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## Electric Appliance Recycling in Japan

While the broad implementation of extended producer responsibility (EPR) in Europe has received significant attention, EPR in Japan is often overlooked. Nonetheless, in recent years, the Japanese government has enacted producer responsibility requirements for waste packaging, end-of-life vehicles, electric appliances, and personal computers.

Driven in part by a lack of landfill capacity combined with a densely populated urban environment, the Japanese government, primarily through the Ministry of the Environment and the Ministry of Economy, Trade and Industry (METI), has taken steps toward the enactment of federal laws that promote recycling and resource conservation. The Basic Law for Establishing the Recycling-based Society, enacted in 2000, has served as a framework guiding recycling efforts and promoting producer responsibility for various products and materials.

### The Home Appliance Recycling Law

Spurred by the increasing quantity of electric appliances in Japan's municipal waste stream and the lack of adequate processing capacity for these waste products, the Home Appliance Recycling Law (formerly the Specified Home Appliance Recycling Law) was a major step toward producer responsibility in Japan. It was enacted by the Japanese Diet in 1998 and went into effect in April 2001. The law requires manufacturers and importers to collect and recycle their own appliances. Products addressed by the law include:

- Air conditioners.
- Refrigerators.
- Televisions.
- Washing machines.

Manufacturers are obligated to finance the recycling of their own products. The Association for Electric Home Appliances (AEHA), a trade group, is responsible for "orphan" products — those that outlast their manufacturer, such as a TV discarded 20 years after the date of sale.

### Separate Collection

Like take-back requirements for electronics in Norway, Sweden, the Netherlands, and Belgium, the Home Appliance Recycling Law imposes an "old for new" requirement on Japanese retailers. That is, every time they sell a product, they must take back from the consumer either a similar used product or some other product that they sold in the past.

The law also permits manufacturers to contract with other organizations, such as the AEHA, to provide collection services on their behalf. In rural areas without major appliance retailers, collection is provided by local government or the AEHA. The Ministry of the Environment estimates that 80 percent of recycled appliances are currently being collected through retail outlets.

Following collection, retailers, local government, or some other designated organization is obligated to transport the collected materials to consolidation centers operated by two manufacturer consortia.

### Industry Implementation

The Home Appliance Recycling Law specifies that manufacturers have individual responsibility for their own products. The industry has formed two consortia to meet this responsibility. Manufacturers in each group have the obligation to establish regional consolidation centers and to ensure the transport of collected products from these centers to recycling facilities.

Each consortium operates approximately 190 consolidation centers and more than a dozen recycling facilities. Group A comprises the following manufacturers:

- Electrolux
- GE
- Matsushita
- Toshiba

Group B comprises these manufacturers:

- Daewoo
- Hitachi
- Sanyo
- Sharp
- Sony

Companies that sell only a limited number of products in the Japanese market can designate other organizations to fulfill their collection and recycling responsibilities on their behalf. As of mid-2003, 29 companies had taken advantage of this option.

## Financing

As opposed to the front-end financing requirements common in Europe, which encourage cost-internalization (whereby recycling costs are included in the price of the product and are invisible to consumers) or advance recovery fees (which are identified on the receipt at the time of purchase), the Home Appliances Recycling Law relies on end-of-life fees paid by consumers to finance the collection, transport, and recycling of targeted products.

Consumers pay a collection fee, set by the retailer or other collection agent, when they drop off their used products. They also must buy a recycling ticket (available at post offices and retail stores), which they provide to the collection agent to demonstrate that the recycling fee (which is set by the individual manufacturer) has been paid. While these end-of-life fees were intended to introduce competition into the system, resulting in different recycling fees for different brands, the recycling

fees have so far been remarkably consistent within each product category. The following are the recycling fees for each of the targeted product types:

- Air conditioners: \$23 – \$30
- Refrigerators: \$30 – \$38
- Televisions: \$18 – \$24
- Washing machines: \$16 – \$22

The fees at the high end of these ranges are charged for orphan products recycled by the AEHA.

Recycling fees are transmitted to manufacturers monthly. They are intended to cover the costs associated with operating the regional consolidation centers, transporting products to recycling facilities, and recycling itself. However, it is important to note that these fees are insufficient to cover all the costs of recycling and that manufacturers are responsible for the remaining costs.

## Recycling Rate Requirements

Unlike the European Union's (EU's) Directive on Waste Electrical and Electronic Equipment (WEEE Directive), the Home Appliance Recycling Law does not include collection targets. Instead, it emphasizes recycling goals, requiring the following recycling rates for each type of appliance:

- Air conditioners: 60 percent
- Refrigerators: 50 percent
- Televisions: 55 percent
- Washing machines: 50 percent

As of late 2002, the national recycling rate was 3 kg per capita for all appliances targeted under the law.

## Reporting

While the individual companies are required to track, among other things, the weight of their own products collected and recycled within each product category, the Association for Electric Home Appliances is responsible for aggregating this data and voluntarily

reports on implementation of the law. The Home Appliance Recycling Law does not specify a public reporting schedule, but individual companies, the government, and the AEHA publicly disseminate the data collected on recycling results.

## Highlights and Analysis

**Financing.** The Home Appliance Recycling Law relies on end-of-life fees to finance the system, a mechanism not often used by producer responsibility-oriented policies and programs. These programs are generally financed through front-end fees, which are viewed as more economically efficient and provide manufacturers with direct incentives to incorporate design for environment practices. However, Japan's law does impose specific obligations on individual producers. Despite the relatively uniform fee within product categories, each company has the opportunity to set a fee that reflects its particular circumstances, such as its ability to execute competitive recycling contracts.

The end-of-life fee financing system, while effective in meeting the law's recycling goals, has proven to be very expensive for individual consumers and for the system as a whole, since the law provides few incentives to pursue a more economically efficient model. The Revised Law for Promotion of Effective Utilization of Resources, adopted in 2000, mandates the collection and recycling of personal computers using a front-end financing system. This may produce some economies of scale for the overall processing infrastructure for waste electronic and electrical equipment and result in a reassessment of the end-of-life fee model.

The Japanese government, as well as other observers, have been concerned that the system's reliance on end-of-life fees will increase the incidence of illegal dumping by consumers unwilling to pay the recycling fee. In fact, illegal dumping did increase initially, but the government implemented a robust monitoring system and the problem appears to be abating.

**Collection.** Following the "old for new" requirement of many European programs (such as for waste elec-

tronics), retailers have primary responsibility in Japan's system for providing collection services, relieving local government of the responsibility to establish a collection infrastructure for appliances targeted by the law. The few collection systems provided by local governments charge higher fees than those charged by retailers.

**Comparison with European programs.** The Home Appliance Recycling Law addresses a much narrower range of products than the WEEE Directive and other EPR programs in Europe for waste electronics. However, the Japanese government estimates that the four product categories targeted by the law account for 80 percent by weight of all discarded electrical and electronic equipment. Moreover, the recycling goals contained in the law are lower than those of the WEEE Directive and they do not escalate over time. However, it is expected that once the system matures, the recycling goals will be raised.

Unlike the EU's Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive), the Home Appliance Recycling Law fails to specify material restrictions or other requirements that could promote design for environment practices by appliance makers. However, it is important to note that Japanese manufacturers have demonstrated leadership in design for environment, such as in the search for alternatives to lead solder.