

## Deposit Refund System (and Packaging Tax) in Finland<sup>i</sup>

Author: Sarah Ettlinger (Eunomia)

### Brief summary of the case

Finland has a long history of deposit refund systems for beverage packaging, with systems now collecting refillable glass and PET bottles and one-way cans, PET bottles and glass bottles. Deposit amounts are laid out in Government decrees and range from EUR 0.10 to EUR 0.40 per container. The largest deposit refund system operator, Suomen Palautuspakkaus Oy (PALPA), achieved return rates from 89% to 95% for one-way packaging in 2015. Government targets for recycling and reuse are now 90% for all returnable packaging materials, metal beverage cans, and other one-way packaging. The scheme is therefore considered very successful; this is largely attributed to the close co-operation and negotiations between parties (beverage industry and retailers) ahead of extending the system to new packaging materials. PALPA is also owned 50% by retailers and 50% by the beverage industry.

In addition to the deposit refund system, Finland has had a beverage packaging tax since 1994. This incentivises participation in the deposit refund system by offering a lower rate of tax for participants in a registered deposit refund system. Until 2005, only refillable bottles in a deposit refund system were exempt from the tax entirely, with one-way containers still liable to pay between 12.5% and 25% of the tax. From 2008, one-way containers were also exempt from the tax if in a deposit refund system. This change in the tax has been credited as the main driver for the switch from refillable to one-way containers in Finland over the last ten or so years.

## 1 Description of the design, scope and effectiveness of the instrument

### 1.1 Design of the instrument

A deposit refund system has existed in Finland since 1950. The first system was used for refillable glass bottles and was operated by the breweries with their own pool of bottles (PALPA, 2016b). Suomen Palautuspakkaus Oy (PALPA) was formed in 1996 to operate a one-way metal beverage cans system and currently operates the largest deposit refund system in Finland. In 2008, PALPA also introduced a system for collecting one-way PET bottles and in 2011 for one-way glass bottles. PALPA is a non-profit organisation, owned and operated 50% by the beverage industry and 50% by the retail industry and funded by fees paid by participating producers and importers whose products are covered by the system. Members pay both a registration fee and an annual fee, which is set according to the type and volume of products placed in the system. Additional systems also operate, including Ekopulloyhdistys ry (Ekopullo) which was set up in 2004 to manage the system for refillable PET and glass bottles and private retailers' own internal systems (Eunomia Research & Consulting et al., 2011).

In PALPA, consumers pay a deposit of EUR 0.15 per metal can, EUR 0.10 for a plastic bottle of less than 0.35L, EUR 0.20 for a plastic bottle of 0.35L-1L, EUR 0.40 for a plastic bottle larger than 1L and EUR 0.10 for all glass bottles (PALPA, no date). These values are driven by the

minimum deposit values set out in a series of Government decrees on deposit refund systems (Statsrådet, 2013). These values have remained the same since the first decree in 2005. In Ekopullo, consumers pay EUR 0.40 for 1L glass bottles; this is higher than the minimum required in the decree. All other rates in Ekopullo are the same as PALPA's. Consumers return the packaging to retailers, using 'reverse vending machines'<sup>1</sup>, and their deposit is refunded to them. PALPA's machines accept glass bottles and cans that are not part of the deposit refund system, though no deposit is refunded for these. In 2010, it was estimated that around 40 million metal beverage cans enter Finland as private imports from Estonia (Copenhagen Economics, 2013). Plastic bottles that are not in the deposit scheme cannot be returned through the machines.

## 1.2 Drivers and barriers of the instrument

Finland has a long and dedicated history of returning refillable containers and the deposit refund system exists to continue to incentivise the return of packaging for reuse and recycling. In order to further incentivise producers and importers to participate in a deposit refund system, a **packaging tax** on soft and alcoholic drinks packaging was introduced in 1994. This was levied at the point at which products were placed on the Finnish market. This crucially offered a lower tax rate to producers and importers that participated in a Government-registered deposit refund system and was a key driver for the set-up of PALPA in 1996. When the packaging tax was introduced it was based on the volume of the packaging and set at FIM 4 (EUR 0.67) per litre for packaging not in a deposit refund system; at FIM 1 (EUR 0.17) per litre for one-way packaging in a system; with refillable containers in the deposit refund system exempt from the tax entirely (ECOTEC et al., 2001). The tax was revised in 2004. From 2005 to 2008, the tax on one-way packaging in deposit refund systems was halved to EUR 0.085 per litre. Since 2008, one-way packaging in deposit refund systems has been zero-rated. The rate is EUR 0.51 per litre for all drinks packaging not captured in a deposit refund system (Riksdagen, 2004).

The set-up of PALPA and the one-way cans deposit refund system was spearheaded by the breweries industry, though the transition from refillable glass bottles to cans was in part also driven by retailers: cans were preferable to retailers as they were easier to handle, could be crushed and did not require so much storage space (Nikkanen, 2016). However, the cost of the one-way packaging tax, even with the reduction for participation in a deposit refund scheme, slowed the introduction of one-way packaging. After 2004, when the tax was halved and the intention to remove it entirely within four years was announced, the switch to one-way packaging started to happen rapidly. This then directly led to the introduction of the systems for one-way PET and glass bottles (PALPA, 2016b).

To ensure that deposit refund systems meet their environmental goals, the decrees on refund systems also set out the required minimum recycling and reuse targets: in 2005 these were 90% for returnable packaging, 90% for metal beverage cans and 80% for other one-way packaging (Rehnberg, 2010). In 2013, the target for other one-way packaging was increased to 90% so the targets for all materials are now the same.

---

<sup>1</sup> Reverse vending machines usually receive containers one at a time through a front-facing horizontal opening, rotate and scan the containers' bar code, then return the deposit to the consumer, usually as a coupon.

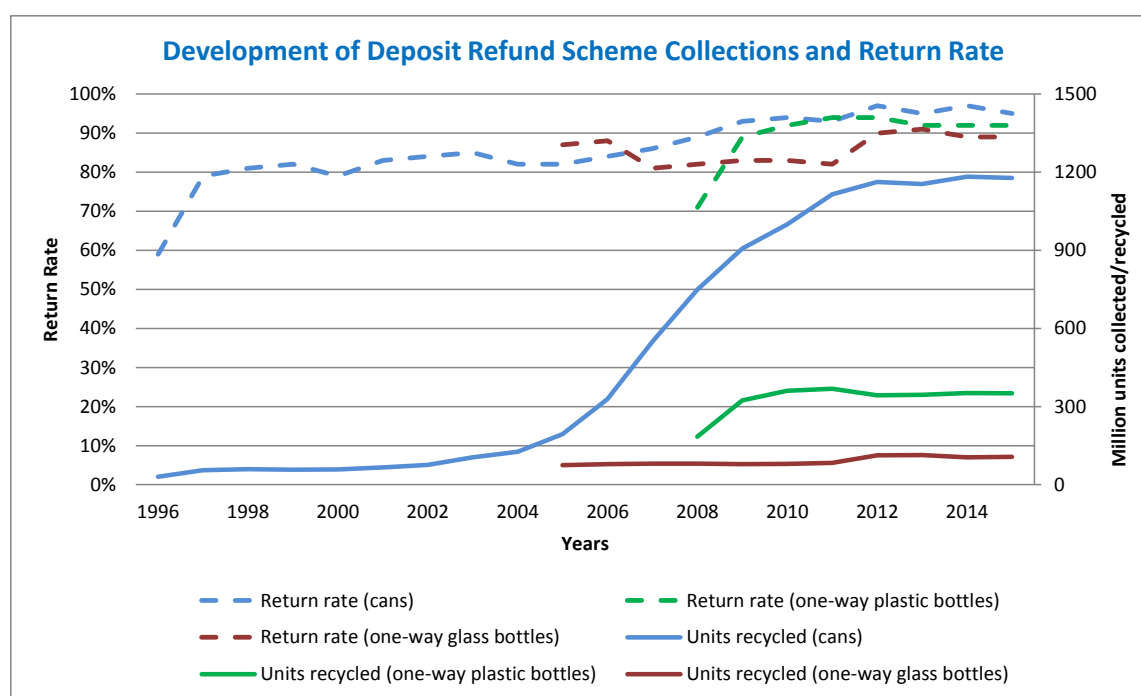
### 1.3 Revenue collection and use

The fees paid by producers participating in the PALPA scheme finance the reverse vending machines and administration of the system, as well as the transport and sorting costs of the materials. PALPA is non-profit and fees are therefore set at a rate equal to the costs of running the system. A 2011 estimate, based on the fee producers pay per can and the additional revenue from unclaimed deposits suggests that total running costs for the system are around EUR 0.019 per can (Eunomia Research & Consulting et al., 2011). Unclaimed deposits, which are low due to the high return rate of the system, are retained by PALPA and used for the system’s operating costs, rather than being returned to retailers or producers, as is the case in some other northern European deposit refund schemes. Total turnover for PALPA in 2015 was EUR 72 million, with EUR 284 million paid in deposit fees (PALPA, 2016a).

The packaging tax raised revenues of FIM 103 million (EUR 17.3 million) in 1995. After the introduction of PALPA’s scheme for cans, revenue fell to FIM 59 million (EUR 9.9 million) in 1997 (ECOTEC et al., 2001). Since the increase of the tax rate for packaging not in a deposit refund system, the removal of the tax for one-way packaging in a deposit refund system and the introduction of the scheme for PET bottles in 2008, the revenue has been relatively constant at around EUR 12 to EUR 15 million per year, with EUR 14 million raised in 2014 (Eurostat, 2016).

### 1.4 Environmental impacts and effectiveness

**Figure 1: Environmental Impact of Finnish Deposit Refund System**



Source: adapted from PALPA (2016a), pp. 14-15.

Finland consistently achieves very high rates of return for its deposit refund systems. As shown in Figure 1, when the one-way cans system was first introduced by PALPA in 1996, the return rate (i.e. recycling rate) was already at 59% in the first year, increasing to 79% in the second year. By 2009, the return rate for cans was above 90%. Similarly, when PET bottles

were introduced in 2008, the return rate was 71%, rising above 90% within two years. Glass bottles have consistently experienced a high return rate of above 80%, due to their long history in the deposit systems. The very significant increase in the actual number of cans returned whilst the return rate remains relatively steady reflects the change in consumption patterns from refillable glass bottles to one-way cans.

Refillable glass bottles are returned at an even higher rate than one-way packaging. In 2014, the rate was 97%, and in 2015 it was 98% (PALPA, no date). It is noted that Finland's significant shift from refillable to one-way beverage packaging over the last ten years or so has been attributed to the structure of the packaging tax, which favoured refillable packaging over one-way packaging until amended in 2004 and again in 2008 (PALPA, 2016b).

### **1.5 Other impacts**

According to a representative of PALPA, with the original structure of the packaging tax, smaller breweries considered themselves to be at a disadvantage. The refillable glass bottle market was dominated by a small number of large players, and smaller breweries that used cans (in part to enable access to the EU market) were disadvantaged due to the extra tax (PALPA, 2016b). In addition, in 2000, the Finnish Competition Authority raised concerns that breweries must be of a minimum size before joining a deposit refund system makes financial sense. Large breweries or importers furthermore are advantaged as they can set up their own system if they want, which is not feasible for smaller players. It has also been claimed that the deposit refund system and packaging tax that favoured refillable packaging was responsible for the historically low levels of imported beverages in Finland.<sup>2</sup> On the other hand, the original structure of the packaging tax has also been praised for better reflecting the environmental externalities of one-way packaging compared to refillable packaging (ECOTEC, 2001). The deposit refund systems and packaging tax are not thought to have had other significant impacts, including distributional impacts.

## **2 Stakeholder engagement**

None of the deposit refund systems in Finland are state-run and the systems have therefore been almost entirely implemented by civil society, in particular in close co-operation between the beverage industry and retailers, though significantly influenced by Government policy. The timeline shown in Figure 2 outlines the key dates in the development, starting from the first Government consultation ahead of the introduction of the packaging tax. When industry decided to set up a deposit refund system (PALPA) to avoid paying the highest rate of tax, both retailers and industry were heavily involved in the conversations around the design and particulars of the scheme. Additionally, academics, reverse vending machine manufacturers and the Government also participated in the conversation. A representative of PALPA has noted that the wide breadth of stakeholders involved in the discussions has eased the introduction of the system, as buy-in was achieved through involvement in the negotiations (PALPA, 2016b). However, according to a beverage industry stakeholder, there are also unique challenges associated with the particular combination of retailers and industry as key

---

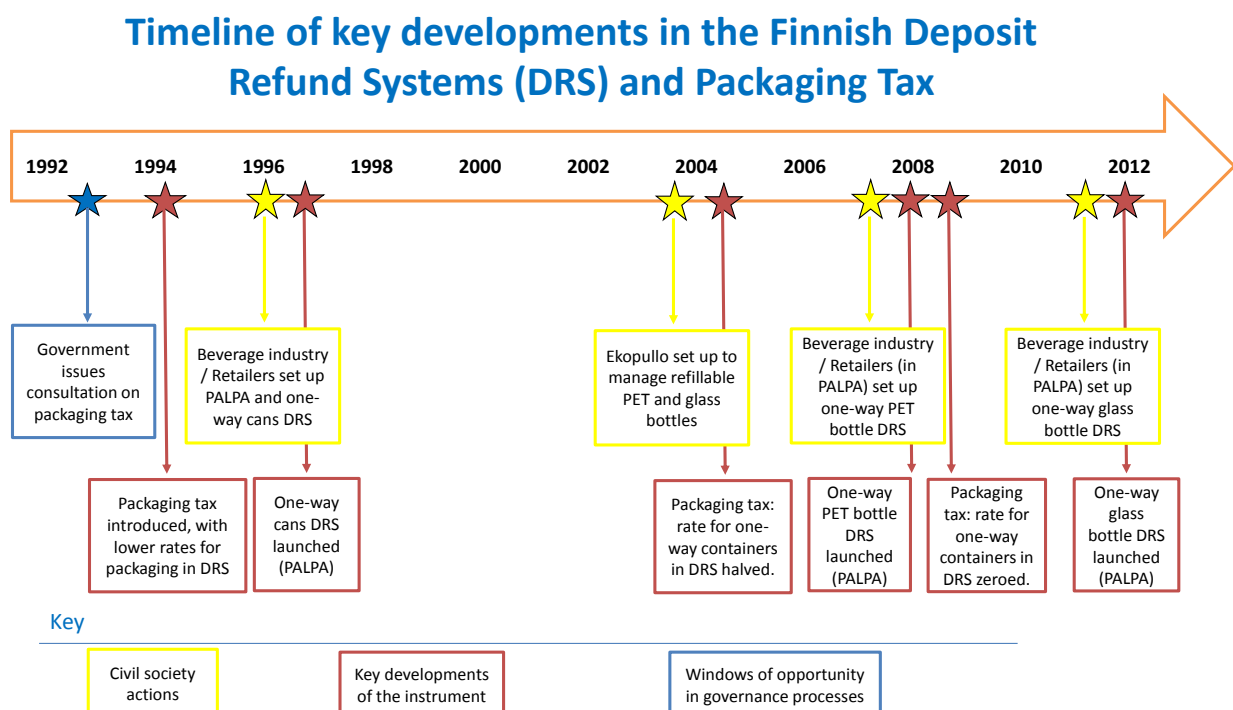
<sup>2</sup> As noted in Section 1.1, an estimated 40 million cans were privately imported from Estonia in 2010.

stakeholders: namely that retailers are customers of the beverage industry, making financial negotiations more complicated (Nikkanen, 2016).

Similar conversations were repeated both ahead of the introduction of PET one-way bottles and one-way glass into PALPA's systems. Before PET was introduced, the Government decree on deposit refund systems was undergoing amendment, including updates to the targets specified for different materials. PALPA and the Government were negotiating the target. Although the Government wanted 90%, a compromise of 80% was reached. PALPA argued for a lower rate to reduce the risk of launching a deposit system which was 'doomed to fail' from the first year of operation (PALPA, 2016b), i.e. to ensure that the early results were not disappointing enough to make the scheme seem unsuccessful. In addition, lessons from discussions held when the cans system was developed led to more independent experts being consulted and assessments carried out to get objective financial cost input into the PET and glass scheme negotiations (Nikkanen, 2016).

The packaging tax, the trigger for the wide expansion of the deposit refund schemes, was consulted on ahead of its implementation. Although there was some resistance to the tax from the beverage industry it was never the focus of a concerted campaign for abolition. However, the specific structure that allowed refillable containers to be entirely exempt from the tax (on the condition of membership in a deposit refund scheme), with only a lower rate provided for one-way containers in schemes, caused a lot of controversy and concerns over competitiveness impacts. Opinion is divided on whether the amendment of the tax to remove this distortion was the result of successful lobbying or whether the tax was only intended to remain with this structure until one-way deposit refund systems were suitably advanced and an 'obvious choice' for producers.

**Figure 2: Schematic view of the involvement of civil society (in yellow) and policy-makers (in blue) in the introduction and implementation of the instrument (in red)**



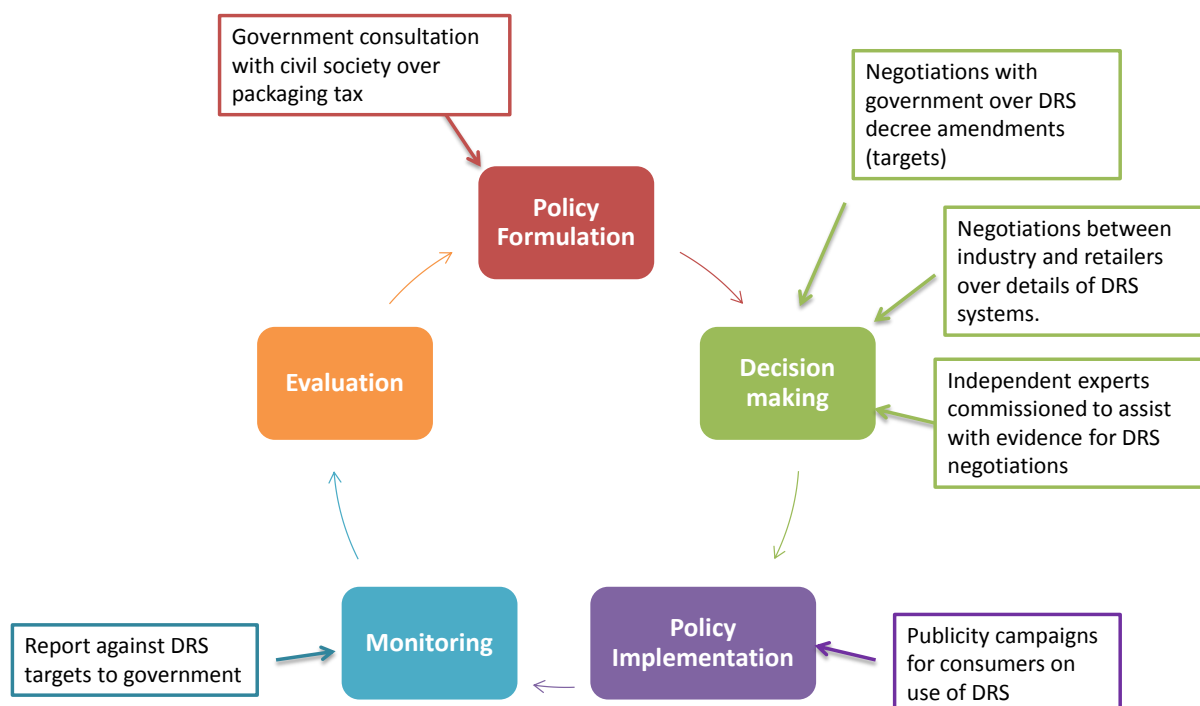
### 3 Windows of opportunity

As outlined in Section 2, there have been a number of opportunities for stakeholders to engage in the development of the deposit refund systems and the packaging tax. As the development and set up of the deposit refund system was led by industry, this is where most of the opportunities have been found. Furthermore, in addition to the formal processes mentioned in the previous section, there has also been a continued role for communication with the public at each stage where PALPA has changed and new packaging materials have been accepted into the scheme. As habits and the use of deposit refund systems are engrained in Finland, the communications have been less a fundamental behaviour change campaign and more wide-spread communication about the system itself.

A summary of the opportunities is outlined in Figure 3.

**Figure 3: Schematic overview of windows of opportunity throughout the policy cycle of Finnish Deposit Refund Systems and Packaging Tax**

## Civil society engagement with the Finnish Deposit Refund Systems (DRS) and Packaging Tax



### 4 Insights into future potential/reform

#### 4.1 Actual planned reforms and stakeholder engagement

There are no known planned reforms to the Finnish deposit refund schemes or packaging tax. However, there are ongoing conversations about particular aspects of the scheme. Specifically, PALPA's decision to accept glass bottles from outside the scheme in the reverse

vending machines is cause for concern amongst industry members of PALPA. Glass is not as valuable a material as aluminium, and it is therefore a financial burden to recycle these bottles, while producers of these bottles do not have to pay or be responsible for their disposal (i.e. they can be considered 'free riders'). However, according to the beverage industry, retailers have a strong preference for machines to accept all packaging, as any rejects may otherwise be left at the location of the machine and become the responsibility of the retailer. A good solution to this would be to encourage importers of non-deposit system glass bottles to join the system or to pay some contribution to the scheme. The latter would require an ability to track the bottles, which is currently not possible (Nikkanen, 2016). Alternatively, work could be done to improve the market for glass recycle in Finland, thus ensuring a revenue from these bottles.

There are also no known planned reforms for the packaging tax.

#### **4.2 Suggestions for future reforms – instrument design and civil society engagement**

The packaging tax currently only covers beverage packaging, and does not include other bottles for non-beverages, or beverage containers made of other materials (such as cartons). In the view of the case study author, although the tax structure would need to be amended as there would be no option to reduce the rate by participating in the deposit refund scheme, expanding the tax in this way would enable Finland to tackle waste from other sources, which is currently not addressed.

Similarly, modern reverse vending machines could be designed to accept non-beverage packaging that is not currently accepted, for example non-round PET bottles.

#### **4.3 Suggestions for replicability**

Setting up a deposit refund scheme requires close co-operation between the main actors who will use the scheme, namely retailers and industry (and consumers to some extent), though in principle it can be replicated anywhere. Where a culture of attention and responsibility for one's own waste management does not currently exist, a behaviour change campaign is needed to make the scheme a success, but if the deposit is set at the right level, the financial incentive itself should encourage this behaviour change. Furthermore, there are particular design features that need to be considered. The Finnish approach to unclaimed deposits is that these remain within the system. According to a representative of PALPA, this is not controversial with any parties, as the return rate is so high and the number of unclaimed deposits therefore low. However, where a new system is not expected to achieve a high return rate in its first years of operation, keeping revenues from unclaimed deposits in the scheme may not prove as popular, unless the system has been set up with full support from all parties (PALPA, 2016b).

The synergy between the packaging tax and deposit refund system in Finland has been a particular driver in encouraging high rates of use of the deposit system. However, although a packaging tax could also be implemented in other countries, deposit refund systems can also operate successfully without a complementary packaging tax.

## References

Copenhagen Economics (2013) Cost-benefit analys av ett gemensamt nordiskt pant-system [Cost benefit analysis of a common Nordic deposit refund system]. Nordic Council of Ministers, Copenhagen. Accessible at <https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/0/270/0/Cost-benefit%20analys%20av%20ett%20gemensamt%20nordiskt%20pant-system.pdf>

ECOTEC et al. (2001) Study on the economic and environmental implications of the use of environmental taxes and charges in the European Union and its Member States. European Commission, Brussels. Accessible at <http://ec.europa.eu/environment/enveco/taxation/>

Eunomia Research & Consulting et al. (2011) Options and Feasibility of a European Refund System for Metal Beverage Cans: Appendix 2. European Commission, Brussels. [http://ec.europa.eu/environment/waste/packaging/cans/pdf/Options%20and%20Feasibility%20of%20a%20European%20Refund%20System%20for%20Metal%20Beverage%20Cans\\_Final%20Report.pdf](http://ec.europa.eu/environment/waste/packaging/cans/pdf/Options%20and%20Feasibility%20of%20a%20European%20Refund%20System%20for%20Metal%20Beverage%20Cans_Final%20Report.pdf)

Eurostat (2016) Tax revenue statistics: National tax list. Eurostat: Luxembourg. Accessible at: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Tax\\_revenue\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Tax_revenue_statistics)

Hennlock, Magnus et al. (2014) Economic policy instruments for plastic waste – A review with Nordic perspectives. Nordic Council of Ministers, Copenhagen. Accessible at <http://norden.diva-portal.org/smash/get/diva2:791794/FULLTEXT02.pdf>

Nikkanen, Yrjö (2016) Interview for the report. August 2016

PALPA (2016a) Kaikki kiertää. Palpan vuosi 2015 [PALPA annual report 2015] Suomen Palautuspakkaus Oy (PALPA). Accessible at <http://digipaper.fi/palautuspakkaus/128335/>

PALPA (2016b) Interview with staff member from Palpa. August 2016.

PALPA (no date) Palpa Briefly. Suomen Palautuspakkaus Oy (PALPA). Accessible at <http://www.palpa.fi/beverage-container-recycling/palpa-briefly/>

PALPA (no date) Frequently Asked Questions. Suomen Palautuspakkaus Oy (PALPA). Accessible at <http://www.palpa.fi/retail-and-horeca/faq/>

Rehnberg, Jan (2010) Nordisk Pantanalys: Analys av förutsättningarna för ett gemensamt nordiskt pantsystem för dryckesförpackningar [Nordic Deposit Analysis – Analysis of the requirements for a joint Nordic deposit system for beverage containers]. Nordic Council of Ministers, Copenhagen. Accessible at <http://norden.diva-portal.org/smash/get/diva2:701557/FULLTEXT01.pdf>

Riksdagen (2004) Lag om accis på vissa dryckesförpackningar 1037/2004 [Law regarding packaging tax]. Riksdagen, Helsingfors. Accessible at <http://www.finlex.fi/sv/laki/ajantasa/2004/20041037>



Statsrådet (2013) Statsrådets förordning om ett retursystem för dryckesförpackningar (526/213) [Decree on deposit refund systems]. Accessible at <http://www.finlex.fi/sv/laki/alkup/2013/20130526>

---

<sup>i</sup> This case study was prepared as part of the study 'Capacity building, programmatic development and communication in the field of environmental taxation and budgetary reform', carried out for DG Environment of the European Commission during 2016-2017 (European Commission Service Contract No 07.027729/2015/718767/SER/ENV.F.1) and led by the Institute for European Environmental Policy ([www.ieep.eu](http://www.ieep.eu)). This manuscript was completed in December 2016.