



22 May 2008

The Secretary  
The Senate Standing Committee on Environment, Communications and the Arts  
PO Box 6100  
Parliament House  
CANBERRA ACT 2600

**SUBMISSION TO THE SENATE INQUIRY INTO THE MANAGEMENT OF AUSTRALIA'S  
WASTE STREAMS AND THE DRINK CONTAINER RECYCLING BILL 2008**

GRD Limited is pleased to present the attached submission for consideration by the Senate Standing Committee.

GRD Limited is a Perth headquartered engineering and development company, its subsidiary Global Renewables operates in the waste management sector processing Municipal Solid Waste (MSW) using Advanced Waste Treatment (AWT) technologies.

Global Renewables presently operates the Eastern Creek Facility in Sydney and uses the UR-3R Process<sup>®</sup> to divert significant amounts of MSW from landfill, recover resources from the waste stream, create bio-gas for power generation and, as a result of the outcomes, reduce greenhouse gas emissions. Global Renewables has also secured a contract in the United Kingdom to process the household waste of more than a million people in the county of Lancashire.

We believe sustainable waste management is a critical issue for Australia and we hope our submission will assist the Senate Standing Committee with its deliberations.

Yours faithfully  
**GRD Limited**

A handwritten signature in blue ink, appearing to read 'Casey Cahill', with a horizontal line underneath it.

**Casey Cahill**  
Group Manager Corporate Affairs

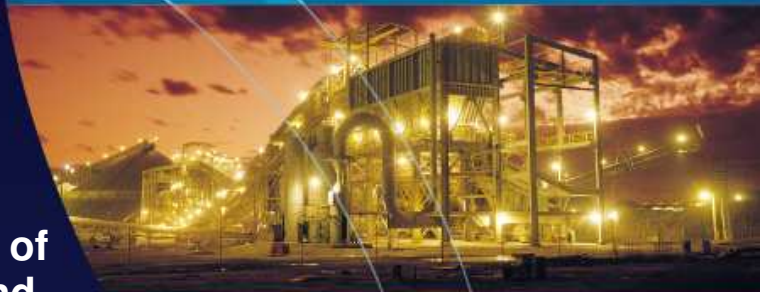


**GRD**

GRD Limited is a construction  
and development company

# **Inquiry into the Management of Australia's Waste Streams and the Drink Container Recycling Bill 2008**

**May 2008**



# INQUIRY INTO THE MANAGEMENT OF AUSTRALIA'S WASTE STREAMS

GRD LIMITED

MAY 2008

## 1. INTRODUCTION

GRD Limited is an Australian engineering and development company which, through its subsidiary Global Renewables, has developed the UR-3R Process® which offers a sustainable solution to the largely hidden problem of urban waste management in Australia.

The Urban Resource – Reduction, Recovery and Recycling (UR-3R) Process® is a mechanical biological treatment (MBT) process that treats municipal solid waste through integrated sorting, biological digestion and composting processes. The process separates and cleans the organic fraction of household waste, producing renewable energy and returning carbon to the soil. The UR-3R Process® also differentiates itself from other processes that use MBT technologies to process waste, as it delivers greenhouse gas reduction, a resource recovery focus and energy production without incineration. It also avoids dumping more than 70 per cent of the resource rich waste into landfill.

GRD's first UR-3R™ Facility has been operating at Eastern Creek, Sydney for the past 4 years, converting around 11 per cent of Sydney's urban waste into useful resources; gas for energy, organic growth media for enriching arable land and recovering glass, aluminium, steel, paper and plastic recyclables.



*The Eastern Creek UR-3R Facility is processing around 11 per cent of Sydney's household waste*

The second wave of UR-3R™ facilities is currently under construction in the United Kingdom where Global Renewables, in alliance with Lend Lease, is building a network of processing facilities as part of a 25 year contract to process the municipal solid waste of 1.4 million people in the UK county of Lancashire.

A triple bottom line assessment identifying the economic, environmental and social performance of the UR-3R Process® by sustainability consultancy Nolan-ITU has identified that the process can:

- provide a net environmental benefit of \$130-\$150 a year for each household in Australia's major population centers;
- avoid or minimise the problems of toxic emission and climate change impacts associated with landfill, and
- contribute to material and energy conservation.

In other parts of the world, MBT of waste has also been proven as a waste management solution that is environmentally superior and cost competitive against alternatives such as incineration in terms of toxic emissions, climate change impacts, material conservation and energy conservation.

Through our experience in Australia and the United Kingdom we are both pleased and qualified to make this submission to the Inquiry by the Senate Standing Committee on Environment, Communications and the Arts into the Management of Australia's Waste Streams.

We note that the objective of the Committee is to inquire into key issues such as the effectiveness of existing strategies to reduce, recover or reuse waste; and to explore potential new strategies.

In this submission we strongly support the adoption of more sustainable waste management practices in Australia. Key points include:

- dumping untreated municipal solid waste into landfill should be progressively banned in Australia, as it has been banned in Europe and the UK
- better management of our municipal solid waste will have a significant positive impact on Australia's greenhouse gas emissions; and
- the Commonwealth Government needs to play a leadership role in establishing a sustainable Advanced Waste Treatment (AWT) industry in Australia.

For clarity of presentation, our submission is arranged into the following sections:

1. Introduction
2. Urban waste mismanagement in Australia
3. The greenhouse gas consequences of landfilling
4. The true cost of landfill
5. Australia and International policy trends
6. A UK Solution
7. What is needed in Australia?

## **2. The Cost of Urban Waste Mismanagement in Australia**

In Australia's urban consumer economy, 80 percent of saleable products become waste within six months, and most municipal solid waste goes to landfill where it can generate leachates and methane gas for many decades. Disposing municipal solid waste to landfill has adverse long-term environmental, economic and social impacts, mainly through:

- production of virile greenhouse gases (eg. methane is 23 times worse than carbon dioxide as an agent contributing to atmospheric warming);
- contamination of groundwater;
- resource depletion and the waste of embodied energy through the need to create replacement products from virgin materials; and
- quarantining from other uses of the land contaminated by waste.

Each Australian household generates an average of 850 kilograms of municipal solid waste every year, putting Australians in the highest quartile of waste generators globally.

Every day Australians commit 50,000 tonnes of non-renewable resources, complex manufactures, toxic wastes and essential biomass to wasteful disposal (excluding building materials). That is equivalent to filling a football field with a 20 metre layer of waste every day or filling every football field in the country with municipal solid waste in a decade.

This is a massive waste of resources and requires the increased use of virgin materials to replace the products that have been dumped in landfill. This in turn requires significant quantities of energy and produces additional greenhouse gases.

### **The Greenhouse Gas Legacy**

In the debate about tackling climate change, greenhouse gas emissions from landfill have largely been ignored or discounted. One tonne of waste sent to landfill today will decades from now still be emitting methane gas, which has a global warming potential 23 times that of carbon dioxide

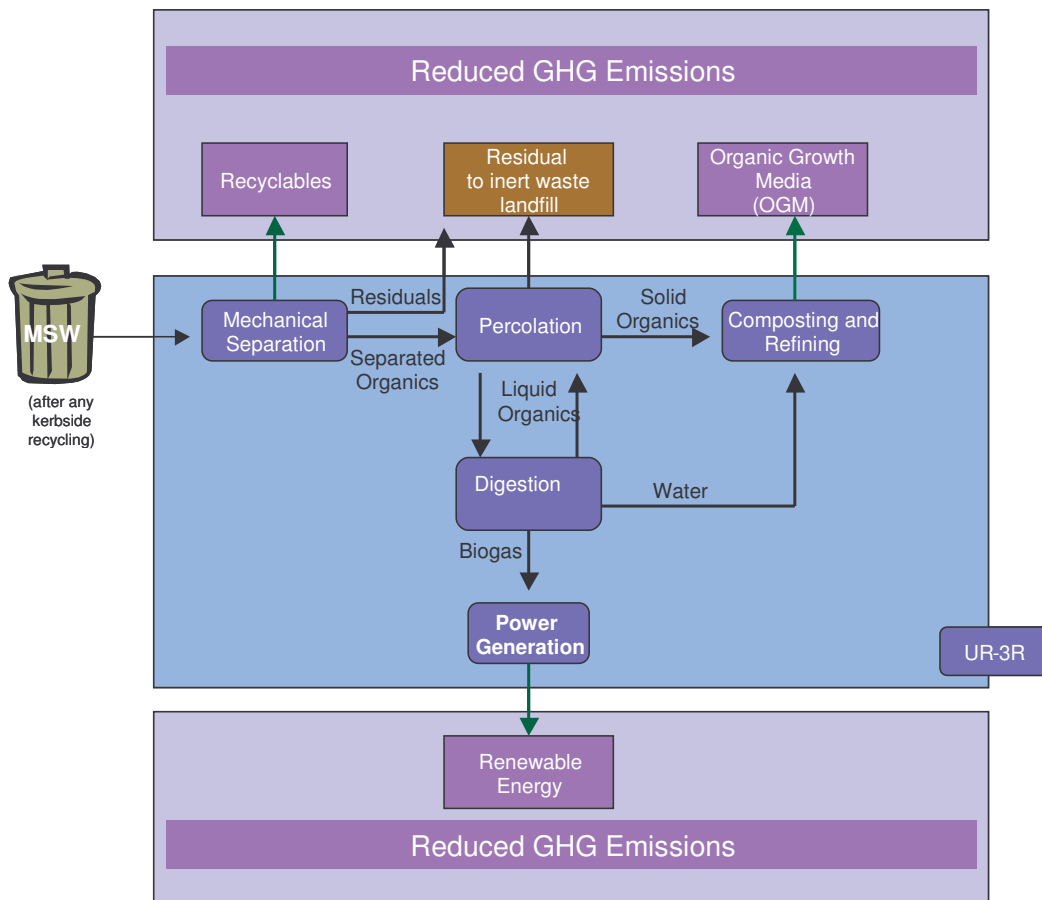
In August 2007, a report prepared for the Total Environment Centre and the Resource Recovery Collaboration, a grouping of waste management companies including Global Renewables, estimated that unless the nation's landfill practices change, up to two billion tonnes of greenhouse gas will be released from Australian rubbish dumps in the next 50 years.

The report prepared by researchers Warnken ISE concludes that, unless new resource recovery and recycling polices are implemented, greenhouse gas from degradable organic waste could potentially make up 85 per cent of Australia's future carbon budget.

Warnken states that business-as-usual (BAU) projections highlight the potential greenhouse gas liability from organic waste. It is estimated that if we take no action on greenhouse gas emissions from landfill, BAU projections show an increase from 15.4



million tones of carbon dioxide equivalent in 1990 to 30.7 million tones by 2020, and a further increase to at least 47 million tonnes by 2050.



The existing and potential impact of waste practices on climate change in Australia was recently highlighted when The Clinton Foundation, formed by the former United States President to help address issues of global warming, recognised the benefits of AWT by signing a Memorandum of Understanding with the Victorian Government to explore options for the take-up of new waste treatment technologies.

### The True Cost of Landfill

The triple-bottom line assessment of the UR-3R Process<sup>®</sup> by Nolan-ITU (attached to this submission) quantified the costs of landfill which are not included in calculations of waste disposal pricing. Nolan-ITU estimates the long-term environmental costs of leachate and landfill gas emissions at significantly more than \$150 per tonne of municipal solid waste disposed of to best practice landfill. These are hidden environmental and social costs not reflected in current landfill prices. Some of these costs are borne by our community as environmental impacts, and some will be borne by future generations. In addition, where remediation is necessary, the responsible councils will carry this liability.

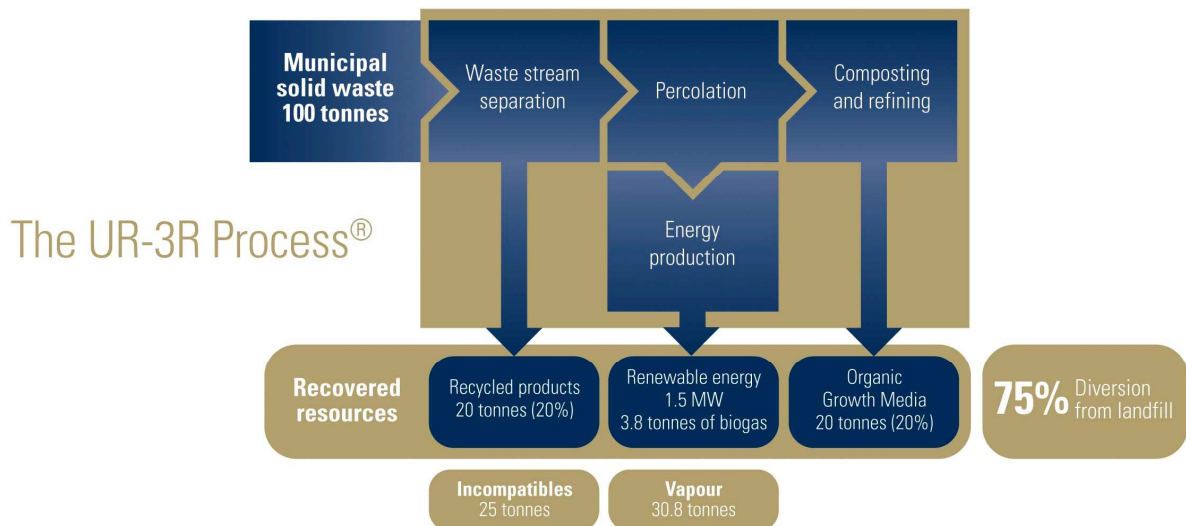
But Australian landfill levies are low by global standards. Though voluntary timetables have been adopted to phase out landfill disposal of waste in Australia, there are no strong drivers, or even guidelines to indicate how these timetables might be adopted. Nor is there any provision for incentives to achieve sustainable municipal solid waste management.

The Nolan-ITU study detailed the costs of landfill versus the UR-3R Process<sup>®</sup> and the triple bottom line cost / benefit analysis indicated a very significant net benefit from the UR-3R Process<sup>®</sup> to the community of \$130-\$150 per household per year in Australia's major population centres.

When summed over the total number of households in the major population centres modeled, the annual net benefit from the UR-3R Process<sup>®</sup> over landfill disposal amounts to \$159 per household per year in Australia's major population centres, or \$741 million per year for Australia.

When applied to each major population centre, an estimated 353,000 tonnes per year of dry recyclable materials would be diverted from landfill and recovered for recycling by the UR-3R Process<sup>®</sup>. The processing of municipal solid waste through UR-3R facilities would therefore increase Australia's recovery of dry recyclable materials by an estimated 42% (ie. from 847,000 tonne per year to 1.20 million tonne per year).

In addition the analysis of social indicators provided a positive result – the UR-3R Process<sup>®</sup> is clearly preferred to landfill disposal in terms of social indicators including social cohesion and quality of life.



In order to compare the UR-3R Process<sup>®</sup> against a baseline, the study needed to determine the environmental cost of the landfill disposal of municipal solid waste in Australia's major population centres. It was determined that the annual environmental cost of landfilling of municipal solid waste in Australian major population centres may exceed \$640 million per year.

This costing includes air emissions from best practice landfill, leachate from best practice landfill, and greenhouse gases from best practice landfill.

In comparison, the cost of salinity (according to Commonwealth Government estimates) to Australia amounts to \$243 million per year. Nolan-ITU also demonstrated that on a State by State basis, the environmental cost of landfilling putrescible waste could potentially be as high as follows:

NSW	\$238 million
Victoria	\$132 million
Queensland	\$124 million
South Australia	\$50 million
Western Australia	\$90 million
ACT	\$9 million

The Greenpeace Trust report, *Cool Waste Management – A State of the Art Alternative to incineration for Residual Municipal Waste*, also provides an overview of mechanical biological treatment of waste such as the UR-3R process as a preferred approach over landfill and thermal processes. It concludes that mechanical biological processes are an environmentally superior and cost competitive waste management solution in terms of toxic emissions, climate impacts, material conservation and energy conservation.

### **Australian and International Trends**

Successive governments at a State and Federal level have acknowledged the need to reduce the amount of municipal solid waste being sent to landfill. Many have set targets. For example, in 1992 the ALP wanted to achieve landfill diversion of 50 per cent by 2000, a target that was not reached. Most State and Territory governments have identified aspirational diversion rates (NSW – 66 per cent by 2014, the ACT – Zero Waste 2010).

The reality is that it will be impossible to achieve these targets without political leadership that is focused on resource recovery from waste and committed to encouraging significant investment in AWT infrastructure.

In April of this year we saw an example of this fragmented approach, when State and Federal Environment Ministers could not reach a decision on phasing out the use of plastic shopping bags.

Not only did the indecision show a lack of co-ordination, the focus on plastic bags was in the main addressing a litter problem. It did not focus on meaningful steps to tackle the harmful environmental effects of dumping and burying massive quantities of organic waste.

In the meantime, Australia's development of an AWT market is constrained not by a lack of desire, but by a failure in coordination and an apparent unwillingness to place an appropriate price on landfilling:

- While Federal and State Governments set diversion targets and regulate the waste industry, it is local government that has responsibility for municipal solid waste infrastructure. Despite undoubted goodwill and intentions, councils are not



well placed to provide leadership in the area of large scale infrastructure development. Those waste infrastructure tenders that have been completed have followed lengthy and extensive pre-project processes. Most tendered projects have not proceeded to contract.

- The price for landfilling of waste in Australia fails to reflect the true cost of the practice – ie the cost to the environment of unnecessary methane and leachate emissions, the cost to society of lost resources and embodied energy and the opportunity cost of land for which usage will be restricted for more than 100 years post closure. In an attempt to recognise these factors many States have introduced landfill levies. Unfortunately, most of these are too small to have their intended effects of making landfilling more expensive than sustainable alternatives – so the practice of landfilling continues largely unabated, notwithstanding the ability of proven and viable alternatives. In any case, the landfill levies in themselves are not sufficient to drive large scale implementation of AWT without appropriate ways of grouping councils and providing security of supply or revenue to justify large capital investment in advanced waste infrastructure

Australia's fragmented and uncertain efforts are at odds with the emerging global trend towards banning recyclables and putrescibles to landfill and transforming a substantial part of the waste stream into resources. Beyond Australia (as Table 1 below illustrates) the world is changing in favour of resource recovery from municipal waste processing.

**Table 1**

EU	All EU countries must, pursuant to the 1999/3 EC Landfill Directive, reduce the amount of biodegradable waste disposed to landfill by 50% by 2010. Proposed new target of 50% recovery of recyclables from MSW
Germany	Banned landfilling of material with greater than 5% organic content in 2005.
UK	Landfill tax of £15/t from 2004, rising now by £8/t annually to a maximum of £48/t in 2010/11. 25% of all household waste to be recycled/ composted in England and Wales by 2010.
Sweden	Ban on putrescible waste landfilling from 2002.
Austria	Banned landfilling of material with greater than 5% organic content in 2004.
Belgium	Plans to ban direct landfilling of combustible waste.
Denmark	Plans to ban the landfilling of combustible waste.
USA	California, Washington and North Carolina have adopted medium term zero waste policies.
Canada	British Columbia and Ontario have adopted medium term zero waste policies.
China	Plans to reduce landfilling and incineration to meet significant 2008 Olympic and 2010 World Expo diversion targets.

## **A UK Solution**

In 1999, the European Union introduced the Landfill Directive requiring all EU members to reduce the amount of MSW being sent to landfill. Given the potential of organics to degrade in landfill, generating methane and contributing to global warming, the Landfill Directive seeks to reduce the degradable fraction being landfilled in the interests of sustainability and to improve resource recovery.

In the United Kingdom, they have adopted a series of market based instruments to achieve this.

Central to the changes is the requirement for local governments to meet strict targets:

- By 2010, councils must reduce the amount of MSW landfilled to 75 per cent of 1995 levels.
- By 2013, reduce the amount to 50 per cent.
- By 2020, reduce the amount to 35 per cent.

The directive has meant that councils must develop alternatives to dumping and invest in technologies such as incineration or mechanical and biological treatment (MBT). As part of the process, local government bodies are given a landfill allowance; those who exceed the allowance are liable to a financial penalty of £150 per tonne.

To help local government authorities meet their obligations under the EU Landfill Directive, The UK Government has established the Landfill Allowance Trading Scheme (LATS). Under the scheme, each local government or waste disposal authority is able to determine how to use its allocation of allowances in the most effective way.

Authorities are able to trade allowances; save them for future years (bank) or use some of their future allowances in advance (borrow). Trading is not mandatory, but is 'sold' to local government as an opportunity.

Unlimited 'banking' is allowed between target years and authorities are able to borrow up to 5% of next year's allowance.

The scheme is also seen as an encouragement for councils to reduce their landfilling practices even beyond their allocated allowance. In the first year of the trading scheme (2005/06) the total tonnage of municipal solid waste that could be landfilled in England was 15,196,000. The actual amount that was landfilled was 12,386,666 tonnes, 18.5% less than was allocated. This allocation will decrease significantly from 2010.

The first sale of landfill allocations took place in Hampshire, where a local authority sold 138,000 tonnes of its allocation for £2.7M

The LATS scheme is one of a number of mechanisms implemented in the UK to support change. The Federal Government has adopted a 'carrot and stick' approach to make things happen.

The `sticks' include a landfill tax that will rise annually to £48 per tonne and, as already mentioned, fines of £150/t for councils who exceed their landfill allowances.

The `carrots' include LATS and a series of support initiatives funded by the landfill tax. These include recycling programs, but the key initiative is more than £600M available in 25 year contributions to councils as Private Finance Initiative (PFI) credits.

PFI is intended to encourage private investment in services which were previously funded by the public purse. To qualify for PFI funding, local authority projects have to fulfil various general criteria such as promotion of sustainable development, contribution to local cultural, social, health, safety, regeneration, or educational objectives, and rigorous cost/benefit assessment.

Requirements include the need for a local authority to write and adopt a waste infrastructure plan. This plan is then reviewed by the central government and if approved the local authority is allocated an amount of PFI credits on the condition they use a standard form contract to procure a private service provider to deliver the infrastructure.

### **What is needed in Australia.**

A crucial step forward is the need for Australian governments at all levels to recognise their capabilities and responsibilities for waste management. The Commonwealth has a key role to play in achieving this through agreements by relevant ministerial councils and the Council of Australian Governments (COAG).

We suggest that COAG also set the agenda by adopting a policy of banning the disposal of putrescible and recyclable waste to landfill in Australia by a given date and supported by transitional step targets as a first step towards an ultimate goal of zero waste to landfill.

There also needs to be a revitalisation of government roles and attitudes towards the management of waste.

Local governments in Australia are responsible for the collection and treatment or disposal of waste. Unfortunately local governments are not best placed to procure major infrastructure.

The State of the Environment 2006 report states that "Australia has to do better in recycling and in the re-use of critical resources..."; "...only 31 per cent of councils (consider) that they (have) a comprehensive or good capacity to take up natural resource management initiatives"; "the success of future generations and environmental progress will depend on better technologies, knowledge, skills and investment strategies" and "(responses to these significant issues) cannot occur without government leadership and public support...environmental sciences are needed and valued by all and so must be paid for by all."

At present, most councils are ignoring the impact of greenhouse gas emissions from the MSW they send to landfill. Given they have control of this waste and its greenhouse legacy dwarfs their operational impacts, councils need to be more accountable for their actions in this area

It is therefore suggested that local governments remain responsible for the procurement of collection, treatment and disposal services, but that responsibility for waste infrastructure development for recycling/resource recovery should reside with the State Governments.

The States are clearly the best equipped to plan for and procure major infrastructure and waste processing facilities should be regarded as a crucial requirement for the nation's growing urban communities. The States have demonstrated and developed Public Private Partnership (PPP) capabilities and can best deal with siting and scale issues. Through State Government guarantees, they are able to provide major infrastructure projects with their optimal finance structure and cost, thereby enabling the lowest possible processing cost in each case. GRD believes that the most effective way to capture this capability would be for the States to establish Resource Recovery Authorities, responsible for developing metropolitan waste infrastructure strategies that reflect each State's landfill diversion aspirations. The Resource Recovery Authorities would then be responsible for tendering and contracting for PPP based advanced waste treatment facilities. This is not denying the need for adequate consultation with councils and local communities, but progress will require solid regional co-ordination which is best done through State Government oversight

A key deficiency in the approach to waste management in Australia is the lack of a clear price point which values the benefits of AWT and the negative impacts of landfilling.

The price imposed on dumping and burying waste is currently far too cheap and often does not take into account the full cost of landfill after-care, let alone the various externalities associated with the process. It is the view of GRD that a landfill levy should be required in each State to ensure that the practice is relatively more expensive than sustainable waste management. To achieve this purpose it is suggested that the cost of landfilling a tonne of waste in Australia should be similar to the rate currently charged in New South Wales, in the vicinity of \$120 - \$130 (2008 dollars). The levies should also be regulated to increase by at least 50 per cent every few years. The increased levies could also be used to partly fund the Resource Recovery Authorities established by the States.

This regulatory framework could be complemented by the introduction of a Landfill Allowance Trading Scheme, similar to that operating in the United Kingdom.

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