

INCREASING DEMAND FOR RECYCLABLE WASTE AND RECYCLED
PRODUCTS:
THE LIMITATIONS AND POTENTIAL OF STATUTORY SOLUTIONS

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ABSTRACT

While the preliminary stages of a recycling program (collection/separation and transport of waste) appear relatively easy to implement internationally, subsequent ones, (integration into the production process and consumption of recycled products) are more problematic. In recent years, initial optimism spawned by aggressive recycling laws has turned to frustration in many states due to a mismatch between the supply of recycled materials and industrial and consumer demand. In this study, recycling laws in 9 European nations and 28 U.S. states are evaluated and contrasted with the Israeli Knesset's proposed Collection and Removal of Wastes for Recycling Law (1991). Different policy strategies for addressing the demand side of the recycling equation and their potential for improving Israel's inadequate recycling activities are assessed. The study argues that command and control statutory prescriptions are necessary to galvanize recycling efforts in Israel.

KEY WORDS: RECYCLING, SOLID WASTE, REGULATION, ISRAELI LAW

INTRODUCTION

Policy analysts (U.S. EPA, 1989) have identified four stages for a successful recycling program:

- 1) the recyclable material must be recovered from the solid waste stream;
- 2) the material must be delivered to a manufacturer for processing;
- 3) manufacturers must use reclaimed material in production processes; and
- 4) consumers must purchase finished products containing recycled materials.

In essence the first two stages involve generating the *supply* of recyclable materials while the latter two involve the *demand* side of the recycling equation transformation or integration into marketable products. Despite the widespread success around the world in implementing waste separation and transport programs, recycling initiatives are increasingly hampered by inadequate demand from both industry and consumers (Cutler, 1988). Lazarre (1991) documents examples of numerous U.S. states in which separated, recyclable materials are returned to the waste stream for burial due to insufficient market demand.

In the absence of any regulatory or statutory arrangements, recycling rates in Israel reach only a fraction of levels in Europe and North America and have actually declined in recent years (Brownseug et. al. 1989). For example while Europe recycles roughly 43% of its glass, Israel recycles no more than one percent. (Technion, 1992). Only 24% of Israeli newspapers are recycled, less than half of the European rate which frequently exceeds 60 percent. (Swedish Association of Solid Waste Management, 1990) Cans and plastic beverage containers are not recycled at all as the mixture of materials (zinc and tin or PVC and PET) precludes their efficient integration into the recycling production process. (Morganstern, 1991). With such limited recycling, and no municipal waste incinerators in Israel, solid waste disposal has emerged as one of the country's major environmental problems. The resulting hydrological hazards, odor nuisances, and siting controversies, make recycling a central environmental policy objectives in Israel.

Noting recycling's potential to help solve the country's solid waste problem as well as improve the balance of trade, Israel's Knesset recently proposed legislation to address this problem. The proposed Law for Collection and Removal of Waste for Recycling, 1991 (hereinafter: the Law) is designed to "determine principles and a framework" for recycling. Substantively, the law offers only a modest framework for municipalities to voluntarily promulgate recycling by-laws to increase waste separation.

The Israeli law's operational requirements are limited to businesses, while household source separation, for example, is not mandatory. Lacking are the highly specific criteria found in European and U.S. legislation such as the Danish requirement that all public institutions producing more than 100 kg. of paper waste/month collect all paper for recycling (Miljoministeriet, 1990) or the extensive fines associated with even small deviations from Washington D.C.'s rigorous curbside collecting directives (§2061). Most importantly, the Law has no provisions relating to acquisition of separated recyclable waste, market based recycling incentives for manufacturers or provisions about material makeup of the wastes.

During its deliberations, the Knesset Committee of Interior and Environment commissioned a study comparing recycling statutes in 9 European countries (Austria, Belgium, Denmark, Great Britain, France, Germany, the Netherlands, Norway, Switzerland) and 26 U.S. states with the proposed Israeli law. The survey, overseen by the author, was conducted by the Israel Union for Environmental Defense (IUED, 1991). It focuses on the contents and prevalence of statutory measures around the world intended to increase demand for recycled products, both through market incentives and command and control regulation. Substantive provisions are also evaluated for their applicability within the Israeli context.

MANDATING DEMAND FOR RECYCLABLE WASTE

Traditional command and control regulation consists of direct government intervention to compel a particular policy objective. Undesirable practices are prohibited, or, alternatively, desirable activities are required. Comprehensive recycling statutes, invariably, contain provisions that expedite industrial integration of recycled materials into production processes. This can be done

directly or indirectly. Four command and control policies (content regulations, procurement quotas, retail requirements and disposal bans) found in laws around the world will be briefly described and their potential for implementation in Israel assessed.

Content Regulations: The most common statutory command and control approach for stimulating integration of recyclable materials in production are "Content Regulations." These mandatory quotas stipulate that products contain a certain percentage of recycled materials. For example, under Arizona's 1990 Recycling Program Act, private newspaper publishers are required to phase in recycled newsprint to their publications at an ascending rate over a ten year time period - integrating at least fifty percent recycled paper by the year 2000 (§49-803). In Holland, a Packaging Covenant signed by the Environmental Ministry and representatives of the industry requires change from "one-way" to reusable packaging if "there are no predominant objections to such a change on economic grounds." (Article 8).

Another more subtle approach stipulates use of materials which give recycled materials a natural market advantage. Such a strategy is commonly found in standards across Europe and the U.S. which require manufacturers to produce beverage containers made only of aluminum or particular plastics (Returpack, 1986). These requirements serve two purposes: First, they ensure maximum use of recycled aluminum which is both less expensive and preferable for manufacturing due to its greater malleability (Postrel, Scarlett, 1991). Second, such laws increase the likelihood that the new products themselves will be recycled.

Many recycling laws, particularly in Europe, provide overseeing Ministries with authority to promulgate industry specific regulations requiring recycling and acquisition of recyclable materials. For example section 34 of the Norwegian Pollution Control Law grants the Ministry of Environment authority to issue orders forcing industries capable of receiving particular types of wastes to do so. The law sets forth criteria for making such decisions which balance the environmental benefits against economic costs. Similarly, section 4 of the Austrian Waste Management authorizes the Minister of Environment to promulgate regulations that require the manufacture of products from recycled materials, and that products be recyclable themselves.

Mandatory Recycling by Retailers: Perhaps the most far reaching statutory intervention mandating consumption of products is the highly publicized 1991 German Ordinance on the Avoidance of Packaging Waste. Article 4 requires manufacturers and distributors to accept return of used transport packaging and to "reuse or recycle it independently of the public disposal system." Similar systems have been in place in many countries for some time for beverage containers (IFL, 1990). As the German law has only recently gone into force it is difficult to assess what the ultimate effect it will have on solid waste reduction. Already, however, its effects are being felt in Israel where exporters, faced with the requirement to take back their packaging of their agricultural produce, have reduced volume substantially.

Procurement Quotas: The fourth and final component of the recycling strategy involves the public; consumers must be encouraged to purchase finished products containing recycled materials. In order to create markets for recycled products, many states have marshaled their own economic clout. "Procurement Laws" are regulatory directives to public institutions, schools etc., requiring consumption of a certain percentage of recycled goods or offering a preference to recycled goods. These laws serve to ensure a firm market share for recycled products and enhance market stability, creating a positive climate for investment in recycling industrial processes.

By 1991, forty American states had passed laws requiring state agencies to purchase products with recycled content (National Solid Wastes Management Association (NSWMA), 1991). In some states such requirements are contingent on meeting economic criteria. For example purchasing of paper products by public institutions in New Jersey is mandated as long as they are "competitive." Competitive is defined in the New Jersey Recycling Act as a "a price within 10% of the price of items which are manufactured or produced from virgin paper products." (§13:1E-99.25). Other laws have begun to expand the scope of procurement laws, prioritizing tires and glass for use in construction of roads.

Disposal Bans: Many types of wastes that previously comprised a relatively hazardous component of the municipal solid waste stream today are simply not allowed. In particular, some thirty states in the U.S. have bans on the burials of a range of products. Rhode Island has even banned the dumping of telephone books, requiring the state telephone companies to operate a collection and recycling system (§23-18.8-5). (For the most part, disposal bans are associated with automobile residuals such as oil, tires and lead-acid batteries). Disposal of these products is highly regulated and far more expensive than conventional dumping. By eliminating inexpensive burial as a waste management alternative, recycling emerges as the preeminent strategy since the possibility for source reduction is highly limited. As a result it is estimated that 90% of U.S. lead batteries are recycled (NSWMA, 1991). The potential for disposal bans to reduce the overall solid waste loads is finite, but it facilitates recycling of the most pernicious elements in the municipal waste stream.

COMMAND AND CONTROL RECYCLING POLICIES FEASIBILITY IN ISRAEL

Command and control directives, in theory, could push Israeli industry past many of the structural barriers that inhibit demand for recycled materials. But are they realistic? A few basic criteria, such as political and economic acceptability, should be used to assess where these interventions are feasible in the present Israeli context. With the exception of disposal bans (which invoke costs and probably the ire of municipalities) the political acceptability of the command and control schemes appears reasonable. The Israeli economy has been highly regulated since its inception, and industry has grown used to extensive government involvement in determining both the composition and quality of products through Israel's powerful Institute of Standards. Enhancing demand dramatically should improve the political palatability of recycling for Municipalities and Regional Authorities, who would be the primary beneficiaries of the resulting higher prices.

Financial obstacles to these policies do not appear formidable. Inasmuch as Israeli import taxes are high, once demand becomes firm, utilization of alternative recycled materials will simply be "good business." In addition, given the largely monopolistic or monopsonistic nature of the paper and can industries in Israel, any expenses involved in the transition from virgin to recycled materials can readily be passed on to consumers.

With public sector consumption comprising slightly less than a third of GDP in Israel, (Israel Central Bureau of Statistics, 1992) procurement laws in particular should have an immediate impact on the recycling industry. Discussions with the senior management of Amnir, Israel's preeminent paper recycling company, for example, reveal that the company perceives an ironclad government commitment to purchase recycled office paper as likely to provide a sufficient market share to warrant the capital investment necessary to begin production of 100% recycled, high quality, office paper.

While such policies will undoubtedly increase demand for recycled products, they also pose disadvantages such as increasing public sector costs for monitoring and enforcement without generating revenues. Disposal bans, in particular, require formidable enforcement capacity if the ensuing illegal dumping is to be prevented.

FINANCIAL INCENTIVES

Recycling is frequently perceived as more an "economic problem" than an environmental one per se. Policies that eliminate market failures and externalities can produce conditions in which recycling activities flourish independently. The main reason that recycling in Israel is so negligible is because it is so much cheaper to bury the waste. According to this view, the most effective way to increase recycling activity is to raise both the price of landfill disposal and virgin raw materials to reflect true "environmental costs." On the "consumer" side of the equation, legislatures have enacted a rich selection of incentives to heighten demand for recycled products.

Subsidies for Recycling: Direct financial incentives can be offered in order to help industry make the "leap of faith" to consumption of recycled products. These products often involve large outlays for new capital equipment. For example, the Amnir Recycling Company explains that it does not produce recycled office paper due to the prohibitive expense of a deinking machine. The problem of market risk is certainly not unique to Israel (Wyers, 1991) and laws can be used to mitigate it.

The centerpiece of these strategies often involves statutorily mandated Recycling Funds. Some forty U.S. states provide monies for "recycling grants" of varying sizes ranging from \$.03 per capita in Nevada to 5.80 per person in Maine (NSWMA, 1991). Beyond direct government endowments, these funds have three sources of funding: taxing commodities which produce waste, fines and landfill fees. They are utilized to provide grants and loans on favorable terms to industry and municipalities in order to encourage recycling. The most recent version of the Israeli statute expands an existing anti-litter fund to include recycling promotion, directing fines issued pursuant to the Law to the fund. Yet, no criteria

exist ensuring that "Cleanliness Fund" be earmarked for increasing demand for recycled materials and products.

Taxes and Recycling: Particularly in the U.S. a range of taxing mechanisms are increasingly utilized to induce recycling. These can involve positive reinforcement through income tax credits (such as those recently offered by Virginia) to manufacturers that utilize recyclable materials. Most studies indicate that non-regulatory measures, such as educational campaigns, offer the greatest potential for directing consumer tastes towards recycled products (U.S. EPA, 1989). Shoppers presumably respond to elimination of sales tax on recycled products as proposed in Victoria, Australia. Conversely, products which are not recycled or readily recyclable can be taxed. For instance New Jersey's recycling law (§13:1E-99.1) attempts to push both sides of the business equation, levying a tax on manufacturers, wholesalers or distributors of "litter-generating products" and, simultaneously, an even higher tax on retailers. Such a tax sends a clear signal to both producers and consumers.

In fact, the public frequently does not distinguish between these "recycling taxes" and the traditional "deposits" on recyclable waste products (well known in the area of beverage containers). The beverage deposits in fact are fundamentally "anti-litter" in character. Functionally, however, a sliding scale for deposit fees could constitute a positive stimulus for purchase of products that are easy to recycle. In any case, deposit systems offer an available mechanism to which a recycling fund surcharge can easily be added. Recently use of recycling fund fees has expanded beyond beverage containers, and includes products like batteries, oil, and tires. For example, the Utah state tire recycling law requires a tax of \$1.00 to \$2.00 on tires, depending on diameter, which is paid into a fund. A \$21.00 rebate is then paid out to producers for every ton of tires recycled (§26-32a-104, 107).

Price Manipulation: Recycling versus Burial: The low price of burial in Israel is particularly ironic. Despite the extremely limited availability of landfill space, solid waste disposal prices are often as low as 3.5 dollars/ton -- roughly 2000% lower than the U.S. and 4,000% cheaper than in Switzerland. (Morganstern, 1991) Two approaches can be found in solid waste and recycling laws to address the problem: stringent standards for sanitary landfill disposal or, alternatively, landfill disposal taxes. By adjusting the price scheme, these measures indirectly affect demand, as municipalities prefer to find buyers for their trash whose disposal has suddenly become expensive. Demand grows quite naturally when instead of paying for raw materials, manufacturers get paid to take recyclable refuse off municipalities' hands.

A description of environmental requirements for management of landfills is of course beyond the scope of this paper. With regard to recycling policies, it is worth noting that the expense of tipping fees (on-site charges for burial of waste) are often dwarfed by the transportation costs paid by municipalities in order to reach sites which are hydrologically acceptable. Yet, even tough landfill siting and management standards are frequently not sufficient to raise burial prices to levels that make recycling lucrative. In such cases, some legislatures have chosen to raise tipping fees artificially through surcharges, determined according to waste composition and volume. These are typically paid directly to the Recycling Fund.

For example, since 1987 Denmark has added a waste charge 130 D kr/ton of waste incinerated or buried, generating some 150 million D. kr. in revenues in each year (Miljøministeriet, 1990).

FINANCIAL INCENTIVES POTENTIAL IN ISRAEL

Even a demand for recycled materials or goods that is enhanced through taxes and price supports is unlikely to compete with the very low costs of burial under the present Israeli system. In addition, the heterogeneity of the solid waste stream ultimately serves to undermine the potential of traditional incentives. One of the key merits of Israel's proposed law is that in fostering source separation, the prospects of success for financial incentives grow enormously. Given the choice between a potential purchaser in industry, and even low costs for dumping, some municipalities will clearly prefer even a modest payment. Yet, without change in the contents of many consumer products, they simply cannot be recycled efficiently.

Even if the growing demands made by Israel's Ministry of Environment on landfills pushes the price of burial into the international range (from \$50 to \$150 per ton) recycling cannot be expected to spontaneously proliferate. Experience in the U.S. suggests that the costs for municipalities of trash collection integrating a recycling component remains higher than direct burial even after revenues from sales are deducted. (Postrel, Scarlett, 1991). Of course there are exceptionally lucrative materials where this is not the case (e.g., aluminum which can sell for as much \$900 a ton, or even glass). Yet, from a narrow accounting perspective, even with extensive incentives through Israel's Cleanliness Fund, recycling is not likely to be profitable either for the suppliers (municipalities) or many of the subsidized consuming industries. When you add to this the naturally conservative nature of manufacturers, it would appear unwise to make financial incentives the central component of an Israeli recycling strategy.

CONCLUSION

Theoretically, laws are not a prerequisite for comprehensive recycling. Japan leads the world with over a 50% overall recycling rate, without a normative system which imposes sanctions on non-participating citizens. (Lazarre, 1991). Yet, empirical experience in the West suggests that the Japanese voluntary model is not readily applicable in Israel. The extremely broad public participation in Japan is due to unique societal awareness of problems associated with disposal and a famous corresponding sense of civic duty. Further, Japanese industries have often been designed to purchase the separated municipal waste.

Public relations campaigns can undoubtedly improve Israeli attitudes toward recycling and should be pursued vigorously. The Israeli public has proven to be highly informed and participatory in issues ranging from utilization of gas masks to water conservation. Yet, massive public participation, at best, will only increase supply of recyclable waste. Given the uncertain results of incentives, if the Knesset wants to "jump start" a national recycling policy, it will have to provide a command and control regulatory infrastructure which can be enhanced by economic incentives

There are many factors which argue in favor of command and control provisions as a first step in an Israeli recycling demand strategy. Expansion of the proposed Law enabling the Ministry of Environment to promulgate content regulations, procurement quotas, retail requirements, and disposal bans would immediately shift recycling efforts into high gear. As discussed, these measures are politically feasible and it is unlikely that even tough recycling requirements on industrial production would create an inordinate economic burden. Given Israel's chronic balance of trade deficit, Israel's legislature would do well to import more of Europe and America's statutory approaches to recycling, and less of their raw materials.

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