



Submission to Joint Select Committee on Northern Australia

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## Table of Contents

<b>INTRODUCTION</b>	<b>3</b>
<b>Background to Waste to Energy</b>	<b>3</b>
<b>Global Markets for TWtE</b>	<b>4</b>
<b>Components of a TWtE project</b>	<b>4</b>
<b>Benefits of TWtE</b>	<b>5</b>
<b>Introduction to EcoEnergy Ventures</b>	<b>6</b>
<b>POTENTIAL FOR DEVELOPMENT</b>	<b>7</b>
<b>Overview</b>	<b>7</b>
<b>Recommendations</b>	<b>8</b>
Enhancing trade and investment links	8
Addressing impediments to growth	8
Setting conditions for private investment and innovation	8
<b>Suggested Process for Development</b>	<b>10</b>
<b>CONTACT DETAILS</b>	<b>11</b>

## Introduction

### Background to Waste to Energy

Waste to Energy (WtE) is a process that uses the resources available in waste to create energy with minimal pollution. This diverts waste from being sent to landfill while creating a clean and reliable energy source.

WtE sits in the waste management hierarchy just after recycling and as such both processes are often done in conjunction at most WTE plants around the world.



**Figure 1: The Waste Management Hierarchy**

WtE extends existing Waste Management processes of collection and sorting, adding treatment & energy production.

Developed for commercial use over 35 years ago, there are many different types of solutions that have been developed to match the quantity and quality of waste being diverted from landfill.

Feedstock is the term used to describe the fuel source, typically it is Municipal Solid Wastes (MSW), industrial, commercial or wet and hazardous wastes.

There are 2 main types of WtE solution; Thermal (TWtE) and Non-Thermal. The main difference being the type of waste they can process & the amount of maintenance required for the solutions.

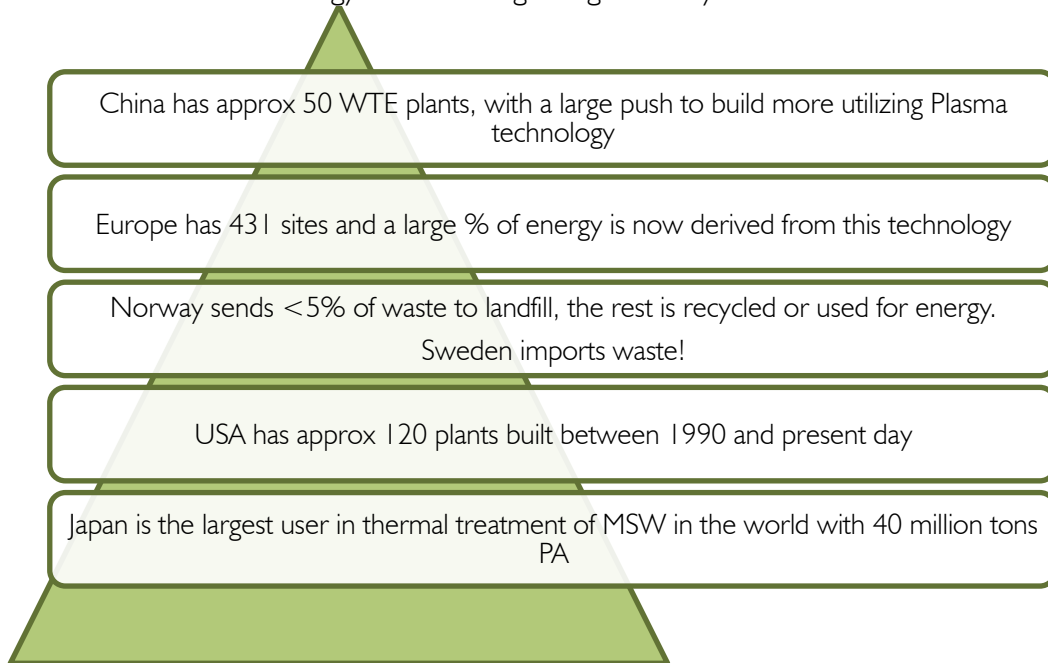
TWtE Technology is not incineration; it involves the gasification of waste at high temperatures to convert waste into a gas that can be used to create electricity.

TWtE had advantages over Non-Thermal technology in that it can process almost all waste types (it is often used to destroy hazardous wastes) with minimal manual intervention to create a clean energy source.

In comparison, Non-Thermal solutions often require extensive management and intervention, and only deal with select waste sources, so the need for landfilling continues.

## Global Markets for TWtE

TWtE technology is widely adopted in the USA, China, Japan and throughout Europe where landfill and energy costs are high. It has not been widely adopted in Australia due to the historical costs of energy and landfilling being relatively affordable.



Comparatively, Australia is equal with Slovenia in 22<sup>nd</sup> place on the global scale for waste sent to landfill, waste recovered and energy generated from waste.

Over the last decade large increases in energy costs and scarcity and increasing costs of landfill in Australia have made the commercial conditions right for this type of activity.

## Components of a TWtE project

The following components are required to develop a TWtE project:

- Feedstock: A long-term agreement for waste to the facility
- Community Support: Early and on-going, NIMBY issues are quite prevalent in the initial phases
- Technology: There is no silver bullet; the right technology needs to be matched to the waste stream, while allowing for growth.
- Siting: Facilities need to be sited in existing or newly zoned areas.
- Off Take Agreements: Contracts for the sale of energy, recyclables, any excess heat (if applicable) & carbon credits.

## Benefits of TWtE

TWtE projects provide many benefits to local communities, including:

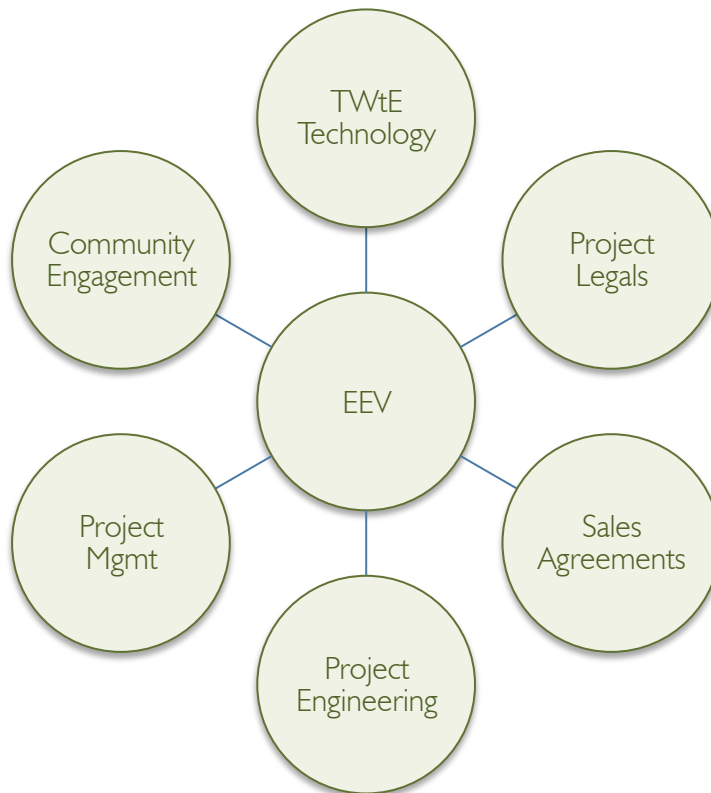
- Retention of local investment:
  - Waste expenditure (e.g. transport) stays in the community, rather than being invested externally.
  - Transferring waste from the community can result in millions being lost over the lifetime of a landfill.
  - Capital infrastructure is developed in the community, rather than being spent on creating and managing landfills.
- Reduction in landfill gate fees:
  - A locked in gate fee at reduced prices can save the local government millions over the lifetime of a plant (e.g. \$20 reduction per tonne on a 30,000 tonne per annum system is \$12 million over 20 years).
- Increased Recycling rates & energy recovery:
  - All TWtE facilities are installed with state-of-the-art waste sorting technology to maximise recycling rates.
  - TWtE facilities ensure that waste isn't left in the ground to decompose, but the energy within them is used to generate electricity.
- Job Creation
  - International markets show that approximately 1.5 jobs are created for every 10,000 tpa of waste processed within the facility
  - Additionally, approximately 1 position is created outside the facility for each position within it.
- Provision of a local, clean energy source:
  - The installation of a TWtE facility significantly reduces a regions carbon emissions.
  - TWtE facilities operate 24/7, supplying a base load of energy that isn't reliant on the sun shining or wind blowing
  - TWtE facilities can be established to sell energy straight back into the grid, or to direct (neighbouring) customers.
- Provision of a long-term waste strategy:
  - The establishment of a TWtE facility provides a long-term, on-going means of diverting waste from landfill, reducing the local carbon footprint & the need for landfill creation and management
  - The international experience shows that the implementation of these facilities meets or exceeds community sustainability goals.

## Introduction to EcoEnergy Ventures

EcoEnergy Ventures (EEV) Pty Ltd is an Australian owned company that develops Thermal Waste to Energy (TWtE) projects.

Our management team has extensive experience in the Energy industry, particularly renewable energy, and is bringing this experience to pioneering the TWtE industry in Australia.

EEV brings together experienced and specialist project partners with proven experience in TWtE project delivery.



## Potential for Development

### Overview

The North of Australia is an ideal location for the development of TWtE facilities for a number of reasons, including:

- Location & Energy Security:
  - At the moment the provision of energy (electricity) to Northern Australia is expensive and unreliable, the provision of local generation will alleviate the need for reliance on the existing, extensive energy network.
  - Local generation can also provide energy to regions and communities that have little-to-no energy delivered to them, improving energy security.
  - TWtE can be modular, matching the smaller feedstock supplies available in more remote communities.
- Maximise existing resources:
  - The larger industries in Northern Australia, including Mining and Agriculture, provide excellent feedstock for TWtE facilities. The ability to use these waste streams as an energy source will maximise the utilisation of these resources.
  - The implementation of TWtE facilities will provide environmentally friendly waste management solutions to regions that have limited access to recycling and other facilities, thereby improving the overall waste-management practices.
  - The dumping of tyres is a considerable concern due to the impacts of degrading tyres & tyre fires. The establishment of TWtE facilities dealing with tyres enables the creation of an industry & source of unrefined oil for use in generators or export for refining.
- Industrial development:
  - The creation of a TWtE industry in Northern Australia will assist in creating a variety of skilled and unskilled jobs.
  - The creation of this industry can also lead to employment to support it, including transport, catering etc.

## Recommendations

### Enhancing trade and investment links

Developing TWtE projects in the region will assist in developing its presence, making it attractive as a place to develop new and dynamic industries.

The creation of TWtE projects will create products such as gas, electricity, oil and building materials (from the ash created by the systems) for which there are ready markets.

The Committee could assist the development of the industry in Northern region by helping to establish markets for the created products, particularly unrefined oil and building materials.

Any impetus that could be placed on Energy Network companies to help drive small generation projects would also be of benefit.

To develop the investment links for this industry, EEV recommends that an incremental feasibility be undertaken from one designated location as a starting point, to analyse the quantity and quality of the waste streams available.

If there are any areas in which waste is a specific concern or has a potential impact to the surrounding community, these may also be a good starting point.

### Addressing impediments to growth

TWtE projects involve the development of small-to-medium sized infrastructure that is capable of diverting waste from landfill to create energy.

While these projects rely on waste for their economic returns, they are not “waste projects”. For these projects to be developed, industry requires that the government provide Economic Development professionals to assist with driving projects forward, rather than put the responsibility in the hands of Waste Managers.

In all, to drive growth in these industries, EEV recommends:

- Gaining a good understanding of the waste types and quantities available
- Identifying areas where energy security is a particular concern
- Identifying areas with critical or notable waste management issues
- Assisting in establishing markets for the products produced by the TWtE industry
- Engaging TWtE project developers who have access to a range of technologies of varying size that are able to develop appropriate solutions

### Setting conditions for private investment and innovation

The primary key for developing TWtE industries is the ability to lock-in long-term waste provision contracts. Where regional governments are able to do so, investors and private developers will be more likely to invest in developing projects in the region.

Similarly, any incentive that the government can provide through the provision of carbon credits, and/or lifting or changing the classification of waste types so that they can be





classified as clean waste (when processed in a TWtE facility), will assist in develop investment.

To encourage the development of a TWtE industry, government should refrain from trying to create markets themselves by claiming “ownership” of waste streams on behalf of industry, leaving the market creation to industry itself.

Finally, the ability to attract investment

## Suggested Process for Development

EEV has believes that the following steps would be a good starting point for assisting in creating the TWtE industry in the Northern Region of Australia:

1. Identify current waste streams (by quantity and type if possible) for each major town, city and region
2. Identify areas with particular energy security concerns & overlay this data against the identified waste streams
3. Identify areas where there is demand for small to medium sized generation energy, or demand to reduce dependency on the grid / network.
4. Engage TWtE project developers to analyse the data to determine the viability of projects in the region.

Other steps that may be of benefit

- Alter local laws / regulations to encourage the generation of energy from waste.
- Identify / define customers in the region who may be interested in the output products.
- Engage TWtE project developers to assist in the definition of waste data to ensure this is done to industry standards.



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