Submission No 95

INQUIRY INTO PROPOSED ENERGY FROM WASTE FACILITIES

Organisation: Boomerang Alliance and Total Environment Centre

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Introduction

EfW is not recognised objectively as a circular economy (CE) activity and thus its expansion is contrary to placing our waste management on the CE platform, particularly since large tonnages over a long period are often involved. Such plants will compete for material, that should be recycled or reused and given they require an assured (often large) supply to be economically viable, will styme the pace of other essential CE programs. As the first priority governments need to invest via regulation at a much more robust way in the upper parts of the waste hierarchy, that achieve environmental sustainability. This is yet to be assured on a fast track in NSW.

When addressing plastic pollution and waste, recycling is only one of the options of a circular economy and sits below a number of better and preferred options. In a circular economy approach, waste and pollution should be eliminated by managing products and resources according to their highest resource value and least environmental impact.

The Commonwealth Government has adopted Circular Economy Principles (developed by the Ellen Macarthur Foundation) that guide policy settings:

- The elimination of waste and pollution
- The circulation of products and materials through the economy, based upon their highest resource value and,
- The regeneration of nature.

Applying highest resource value means avoiding the use of unnecessary resources in manufacture and designing products that can be easily and cost-effectively recovered and not simply thrown away. This is accomplished through designs and practices that reduce, reuse, repair, refurbish, remanufacture, repurpose or recycle products - and in that order.

Many councils estimate that over 65-70% of materials in red bins should not be there. If local councils and business collection services provided best practice collections for organics and recyclables and ensured items were collected as intended (organics in organics bin/recyclables in recycling bin) the estimated residual waste would be significantly reduced and render EfW facilities uneconomic and unnecessary. Any remaining residual waste could be addressed through improved circular economy and EPR practices.

EfW Technologies

Waste to Energy describes a range of technologies that convert or collect the embedded energy from waste materials and use this to extract energy. The most common technologies include:

- Energy from bagasse (sugar cane offcuts) to provide electricity for sugar mills
- Refuse Derived Fuels that use waste materials to power high energy users such as brick kilns
- Methane capture from landfill and sewage plants, then convert gas to electricity, largely to power the facility
- Anaerobic Digestion using microbes to breakdown organic wastes to produce methane for energy and organic compost
- Waste Incineration which applies heat to largely mixed waste materials and collects the energy to convert to electricity

Based upon these principles it is quite clear that some of the technologies outlined below are acceptable under this framework, some are questionable, and some should not be considered as part of a circular economy.

Anaerobic digestion of organic waste is managed in sealed containers using microbes and simply accelerates a natural process. Methane is collected and used to generate electricity, with a compost able to be applied to the land, as the other byproduct. The process is about achieving the highest resource value of the source material- largely food waste.

Methane capture from landfill and sewage collects methane for electricity generation. The process is beneficial without a detrimental impact on the source waste. By collecting methane, the process reduces emissions to the environment. In the case of sewage, the source material can be reused, subject to it meeting environmental conditions.

Energy from Bagasse uses sugar cane offcuts, incinerating and converting this to electricity. From a circular economy point of view, it is probably on the line regarding acceptability. It provides an alternative, lower emission fuel to fossil fuels but is still polluting. However, it is the currently one of the highest resource values for the sugar cane offcuts which would otherwise be wasted. Other alternative uses for sugar cane offcuts exist, such as the production of non-plastic or compostable packaging.

Refuse Derived Fuels is the incineration of mixed waste from industry to replace fossil fuels to provide energy. These mixed wastes include plastics, paper and other assorted wasted materials. The advantage is that they replace fossil fuels. However, they are still polluting, and the materials incinerated have a higher resource value if recycled and reused.

Waste Incineration for energy recovery uses so-called ‘residual mixed wastes’ from households and businesses. The source materials include plastics and general wastes. In some cases, organic wastes. Whilst energy is recovered it is an expensive and inefficient system given the source materials. It offers an alternative to fossil fuels but is still highly polluting and leaves a toxic ash that needs specialist storage. ‘Residual mixed wastes’ could be avoided and have a higher resource value if collected, separated, and recycled.

When it comes to recycling currently the major focus of policy makers, there are two main types: mechanical and chemical (or ‘advanced’) recycling. The latter is being increasingly advocated by certain industry sectors.

Mechanical recycling

This is the predominant system used for business and household recycling collections today. Collected recyclables are usually taken to a Materials Recovery Facility (MRF) where products are first separated by type and material and non-recyclables discarded, ahead of further processing.

In the case of plastics - they are then cleaned and contaminants removed before the plastic is shredded and/or pelletised. This allows the plastic to be recycled - predominantly downcycled - into other products. A basic problem with mechanical recycling is that it can only manage certain types of plastics, usually polyethylene terephthalate (PET), polyethylene (PE) and polypropylene (PP). Other forms of plastics or products made with multiple polymers and different chemical additives are more difficult and expensive to recycle.

Chemical or Advanced Recycling (Mixed Waste Incineration)

The term is a catch-all for a number of different technologies. These technologies break plastics down into their basic chemical compounds so they can be recycled. The three common technologies are pyrolysis, gasification and depolymerisation.

The claimed benefit for chemical recycling is that it can manage all sorts of plastics, different polymers and additives and produce a product that can be an oil or in a plastic form that can be used in the remanufacture of new plastic products.

The downsides of chemical recycling are high greenhouse gas and toxic emissions, and health risks for workers or communities located near facilities. Chemical recycling facilities have high building and operational costs, and they inevitably undermine a more circular economy approach to material use, worsened by their need for long term contracts for large amounts of materials which could be diverted to higher uses. It is yet another end of pipe, linear economy practice.

In a nutshell: What's Wrong with Mixed Waste Incineration for Energy recovery?

- It incinerates materials that should be reused, recycled, or recovered
- It produces GHG and toxic emissions, often equivalent or greater than coal
- It can pose significant health risks to local residents as a result of emissions
- It's very expensive and likely mean a significant increase in collection or levy fees
- It contributes very little to our energy needs and what it does is emission intense. Renewable sources are far better
- Incineration is worse than landfill
- Discourages the development of real Circular Economy material flows; efficient resource use/minimisation
- Requires continued feedstock, locking in inefficient and unsustainable practices and acting as a deterrent to the development of better alternatives

Alternative Landscape

The ***local government*** level is essential. We recommend:

- Organics composted at home (promoting home composting)
- FOGO collection services with product going to anaerobic digestion or composting services
- Expanded yellow bin recycling collection going to relevant recovery facilities, including soft plastics (in designated coloured bags)
- Reduced red bin landfill collections (through variable bin sizes, reduced fees and incentives for reduction), with proceeds going to landfill until alternatives are found
- Kerbside household products collections (periodic or annual)
- Hazardous waste collection depots

Complementary Services

- Bottles and cans (including non-beverage) collected through State container schemes. These should be expanded to improve return rates, other associated items and reusable bottles/cans
- Soft/retail plastic packaging collection services at supermarkets
- Expanded reuse/return to producer schemes and services

EPR

Extended Producer Responsibility (EPR) that ensure producers of products are responsible for the management, and associated costs of those products through their entire lifecycle is an efficient way to develop a circular economy.

EPR obligations should ensure that industries involved with the manufacture and retail of single-use plastics focus on a circular approach that can reduce impacts and costs and include a reduction in the need for recycling.

Mechanical recycling currently provides an important service and should be maintained until such time as recycling is not essential.

Instead of rushing to develop and build more end-of-pipe chemical recycling infrastructure, associated industries would be better served in reducing their environmental impacts and their costs by developing preferred solutions that can eliminate the need for chemical recycling in the first place.

Mandatory EPR and government policies on phasing out problem plastics will make a difference.

Recent government policy shifts are pointing the way to these outcomes. Lightweight plastic bag bans and other single-use phase outs avoid and reduce the need for more plastic recycling; container return schemes provide good quality product that do not require chemical processing.

New initiatives for reusable packaging at major events, in retail and commercial sectors along with shifts in corporate and public behaviour will have a significant impact when introduced.

These initiatives and more must be considered first and fully and implemented as a central focus (rather than token) as the mainstream and preferred approach.

Jeff Angel

Director

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