

## WASTE TO ENERGY STRATEGY AND APPROACH FOR IRELAND

**ANTHONY REYNOLDS**

Electricity Supply Board  
International  
Dublin, Ireland

**PHILIP R. LeGOY**

Electricity Supply Board  
International  
Dublin, Ireland

**AIDAN SWEENEY**

Electricity Supply Board  
International  
Dublin, Ireland

### ABSTRACT

Waste to Energy (WTE) is a viable and vital resource to Ireland. Due to its geographic location, strategically located between the U.S. and Europe, Ireland has inherent advantages when it comes to gaining technical knowledge. As an island country with its size it has exaggerated waste elimination problems. Power generation in Ireland is distorted by the size of the island and Irelands recent high-tech business boom has had an affect too. These two items, power and waste, overlap and can be addressed (in part) with one solution. Products not produced in Ireland are imported. The residue of these products is garbage. Therefore the garbage is constantly being imported to the island and never expelled. Landfill space in Ireland is diminishing - rapidly. "Not in my backyard!" is a principal attitude of the public and with good reason. Refuse is a health threat. Landfill tax legislation is changing and the price is rising to €19/tonne and heading for €32/tonne.<sup>[1]</sup> Converting waste to energy as part of a recycling process garnishes public support because the resource of rubbish is managed in a manner that appeals to common sense. It is a solution that takes into account the public health and providence of the island. If waste is sorted and classified as economically recyclable (i.e. marketable) it is reclaimed and reused. If waste is sorted and classified as economically un-recyclable by conventional methods it is then evaluated for its energy value in power generation and thermal conversion to basic elemental products. The classification process determines the value of waste products, therefore the economic implications of their use either by recycling the waste and thermally eliminating it while generating electricity and/or by producing recycled products. This paper presents a waste recycling/generation project concept that includes waste stream separation, refuse-derived fuels, waste gasification/generation and renewable power resource integration.

### HISTORY

The traditional form of waste management is landfill. In an island country this is only practical as long as landfill land is available. Permitting for new sites is hard to get and the type of waste being deposited in landfills is changing. When the microchip and pharmaceutical factories arrived in Ireland they brought prosperity. They also changed the kinds of refuse created on the island. These plants produced chemical waste as well as municipal. The chemical waste is treated differently from municipal waste but some of it makes its way to landfill in the form of neutralized waste cakes made up of salts from acid and base neutralization processes and large quantities of powdered silicon and heavy metals. Conventional Municipal Solid Waste (MSW) contains large quantities of carbon compounds items such as plastics, organic (i.e. food/garden) waste and industrial waste. Hazardous waste such as bio-medical waste is common in all first world countries and is created by all hospitals. Currently in Ireland the problems of hazardous waste disposal, specifically medical waste, has become a national dilemma. Over 100 illegal waste dumping sites are currently being investigated as of December 2001.<sup>[2]</sup> This may not seem significant but there are only 250 legal landfill sites on the island. The recent outbreaks/epidemics of animal diseases in the EU has created mountains of animal parts and carcasses (450,000 tonnes) that are presently being stockpiled in Ireland.<sup>[3]</sup> Many of these diverse waste streams are recyclable (MSW streams) many are not (hazardous bio-waste).

A common method of sorting MSW is classification. The current technology of mechanical classification is functional, complicated and expensive. But it is a viable technology ready to use and off the shelf. Labor can be competitive with mechanical classification when it comes to price. Methane generated from fermenting MSW is