ANNEX G

EPR for used rechargeable batteries in Japan

by
Dr Tomohiro Tasaki, National Institute for Environmental Studies, Japan[1]

	SUMMARY BOX
Cost allocation	Producers pay for collection and recycling through membership fees to the producer responsibility organisation (PRO). Fees are proportional to the quantity of batteries produced and sold.
Cost coverage	Producers finance all the operations of the PRO, from collection to recycling of compact rechargeable batteries.
Operational responsibility (downstream)	Collection: Retailers (voluntary; collection box) and the PRO (pick up) Recycling: the PRO (commissioned to private recyclers).
Role of government (MOE and METI)	• ministries in charge of supervision of the scheme • encourage voluntary efforts by producers • issue recommendations and necessary measures for producers • awareness-raising and education activities • could impose fines of up to JPY 500 000 to producers (unlikely).
Environmental performance	Recycling rate targets of between 30% for Lithium batteries and 60% for Sealed nickel-cadmium batteries.
DfE incentive	Producers are encouraged to facilitate disassembly of batteries from waste products but no remarkable (prominent) improvements have been noticed.
Cost efficiency	No information.

1. Description of EPR set-up

a) Legal context

The Act for the Promotion of Effective Utilization of Resources, which was promulgated in June 2000 and came into force in April 2001, is the legal basis for promoting the responsibility of business operators for the recycling of their products, including for rechargeable batteries. It aims at comprehensively promoting the reduction, reuse, and recycling of used products based on a 3R approach. The Act provides flexibility to business operators for the design of the recycling schemes. In the case of compact rechargeable batteries, the Ministerial Ordinance Stipulating the Criteria to be Used by Sealed Rechargeable Batteries Manufacturers was issued in March 2001. The Ordinance stipulates that manufacturers of rechargeable batteries, as well as manufacturers of products using rechargeable batteries should conduct the self-collection of waste sealed batteries by designating self-collection points, installing collection boxes, or taking other measures needed for self-collection, and to organize the recycling of collected batteries. Non-rechargeable batteries and automobile batteries are not covered by the law.

b) Allocation of responsibilities (distribution of roles, financial flows)

Manufacturers and importers are required to collect and recycle waste compact rechargeable batteries, as well as to disclose information about collection and recycling every year. As for manufacturers of products using rechargeable batteries, they must collect used batteries and hand them over to the battery manufacturers. In both cases, manufacturers may ask to be certified by the competent minister, in order to ensure a smooth conduct of operations. To organise and finance the collection and recycling of batteries, most manufacturers register with the Japan Portable Rechargeable Battery Recycling Centre (JBRC), a producer responsibility organization (PRO) that collects the

majority of battery types. Another PRO, the Mobile Recycle Network, deals with lithium-ion batteries used in cell-phones, which undertakes collection collectively but the recycling is handled by each communication service provider. For sealed lead acid batteries, most of them are collected by individual battery manufacturers. Retailers that sell compact rechargeable batteries voluntarily register with the JBRC as a co-operation shop and install collection boxes for pick up by the JBRC. There were 21 102 co-operation shops in 2013. For commercial rechargeable batteries, the co-operation businesses also voluntarily register with the JBRC to discard their used batteries to the JBRC. Batteries are sorted by type, which is not the case for retailers. Rechargeable batteries are collected and transported to recyclers by delivery businesses outsourced by the JBRC, who remunerates them with the annual membership fees paid by member manufacturers. Fees are proportional to the quantity of batteries produced and sold. There is no provision in the Act that defines a specific role for municipalities and there is a lack of financial incentive for them to co-operate. However, a small number of them (municipalities) (222) co-operate with retailers for the collection of batteries, which they must insulate and sort by type. The national government (Ministry of Economy, Trade and Industry (METI), and the Ministry of Environment (MOE) are in charge of supervising the scheme and of conducting educational and awareness-raising activities.

c) Governance system and sanctions

The scheme is based on the idea of encouraging voluntary efforts by business operators, and its governance relies essentially on information exchanges between business operators and the government.

Manufacturers of batteries and of products using batteries must disclose information on self-collection and recycling every fiscal year, which is being aggregated and published by the METI and MOE. When necessary, the competent authorities may provide specified resource-recycling business operators with the necessary guidance and advice with regard to self-collection and recycling. When the ministers deem that the self-collection and recycling achievements by a producer (who sells two million pieces of equipment or more) fall far short of the "standards of judgment" (criteria stipulated in the Act), they may recommend necessary measures. When the producer fails to follow the recommendations, the ministers may disclose this shortcoming. If the producer still fails to follow the recommendations, the ministers may order the producer to take necessary measures, after hearing the opinions of the Industrial Structure Council, and may impose a fine up to a maximum of JPY 500 000.

2. Environmental effectiveness

a) Collection and recycling rates

Recycling rates set under the Act (see Table G.1) are defined as the percentage of the total weight of materials recycled from waste compact rechargeable batteries that were turned into a recyclable state, out of the total weight of the waste compact rechargeable batteries collected. Recycling means that waste compact rechargeable batteries are turned into iron, lead, nickel, cobalt, cadmium and other recyclable resources so as to be used. It does not include energy recovery.

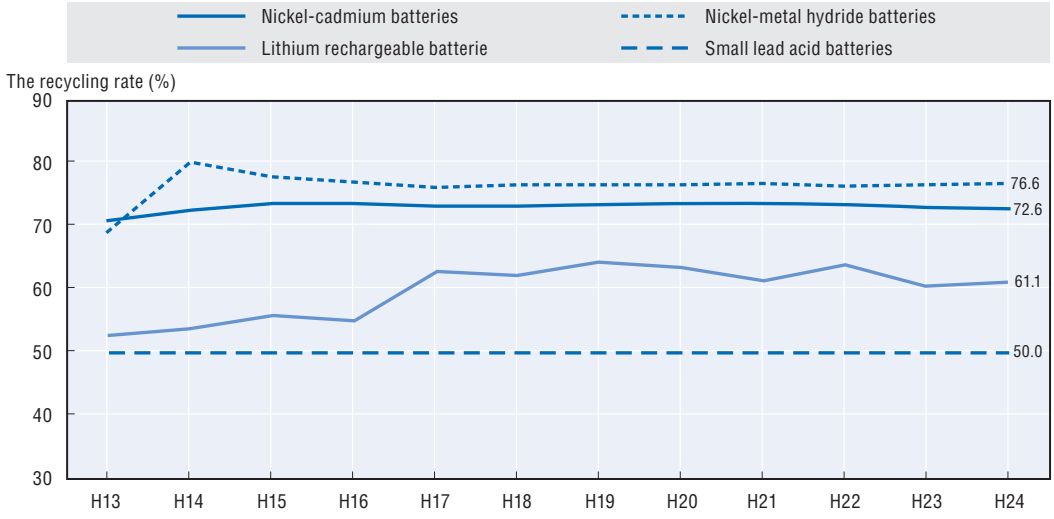
As shown in Figure G.1, the targets set by the Act have been achieved and exceeded, with an increasing recycling rate for lithium-ion batteries and constant rates for the other types of batteries.

Table G.1. **Target Recycling rates for waste compact rechargeable batteries in Japan**

	Mandatory target recycling rate (as from entry into force of the Act)
Sealed nickel-cadmium batteries	60%
Sealed nickel-metal hydride batteries	55%
Sealed lead acid batteries	50%
Lithium batteries	30%

Source: Tasaki, T. (2014), "The recycling scheme for compact rechargeable batteries in Japan – under the act on the promotion of effective utilization of resources", Case study prepared for the OECD, *www.oecd.org/env/waste/gfenv-extendedproducerresponsibility-june2014.htm*.

Figure G.1. **Recycling rates of waste compact rechargeable batteries in Japan**



Source: Tasaki, T. (2014), "The recycling scheme for compact rechargeable batteries in Japan – under the act on the promotion of effective utilization of resources", Case study prepared for the OECD, *www.oecd.org/env/waste/gfenv-extendedproducerresponsibility-june2014.htm*.

Collection rates for compact rechargeable batteries are difficult to estimate because they are collected a few years after they have been put on the market. A study carried out in 2001 estimated that 26 % of waste compact batteries were collected in Japan, with low collection rates for nickel-metal hydride batteries and lithium-ion batteries (see Table G.2).

Table G.2. **Estimated Collection rates for waste compact batteries in Japan**

Type of battery		Quantity collected (tonnes/year)	Collection rate (%)
Non-rechargeable batteries (cylindrical)		21 500	30
Non-rechargeable batteries (button shaped)		1	0.1
Rechargeable batteries (compact)	Nickel-cadmium batteries	984	46
	Nickel-metal hydride batteries	205	2
	Lithium-ion batteries	165	6
	Total	1 354	9

Source: Asari, M. et al. (2011), "Current Status of Disposal and Recycling of Small Used Batteries in Japan", *Journal of Material Cycles and Waste Management*, 22 (6), pp. 412-425.

b) Design-for-Environment (DfE)

The scheme encourages product designs that enable easy removal of compact rechargeable batteries from waste products. However, there have been hardly any remarkable improvements in such product designs. According to a survey carried out by the MOE in 2008, about one quarter of consumers remove batteries from waste products, with variable results depending on the product. For example, 42.3% of the respondents reportedly removed batteries from radio-controlled model cars, while only 10% did so for laptop computers, and 13.9% for cell-phones.

3. Economic efficiency (including competition aspects)

a) Cost efficiency

With regard to the costs, the JBRC discloses a balance sheet based on the obligation to report its performance, as stipulated in the Act. However, the information about individual costs is not disclosed and therefore it is not possible to conduct a cost-benefit analysis.

b) Leakages and free riders

As shown in Table G.2, there would be a large amount of uncollected spent batteries, including those not removed from waste products. The free rider issue has been discussed in recycling policies in Japan as well; however, it has not been a topic related to battery collection/recycling so far. All ten battery manufactures are members of the JBRC, whereas only 306 manufacturers of electrical products using rechargeable batteries have joined the JBRC. Thousands of such producers exist in Japan.

c) Trade and competition

No competition-related problems have been pointed out. The Act stipulates that, when a PRO for specified resources-recycled products is to be created, the competent minister may ask for the opinions of the Japan Fair Trade Commission regarding measures for the self-collection and recycling of the products, when necessary.

4. Key issues and possible reforms

One useful improvement to the scheme would be to increase the percentage of batteries that are collected through appropriate paths and adequately sorted by type. According to a survey by the MOE in 2008, 25% of the respondents placed waste batteries in collection boxes at retailers. Currently, there are little incentives for stakeholders other than producers such as municipalities to take part in the collection of waste rechargeable batteries. The quality of collected batteries has, however, increased thanks to steady awareness-raising and guidance activities.

In light of the expected increase in the use of rechargeable batteries for electric vehicles and household photovoltaic power generation systems, sooner or later it will be necessary to examine how the scheme should be developed with a possible option of inclusion of these batteries, from a medium- to long-term perspective.

Note

1. Full source available at: Tasaki, T. (2014), "The recycling scheme for compact rechargeable batteries in Japan – under the act on the promotion of effective utilization of resources", Case study prepared for the OECD, *www.oecd.org/env/waste/gfenv-extendedproducerresponsibility-june2014.htm*.