the literature on non-profit, privately-owned hospitals in the United States found that there was no economic theory to support the presumption that non-profits will not exercise market power to the detriment of total or consumer welfare. The empirical literature showed that nearly all of them exercised market power by raising prices. (Dravone et al., 2012) The economic theory cited is not specific to hospitals, but applies equally to any non-profits that may use profits they generate to fund their activities.
3. Two guidelines that illustrate this process in Europe are the European Commission’s 2011 Guidelines on Horizontal Co-operation Agreements and, with more examples specific to environmental objectives, the Dutch Authority for Consumers & Markets’ 2014 Vision Document on Competition & Sustainability.
4. An Australian authorisation decision, below, illustrates a public benefit standard in use. The treatments of non-economic benefits and costs, and of indirect – not in the same market – benefits and costs, have changed over time in European competition law. The United Kingdom contribution in OECD (2010) cites several older Commission decisions where non-economic and indirect benefits were cognizable, and more recent Court of First Instance (now the General Court) decisions where indirect benefits were recognised. Compare, too, the recognition of reduced harmful emissions as a benefit in a 2000 Commission decision involving an agreement among washing machine manufacturers with the indirect but economic benefits cited in the lightly camouflaged example in the 2011 EC Horizontal Co-operation Agreements Guidelines, para. 329 (Commission Decision No. 2000/475/EC (CECED) 2000 OJ L 187/47, para. 56; European Commission, 2011).
5. This broad statement is only roughly accurate. The European Union, for example, has a block exemption for vertical agreements meeting certain criteria. The criteria were designed to relieve agreements unlikely to harm competition from a costly case-by-case assessment.
6. European Commission Notice “Guidelines on Vertical Restraints” (2010) provides guidance on how vertical agreements are assessed. Sections VI.2.2 and 2.6 concern exclusive distribution and exclusive supply agreements. The guidelines relate to Commission Regulation (EU) No 330/2010 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of vertical agreements and concerted practices, OJ L 102/1.
7. Despite applying to the waste sector, a 2011 study found that no Member State had notified to the Commission any state aid to waste-related services of general economic interest since 2005 (Commission Staff, 2011, pp. 17-8).
8. “It is only if anti-competitive conduct is required of companies by national legislation, or if the latter creates a legal framework which precludes all scope for competitive activity on their part,

that Article 101 does not apply. In such a situation, the restriction of competition is not attributable, as Article 101 implicitly requires, to the autonomous conduct of the companies and they are shielded from all the consequences of an infringement of that article.” (European Commission, 2011, para. 22, footnotes omitted). In the United States, the so-called “state action doctrine” guides the relationship between federal antitrust laws and state regulatory schemes.

9. An introduction to the resolution of conflicts between competition and other laws is in ICN 2004.
10. Loss of consumer welfare in a market can often be approximated by the volume of commerce times the increase in unit price.
11. Considering only cost factors, “[F]ees vary because of differences in the collection system, the target, the proportion of the costs of collection, sorting and recovery accounted for by the fees and the types of collection, sorting and recovery channels covered (e.g., household, industrial and commercial). Second, collection, sorting and recovery costs are likely to be a function of landfill costs, incineration charges and so on, which are likely to vary by Member State.” (RPS et al., p. D-20).
12. The Executive summary in OECD 2010 observes that, “Experience suggests that competition among recycling schemes produces substantial benefits and leads to higher recycling rates at lower costs, as competitive pressure forces the schemes to improve their efficiency and to pass on benefits to consumers....There might be a better case for encouraging a single collection and recycling scheme at the outset in order to get recycling efforts off the ground. But any arguments in favour of a single system should be critically reviewed to examine whether competition would be the superior alternative from the start, and if a single system is accepted care must be taken that any restrictions that may prevent new entry are phased out as soon as possible.”
13. Arrangements by which independent firms organize the joint production of an input can have both positive and negative economic effects. Joint production may reduce costs, for example, as compared with individual production. However, input production joint ventures (“IPJVs”) may allow the downstream firms to charge monopoly prices (Chen and Ross, 2003). This result obtains even when the IPJV is operated optimally, without disagreement among the parent firms. If the IPJV were granted independent decision-making powers, then the downstream prices would be yet higher and the parent firms’ profits lower. Shapiro and Willig (1990) anticipated the monopoly pricing result, while also positing that parent firms may free-ride on the efforts of other parents, thus reducing the efficiency of the IPJV. Sports leagues, also, can be viewed as production IPJVs for some inputs. In its 2010 decision in *American Needle, Inc. v. National Football League*, the US Supreme Court emphasized that the teams were independent businesses with separate economic interests, and they compete with one another for fans, gate receipts and personnel. They also had common interests, e.g., promoting the NFL brand, and the need to cooperate, “provides a perfectly sensible justification for making a host of collective decisions.” Hovenkamp (2010), commenting on the decision, pointed out that although the individual teams have incentives to compete with one another, the organization may have incentives to maximize joint profits by behaving as a cartel. “This conclusion also has a flip side: The individual members may have an incentive to free ride on the investments of other members, while the organization has an interest that each member do its part.” With both positive and negative effects on efficiency, it is not surprising that input production joint ventures are assessed under competition law on a fact-specific, case-by-case basis. Using the terminology of this chapter, the potential negative effects of a collective take-back and recycling scheme are that it may serve to raise the prices consumers pay for products subject to EPR, or the scheme may operate less efficiently than desired by the producer-owners.
14. In Sweden, the competitors share the cost of jointly used infrastructure. In Germany, the individual packaging PROs are assigned monopoly collecting areas in proportion to their share of the producers who have purchased PRO services nationally. In other markets, WEEE PROs are assigned individual types of collecting infrastructure in defined areas, e.g., retailer collection points in an area for a time period.
15. Many of the categorisations and definitions of this section follow OECD 2005.
16. *Elkjøp Norge Grossist AS v Elretur AS and Hvitevareretur AS*, Oslo Tingrett (Oslo District Court), 13 March 2011, p. 21.
17. Switching costs were high because the “new” PRO would need to procure the amount of WEEE evidence corresponding to the amount of products put on the market by the producer/importer. Since the cost to procure “evidence” in the secondary market was often higher than the cost of organising the collection and treatment of WEEE, and was uncertain, then PROs were not incentivised to attract new producer/importers (United Kingdom Department for Business, Innovation and Skills, 2013, Points 38, 59).

18. Note that collection services generally require less investment than recovery services and typically serve a smaller area. Collection services are therefore often local or regional, while this is not the case for recovery services. There are usually numerous tenders for collection services for different parts of a country, while tenders for recovery services are frequently regional or nation-wide.
19. The Dutch end-of-life vehicle PRO, ARN, had 267 affiliated car dismantling companies. ARN organised tenders to award contracts to collect car wrecks. It awarded one contract per province (European Commission decision No. 2002/204/EC (ARN) OJ L 68/18, points 12, 17). The latter suggests that ARN felt that a local monopoly for car wreck collection was most efficient.
20. Further guidance on the design of auctions is provided in OECD (2014) and publications referenced therein.
21. Yardstick competition is a regulatory tool to give incentives for efficiency to undertakings that are not subject to competition. There are different forms of yardstick competition depending on the market failure it is intended to address. Yardstick competition establishes a “shadow competitor”; the more efficient the regulated undertaking is compared with its “shadow competitor”, the greater its profits (Netherlands Bureau for Economic Policy Analysis, 2000). In the reference cost scheme, the collection costs of various municipalities are used to establish the maximum price that a given municipality may charge for collection.
22. Competition authorities have long opposed agreement on “visible” fees. In 1990, an association of independent operators of storage tanks for third parties, Vereniging van Onafhankelijke Tankopslag Bedrijven (VOTOB) decided to increase their prices by a uniform, fixed amount, an “environmental charge,” to partially cover the investment costs to reduce vapour emissions from the tanks. The charge would be a separate invoice item. The European Commission’s view was negative on the bases that the charge was fixed, uniform, and invoiced as a separate item. The fixing was seen as eliminating competition on that price element, as well as reducing incentives on members to meet the objectives with least cost. The uniformity meant that differences in the level and timing of costs would not be reflected. The separate itemisation was seen as suggesting the change was imposed by the government. In the event, the association changed its policies and the Commission agreed to suspend proceedings (European Commission, 1993, paragraphs 177-186).
23. The 2003 WEEE Directive says, “Member States shall ensure that for a transitional period... producers are allowed to show purchasers, at the time of sale of new products, the costs of collection, treatment and disposal in an environmentally sound way.” (Article 8, point 3, Directive 2002/96/EC of the European Parliament and of the Council on Waste Electrical and Electronic Equipment (WEEE), OJ L 37/24). The 2012 WEEE Directive says that Member States may require producers to show purchasers, at the time of sale of new products, the information on costs (Article 14, point 1, Directive 2012/19/EU of the European Parliament and of the Council on Waste Electrical and Electronic Equipment [WEEE], OJ L 197/38).
24. Similar issues may arise with respect to national registers. Member States of the European Union are required to establish national registers by Article 16 of Directive 2012/19/EU, the recast directive on waste electrical and electronic equipment. Producers must report the weight of EEE placed on the market, by category, for each reporting period. (OJ L 197/38) The categories are fairly broad, and weight may not be useful for monitoring EEE sales.
25. At the time, the ELCF estimated the cost of recycling a WEEE lamp at 60% or even 80% of the retail price of the lamp.
26. The Recommendation of the Council on Competition Assessment (2009) identifies policies that limit the number or range of market participants and their incentives to behave in a competitive manner, among others, as policies to which particular attention should be given. The Recommendation of the Council on Regulatory Policy and Governance (2005) recommends Members to “Integrate Regulatory Impact Assessment (RIA) into the early stages of the policy process for the formulation of new regulatory proposals. Clearly identify policy goals, and evaluate if regulation is necessary and how it can be most effective and efficient in achieving those goals. Consider means other than regulation and identify the tradeoffs of the different approaches analysed to identify the best approach.”
27. Executive summary in OECD 2010 observes that, “Competition authorities in most member and observer countries must examine agreements that pursue environmental goals under the framework that is generally applicable to all competition law analysis. Accordingly, if an agreement is found to potentially restrict competition, a competition authority will consider as justifications only direct economic benefits that are typically recognised in competition law analysis, such as cost savings, innovation, improved quality, and other efficiencies. Non-economic benefits and more remote economic benefits that do not accrue to the users of the products or services covered by the

agreement will not be taken into account when determining whether an environmental agreement violates a jurisdiction's competition laws.”

28. Summary of discussion in OECD 2010.
29. European Commission, DG-Competition 2005.
30. Executive summary in OECD 2010 observes that, “Allocation systems [in which recycled product was allocated to manufacturers based on their historical market shares] were considered anticompetitive as they protected the position of incumbent market players by guaranteeing them cheaper access to a valuable input; they distort competition for the recycled product and make it more difficult for new producers to obtain.”
31. Executive summary in OECD 2010 explains that, “Because pricing restraints conflict with the core goals of competition laws, competition authorities will typically challenge environmental agreements among competitors that directly affect the price at which they sell their products to customers. For example, agreements to pass on environmental charges to customers would almost invariably be considered unlawful even if it could be argued that such a pass-on might motivate customer conduct consistent with environmental policy goals.”

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