Expanding Producer Responsibility for Waste Management in Korea: From the Deposit Refund System to Extended Producer Responsibility

KPOK Korea Program FOR Operational Knowledge

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Introduction

Beginning in the early 1960s, industrialization fueled rapid economic growth in the Republic of Korea. In the late 1980s, the level of waste generation emerged as a serious social problem. Economic growth led to a general increase in consumption, resulting in a nationwide increase in waste. The Nanji landfill, which had been sufficient for waste from Seoul and the surrounding areas since its inauguration in 1978, was projected to be oversaturated in 1993. However, selecting a new site for facilities to substitute for the Nanji landfill became a controversial issue, as residents near the proposed sites objected to the creation of waste management facilities. As public debate spread and the Korean public became more aware of the ever-growing waste problem, the government began to devise responses, including the introduction of a legal framework for waste management. The Waste Management Act, enacted in 1986, laid a foundation for waste management, categorizing different types of waste and clarifying who would be responsible for managing each type. In 1992, the Act on the Promotion of Saving and Recycling of Resources was enacted to establish the principles for resource circulation, thereby setting restrictions on disposable items and materials and methods for packaging.

Development Challenge

The challenge for Korea was designing and implementing an effective and sustainable waste management program, in particular, one that would promote recycling for a range of materials (including packaging waste, tires, and large home appliances). Waste management is a common development challenge in many countries. As economic activities increase, so does waste generation; without waste management capabilities, waste management becomes a serious issue.

Intervention

Among other policies, the Korean government implemented the Deposit-Refund System (DRS) in 1992, which emphasized the responsibilities of producers of goods. Under the DRS, producers of certain products and packaging were required to place a deposit—equal to the amount that it would cost to recycle the items they produced—with the regional offices of the Ministry of Environment. This deposit would then be partially or fully refunded each year, with the amount refunded determined by the quantity of materials recycled by each producer. Although the products covered by the policy were adjusted over the course of implementation, in general the policy focused on packaging (paper, metal, glass, and PET), tires, lubricants, large home appliances, and batteries. The deposit rate, a critical element of the DRS, remained below the actual cost of recycling even with an occasional increase.

PROJECT DATA

SECTOR:
Environment

DEVELOPMENT CHALLENGE:
Waste management

DELIVERY CHALLENGES:
Overambitious Goal; Weak Private Sector

COUNTRY:
Republic of Korea

REGION:
East Asia

PROJECT DURATION:
1992–2010

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After the introduction of the DRS policy, both total deposits and the ratio of refunds to deposits steadily increased. In 1992, the refund-to-deposit ratio was a mere 2 percent, but the ratio increased continuously from 1998 to 2000 before plateauing around 43 to 44 percent, with a slight jump to 52 percent in 2001. Changes in total deposits were affected by an increase in total production, adjustments to the deposit rate, and newly added target items. The overall total deposit increased under the DRS. In 2001, as the voluntary agreement policy became popular, the amount of exemptions exceeded 50 percent of the total deposit.

Addressing the Delivery Challenges: Overambitious Goals; Weak Private Sector

Throughout the 10 years for which the DRS was in place, the refund-to-deposit ratio increased continuously, reaching slightly above 50 percent in 2001. Although this ratio signified a marked improvement in recycling since the inception of the DRS in 1992, it still meant that roughly half of the designated products and packaging were ending up in landfills and incinerators rather than being recycled. For example, metal, lubricants, and batteries were consistently collected, but home appliances and paper were not. Some product groups had a refund rate close to 100 percent, but for others, the rate was below 10 percent.

Two major challenges that contributed to low participation in recycling were the difficulty in setting an optimal deposit rate and the underdevelopment of the recycling sector. Because the deposit rate determines the producers' participation in recycling, setting an appropriate rate is key to the success of deposit schemes such as the DRS. However, calculating the optimal deposit rate is often quite difficult in practice. In the case of Korea's DRS, the deposit rate was sometimes set much lower than the actual recycling cost. For example, the deposit rates for home appliances and paper reflected only 26 percent and 3 to 7 percent, respectively, of the actual recycling costs for those products, which probably explains why their refund-to-deposit ratio remained below 10 percent during the whole period. In other words, to attempt to change producers' recycling behavior with an impractical deposit rate that did not reflect the actual cost of recycling was a bit overambitious.

The underdevelopment of Korea's recycling sector was also a major issue. Producers who became responsible for recycling under the DRS were skilled at manufacturing their products but did not necessarily have the capacity to recycle or take back their products or packaging. Furthermore, there was almost no infrastructure for recycling in Korea at any level. Local governments had no established collection systems, nor were there any private recycling businesses. Given the expense of building new recycling infrastructure, many producers decided to give up the deposit rather than recycle and get a refund. Therefore, with the exception of those who had already built recycling facilities before the DRS was introduced, producers generally called for the abolishment of the DRS.

In response, the Korean government implemented the Extended Producer Responsibility (EPR) policy in 2003 to replace the DRS. Rather than giving producers an economic incentive to recycle and then leaving the choice up to them, policy makers decided to make recycling mandatory. A total of 15 products were made subject to the EPR—the list was nearly identical to the items targeted by the DRS—and the number of items was adjusted and expanded to 24 products by 2010. As a result of the EPR's implementation, the total volume of recycling increased significantly—a 148 percent increase compared with recycling under the DRS. Under the EPR, the government set a separate recycling rate for each product group on an annual basis, and producers were required to meet an allocated recycling quota. Failure to meet the quota would result in the imposition of a levy of up to 130 percent of the actual recycling cost. The outcome was successful. The total volume of recycling, which had plateaued under the DRS, began to increase again with the implementation of the EPR in 2003. In that year, the total amount of recycling increased by 12 percent compared with the amount in 2002, and by 2007, the amount recycled reached 1,384 thousand tons. Furthermore, recycling rates of home appliances and PET, both of which were relatively low under the DRS, increased sharply with the introduction of the EPR.

The recycling industry and associated infrastructure also grew significantly as a result of the EPR. The number of recycling companies in Korea grew by 31 percent, from 418 to 550, between 2001 and 2008. In addition to this quantitative growth, there was qualitative growth in organizational complexity. Under the EPR, producers established producer responsibility organizations (PROs) designed to manage recycling on their behalf. Eleven PROs were established by 2010, and 93 percent of the total amount of recycling required by the EPR was conducted by PROs. The PROs were effective

at creating enough demand for recycling and at minimizing excessive competition between small recycling companies, thereby contributing to the overall development of the recycling industry. In such a stabilized condition, recyclers had room to make further investments in recycling technology, and the transparency of the recycling market improved.

Lessons Learned

The case of how Korea moved from the DRS to the EPR provides two key lessons that may be applicable to policy interventions in this area.

Identifying Policy Synergies

The first lesson is that when adopting a new policy, policy makers must pay close attention to other related policies and social contexts. The Volume-based Waste Fee (VWF) policy, implemented nationwide in 1995 to tackle Korea's household waste problem, proved synergistic to the EPR. The VWF and the DRS complemented each other by preventing duplicate labor and cost. Furthermore, the change in the public perception of recycling engendered by the VWF was a critical element of the success of the EPR. The synergy between the VWF and the DRS had served as a stepping stone to the more improved model of the EPR. Initially, the government could not set a bold deposit rate because of resistance from producers; at the same time, many producers were left to give up their deposits because the cost of recycling was too high without the proper infrastructure. The VWF policy had, however, contributed to the improvement of the recycling infrastructure nationwide. As a result, the challenges faced by producers were gradually overcome. Recycling companies were created to deal with recyclable resources discharged from households. The take-back system of local governments, which was designed to implement the VWF, was also used to collect and transport recyclable items for the designated producers. Moreover, the VWF changed the general perception on recycling. When the DRS was introduced, some target industries opposed its enforcement, arguing that even the more advanced economies had not adopted such a scheme. With the VWF policy, however, the public soon became familiar with separating recyclables from mixed waste and was no longer as opposed to the policies.

Incremental Implementation and Iteration

The second lesson is that incremental implementation of policies may be important when tackling a complex issue such as waste management. Rather than setting up an ideal plan from scratch, beginning with a practical and attainable goal and subsequently modifying plans iteratively can be a more practical strategy. Even though the DRS attained a refund-to-deposit ratio of only around 50 percent, it functioned as a transitional recycling scheme that laid the foundation for the EPR. By offering an economic incentive and freedom initially, the DRS allowed producers to choose whether or not to participate in recycling. In that way, the amount of recycling that individual firms could afford and the recycling condition for each product group were ascertained. This information eased the design of and transition to the compulsory regulatory model of the EPR, particularly by making it easier to identify mandatory recycling rates. The mandatory recycling rate in the first year of the EPR was primarily based on the amount of recycling under the DRS and was subsequently adjusted over time. This incremental approach to setting the mandatory recycling rate relieved producers' burden and reduced resistance. In contrast, for example, Taiwan, China, implemented a policy of requiring producers to recycle products and packaging around the same time that Korea implemented the DRS. That policy proved to be short lived, because Taiwanese producers did not comply with the obligations.