Waste Reduction: An International Perspective

The actions of other national governments in the area of waste reduction may be of interest to American policy makers for two reasons. First, the choices made by other countries can serve as policy models. The varied experience of countries actively promoting waste reduction and those attempting to deal with waste problems in other ways can help Americans understand the range of policies available to them and, over time, the results of those policies. Second, expertise gained by other nations with longer experience in waste reduction can present a challenge. Many Western European governments have actively encouraged waste reduction for many years. To the extent that their 10-year lead in waste reduction results in more efficient processes and increased productivity among European industries, U.S. firms in similar industrial sectors may be placed in an inferior competitive position. In addition, to the extent that a profitable worldwide market for waste reducing technologies and techniques opens up in the coming decade, U.S. firms may find it difficult to sell their waste reduction technologies to industrial operations here and overseas if Europeans are offering a wider variety of better techniques, tested over a longer period of time.

Multilateral Organizations

Some of the earliest initiatives in waste reduction came from international organizations. The United Nations Economic Commission for Europe (ECE) sponsored the first International Conference on Non-Waste Technology in Paris in 1976. In 1979 the ECE adopted a detailed "Declaration on Low- and Non-Waste Technology and Reutilization and Recycling of Wastes. "[1] In this document, the ECE recommended action on both the national and international levels to develop and promote low- and non-waste technologies. International ECE activities resulting from this declaration have included:

- publication of a four-volume compendium on low- and non-waste technologies in 1982, listing over 80 examples of successful pollution prevention efforts by European industrial firms;z
- publication of a compendium of lectures by experts in low- and non-waste technology in 1983;[3]
- holding a European Seminar on Clean Technologies at the Hague in 1980;
- setting up a Working Party on Low- and Non-Waste Technology and Re-utilization and Recycling of Wastes which has met annually since 1980; and
- setting up an Environmental Fund for demonstration of innovative technologies that are broadly applicable to reducing pollution. A sum of 6,5 million in European Currency Units (about 6.1 million U.S. dollars) was set aside for this purpose in 1985.

The Organization for Economic Cooperation and Development (OECD) has taken a strong stand in favor of waste reduction although no promotional activities have been taken. An OECD conference in 1985 on t ransborder movements of hazardous waste concluded that the *first basic principle* for the management of waste is: "to prevent and recduce, so far as possible, the generation of wastes, to limit their hazardous character and to try to improve production processes. " Recycling and proper treatment of wastes are included in the second principle, OECD further recommended that member countries make sure that: "adequate measures are taken for preventing or reducing the generation of hazardous wastes . . . '' in new investment or development projects.[4]

European industry has also espoused the concept of waste reduction. In its recently published "Summary of Principles of Industrial Waste Management, the European Council of Chemical Manufacturers' Federations headed its list of principles wit h:

> . . Waste reduction: Take all economical]} and technically justifiable measures to minimize generation of waste through process optimisation or redesign.[5]

[1]United Nations Economic Commission for Europe, *Declaration on Low- and Non-Waste Technology and Reutilization and Recycling of Wastes* (Geneva, Switzerland: November 1979).

[2]Ibid.

[3]H u ngaria n NationalAu thorityforEnvironmentProtect ion d ndNature (Conserva tin]], *Compendiumof Lectu s onLow- andNon-Waste Technology*{ Budapest,Hungary Decembe r 983}

[4]Orga n izationforEconomic Cooperationand Developmen I, Resol u I io n of t heCouncil on I nternationalCooperation ConcerningTrans frontier Movements ofHazardous Wastes (including Appendix), July 3, 1 985

[5]Europea n Councilof Chem i{, al Manufacturers'Federations,*Industrial Waste Management*, C [I FIC, Brussels, Belgium, 1 985 As cited in Royal Commission on Environme ntal Pollution, *Eleve enth Report— \ lanaging Waste: ADutyof Care* ([, U) ndon:Her Majesty's Stationery Office, 1)ecembe [1985).

Great Britain, Japan, and Canada

Among individual governments that have not actively promoted waste reduction are the British and the Japanese. Great Britain has decided to concent rate its efforts on waste management to protect the environment rather than waste reduction. As a member of the European Communities, Britain has endorsed the principal of waste reduction, and the most recent report of the Royal Commission on Environmental Pollution acknowledges its usefulness. However, as the report makes clear, government action focuses on achieving higher quality waste management particularly safe and responsible land disposal. There are no plans in the British Government to promote waste reduction in the foreseeable future.[7]

The Japanese Government, similarly, has not undertaken any dedicated waste reduction actions but has developed and promoted recycling and reuse technologies to address environmental concerns. The Waste Disposal and Public Cleansing I.aw of 1970 specifically identifies recycling and reuse as the means to reduce wastes in Japan by stating: "The enterprise must endeavor to lessen the amount of wastes by regeneration or re-use of wastes. The Japanese do have, however, a number of the common indirect incentives to reduce waste such as a tax on air pollutants. They also have a toxic substances control law, whicch was largely based on the U.S. Toxic Substances Control Act, that provides the government With authority to gather information about and place controk on toxic chemicals in industry and commerce. As is the case in the United States, this law has not been used for waste reduction purposes. In addition, the National institute of Hygiene has been engaged in research to reduce specific toxics of concern in wastes, for example dioxin.[8]

The Canadian Federal Government has not yet acted in the area of waste reduction but plans to do so in the near future. In Canada, hazardous waste is considered to be a natural resource and therefore is a Provincial responsibility. Among the Provinces, Ontario has been quite active in promoting waste reduction, but little activity has been undertaken elsewhere. However, interest in waste reduction has grown rapidly in Canada and its Federal Government is now becoming involved in a coordinating role. The Canadian Council of Resource and Energy Ministers, a policy-setting group of all Provincial ministers and the Federal minister in this area, plans to meet in October 1986 to discuss an action plan for waste reduction. The contents of this plan were being formulated in mid-1986.[10]

Western Europe

Most of the governments in Western Europe have been promoting the concept of clean technologies (or low- and non-waste technologies) since the 1970s. These European concepts are broader than OTA'S concept of waste reduction because they apply to nonhazardous wastes, to product as well as process wastes, and include offsite recycling. 1n some countries, incineration and other waste treatment methods have been funded as clean technologies. This broader scope of European definitions makes it difficult to analyze the state of waste reduction (in the OTA sense) in these countries. Wherever possible, the extent to which European activities include waste management as well as waste reduction has been noted.

Among individual governments, several have distinctive and interesting approaches to waste reduction. The French have pursued the development of clean technologies primarily to revive productivity y and creativity in industry, thereby increasing its international competitiveness. They also hope to be able to turn a profit marketing their technologies in other developed and cieveloping countries. The Dutch, similarly, are promoting research and development of clean technologies, not only to alleviate waste problems at home, but as a potentially profitable export.

In Austria, all new industrial facilities must demonstrate that they employ state-of-the-art low-waste technology before receiving a permit to commence operation. One drawback to this system is that Austrian facilities never need to be repermitted, so older plants are not required to keep up with the latest technologies.[11]

The Norwegians have taken the unique course of regulating by industrial sector, rather than by enviromental medium. Thus, the Norweregiane n viron mental regulations are multimedia. This is of particular importance for waste reduction. As dis-

[6]Royal Commission on Environmental Pollution, *Managing Waste: The Duty of Care*, op. cit., p. 39. Also, Third Action Programme on the Environment, *Official Journal of the European Communities*, Feb. 17, 1983, as cited in the above.

[7]Margot Bellhouse, British Embassy, Washington, DC, personal communication, May 29, 1986.

[8]Waste Disposal and Public Cleansing Law of 1970, Article 3, Sect 1011 2.

[9]Hiro Sato, Deputy Director, Japan External Trade Relations Organization, personal communication, June 9, 1986.

[10]Dave Campbell, Environment Canada, Ottawa, personal communication, May 23, 1986.

[11]OTA meeting with officials from the Austrian Environmental Fund, June 5, 1986.

cussed elsewhere in this report, waste reduction efforts must be multimedia if they are to avoid shifting of hazardous substances among media.

In the strongly federal West German system, the principal Federal environmental agency, the Umweltbundesamt (UBA), has no regulatory authority, Regulatory authority rests with the States and the Federal UBA acts as a broker and facilitator for waste reduction. Some additional Federal waste reduction action is currently being considered; the proposed Fourth Amendment to the Waste Law of 1972 would require that, where technically feasible, generation of pollution should be avoided and low-waste technologies be used. This provision has already been adopted and implemented in the State of Hesse.

Detailed data, particularly budgetary data, on specific waste reduction programs in these countries are not available in the United States,lz However, a number of generalizations can be drawn about the type, focus, and duration of clean technologies programs in Western Europe and how they compare with efforts in the United States. First, there as here, waste reduction activities have grown out of pollution control programs. The Environmental Fund in Austria, the Subsidies for Environmental Investment in Denmark, grants and loans from Norway's Pollution Control Authority, subsidies granted under Sweden's Environmental Protection Act, and the West German UBA'S R&D grants all began as pollution control assistance programs for industry and now fund waste reduction proposals as well. **However, unlike** the **united States, some European countries have begun to recognize the unique production orientation of waste reduction and, consequently, to separate waste reduction activities from those classified as pollution control,** Denmark's Clean Technology Office and France's Missions for Clean Technologies are examples.

Most of the European programs concern themselves with pollution in all environmental media. Even the regional agencies regulating France's major river basins have become involved in projects to reduce solid wastes destined for landfills because landfilled wastes may leach into either surface or groundwater,

In addition, European programs usually concern themselves with a broad range of wastes—including what Americans would call both toxic and conventional pollutants—as well as nonhazardous solid wastes. waste management authorities may have responsibility for only certain subsets of wastes, but agencies specifically directed to promote clean technologies deal with a wide variety of wastes, For example, the French National Agency of the Recovery and Disposal of Waste (ANRED) deals only with solid and RCRA-type hazardous wastes, but the French Mission for Clean Technologies deals with all types of pollution. Similarly, the Danish National Agency for Environmental Protection is divided into a large number of waste-specific units, but the Clean Technology Office researches reduction of all kinds of pollution.

Many European legislatures have empowered their environmental agencies to take mandatory steps to reduce the generation of waste in various ways, These include legislative provisions allowing agencies to restrict the importation, use, and sale of certain hazardous substances or products containing those substances.ls However, as in the United States, these provisions have been used very little. Instead, European governments have relied heavily on economic measures. Their efforts have mainly taken the form of grants or loans to fund research on new low-waste technologies and tax incentives and disincentives to influence the actions of hazardous waste generators. Grant and loan programs for clean technology R&D, which have not been widely used in this country, area particularly common feature of European waste reduction efforts, Every West European country active in waste reduction has had such a program in place at the national level for at least 5 years, For example:

- Austria's Environmental Fund gives loans and grants for waste reduction and recycling projects;
- Denmark provides grant money under the 1984 amendments to its Act on Recycling, Reuse and Reduction of Waste for projects of those types;
- France's Mission for Clean Technologies provides funding for waste reduction projects. ANRED and the National Agency for Encouragement of Research (ANVARD) under the Ministry of Industry and Research provides funding for a wider variety of waste-related projects;
- France provides rapid depreciation allowances for pollution prevention investments;
- The Netherlands' Committee on Environment and Industry provides R&D grants for clean

[12]Even if such data were available, the varying scope of the programs as well as varying definitions of "clean technologies" and "low- and non-waste technologies' would make it difficult to separate out the portion of each program which deals with waste reduction as OTA defines it,

[13]See, for example, Denmarks Act 00 Chemical Substances and Products (1980), France's Waste Law (1975), The Netherlands Chemical Waste Act (1976), Norway's Product Control Law [1977),

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- S\i'eden funds ~~raste redu(;tion proje(;ts through grants un(lt:r its Eni'ironmcntal Protection Act;
- the lt~est German UBA fun(ls hoth ~faste reduction and rwyr(;ling projects.

The fa(:t that t hcse w'ast e reduction progra ITIS arc oft en a ~Ia rt o ~ pre~'ious]~' existing grant a n(] loan ~)rogrrns for recj'cling and/or pollution control equipment enahles them to use existing hureau-(;rat i(; frameworks to d isserninate funds. OTA t~'as unable to (ieterrnine i f this integration of' pollution (;ont rol and pollution p relrention programs was a n ad~'a n t a gc for w' as t e red uc t i o n p ro g ra m s— h e(: a LIS c it al]o~irs them to use existing hu rcaucra tic frame-~%TO1.ks t. dissem inatc funds—or a d isad['antage-hecause it puts ~taste reduction in direct competition ~iith cstahl i shed ~vaste management initiatives fc~r funding and attention.

Disseminate ion of results oft hese R&D projects in Europe has been almost entirely passi~e. Governments ha~e pub] i shed results i n the form of com-~)endia and reports (France, Denmark, Austria, West G[!rrnanj) and plan to establish lo~v-w'ast e information centers (The .\'etherlands) an(] national databases (Fran(; e) a~'aliable to industrlr. Acti\e onsitc technical assistance programs of the t}r[)(; USC(1 in the State waste reduction I>rograms here [(;, g., North Carolina, Nlinnesota, ~enns~liania, and NetI }rork)l" are rare.

Overall, it appears that governmental interest in waste reduction is growing among industrialized countries and that Western Europeans have the 1ead in developing and implementing the relevant technologies, in large part because of government involvement. European governments have not relied on regulatory requirements for waste reduction, but have instead used economic measures to encourage waste reduction, particularly grants programs for innovative low-waste projects. These programs h a~'e tended to include all types of \\'astes in all t}pes of cn\'ironlmental media. It is unclear, ho~t'eicr, ho~~' much suc(; ess they have had i n putting t hci r (:lea n technologies into wide use, and t hereforc i~'hethcr government efforts ha~~c actual l!' red u (;ed nation a 1 lt'aste ~eneration or i m pro~cd industrial ~lrodu (:-t ivit }.