

in sink erator®



## Not Going to Waste

The role of food waste disposers as part of a total waste management solution

## Introduction

In the face of a rapidly growing population, finding an appropriate method of dealing with household waste continues to be a matter of heightened importance. Food waste accounts for more than 30% of the total rubbish in household garbage bins therefore suitable treatment options for this organic component could help alleviate a global waste problem.

At a global level countries are keen to reduce their reliance on fossil fuels and provide alternatives to wood fuel. At a national level, residents, commerce and industries want to

reduce their dependency on unpredictable price fluctuations of fuels. From a waste management and environmental impact perspective, state and local governments are committed to the issue of climate change and proving measures to avoid methane emissions from landfills.<sup>1</sup>

Therefore alternative methods of food disposal would potentially impact significantly. Food waste disposers while serving a practical function in terms of household hygiene and convenience have the potential to provide a number of benefits on a far broader scale.

## What happens to food that is thrown away?

Australia is heavily dependent on landfill as a means of waste management. In fact, the majority of non-recycled waste will end up in landfill sites.

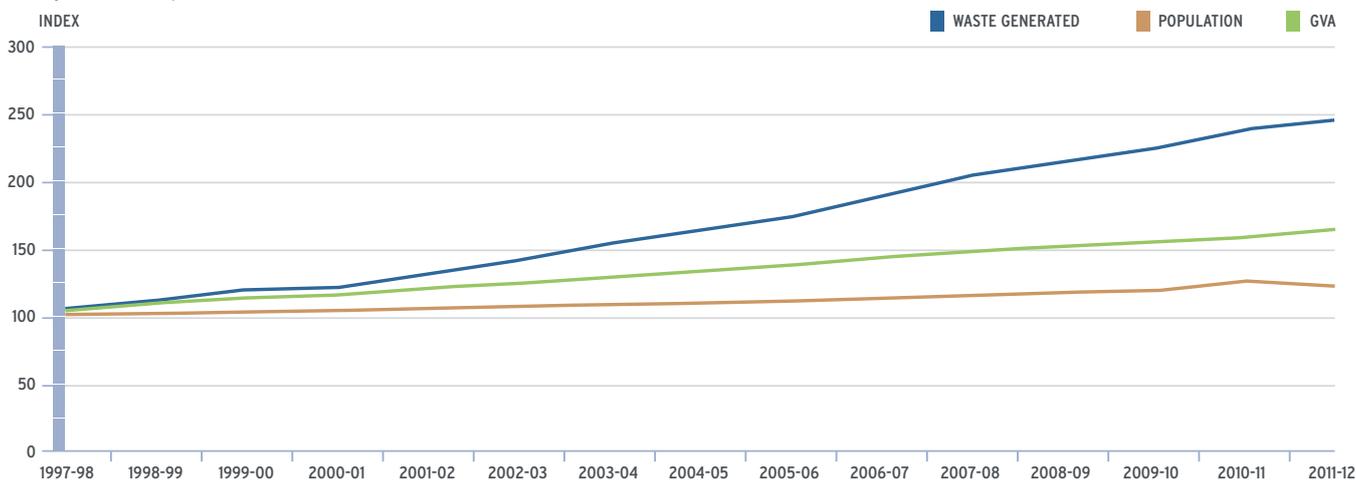
Estimates suggest each household produces close to 1.5 tonnes of waste each year. And nearly half (47% in 2009-10) of all household waste is organic - namely food scraps.<sup>2</sup>

One concern is that waste generation has been growing at a disproportionate rate. Between 1997 and 2012 - when overall population growth was 22% - the volume of waste production jumped by 145%.<sup>3</sup>

The problem here is that landfills are effectively an 'out of sight, out of mind' solution. They potentially have a detrimental impact on surrounding air, water and land quality. There are, however, better ways of managing wastes, especially food waste.

A by-product of anaerobic organic waste decomposition is a gas which consists of around 50% methane. Methane in the atmosphere is a strong contributor to climate change, being over 20 times more potent in this regard than carbon dioxide.<sup>4</sup> However, if captured and 'cleaned', it can be harnessed as a valuable renewable energy source. Using a food waste disposer can facilitate just that without the social dis-amenity associated with landfilling.

Waste generation, Population & GVA, 1997-2012



Source: Australian Bureau of Statistics Waste Generation, Population & GVA 1997-2012<sup>5</sup>

## Food waste and renewable energy

Instead of piling food waste into bins and, ultimately, landfill, food waste disposers can be used to grind food scraps which is then sent via the sewerage system to a wastewater treatment plant. Here appropriate facilities use a process called 'anaerobic digestion', to convert waste to biogas. Anaerobic digestion is a collection of processes by which microorganisms break down biodegradable material such as organic food waste in the absence of oxygen.<sup>5</sup> The anaerobic digestion process produces a biogas methane.

When cleaned, the methane fraction can be stored, pressurised and used to generate on-site power and heat. The power can be used on-site with surplus fed into the electricity grid. Methane can also be upgraded to natural gas-quality biomethane, and a by-product of the digestion process is a nutrient-rich digestate which can be used as fertiliser<sup>6</sup> for areas such as golf courses, playing fields and pasture lands.

## Anaerobic Digestion in Australia

The concept of using anaerobic digestion to produce valuable biogas and hence renewable energy has actually existed for many years. However the technology has continued to be refined and countries such as Denmark, Sweden and the UK are now championing a true paradigm shift in waste management. With that said, Australia's commitment to wastewater treatment is also growing.

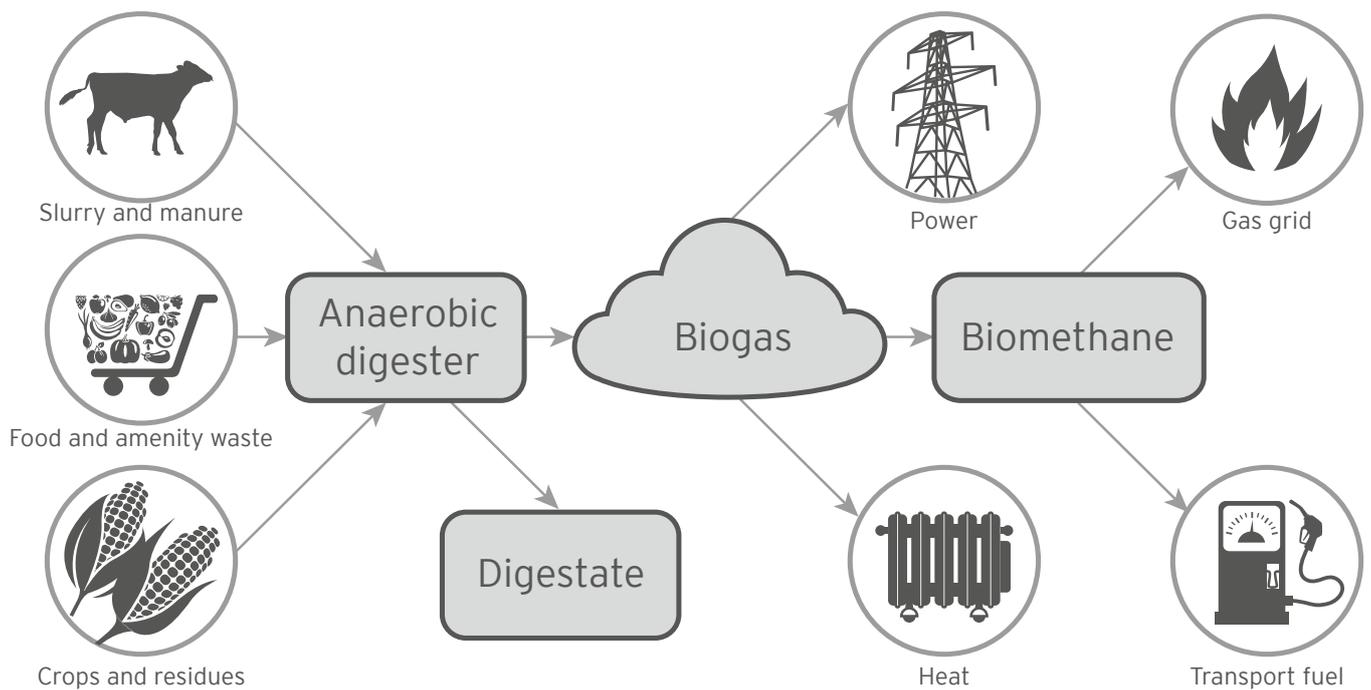
Sydney Water is just one of many wastewater treatment companies employing the process of anaerobic digestion, boasting 14 plants with anaerobic digestion facilities. Eight of the plants have cogeneration (biogas burned in engines to generate electric power), producing over 53,000MWh of electricity per year. Sydney Water aims to harness the natural anaerobic digestion process to maximise its renewable energy generation and possibly expand its services to customers beyond traditional water industry services.<sup>7</sup>

Anaerobic digester systems in Australia are continuing to be embraced due to further understanding of their benefits and the development of technologies. Over and above the

numerous wastewater treatment plants currently employing anaerobic digestion there are several organisations providing grants for construction of biogas plants and installation of digester systems. These organisations include Low Carbon Australia and the Australian government's Clean Technology Investment Program.

Yarra Valley Water has this year completed designs on its first dedicated Waste to Energy facility in the northern suburbs of Melbourne.<sup>8</sup> They have partnered Aquatec-Maxcon, an Australian Company specialising in industrial wastewater treatment and building is set to commence by the end 2014.

Other Anaerobic Digestion plants processing food waste in Australia include TPI/Veolia digester at Camellia, Biogas plant at Richgrow in Perth, plus several others. With more and more companies announcing their plans to invest in the construction of anaerobic digestion plants, adopting waste-to-energy technology, the way we view food waste disposal is set to change.



## InSinkErator® Food Waste Disposers

InSinkErator offers a quicker and more efficient way of dealing with food waste. On a household level, food waste disposers improve the convenience and hygiene of day-to-day kitchen function. Eliminating organic waste from bins can improve household comfort and reduce the risk of attracting vermin or causing odours, particularly when temperatures climb in the summer.

On a broader scale, however, they can reduce the amount of waste that goes into landfill, with the potential to convert food waste into renewable energy through anaerobic digestion processes which capture the gas generated. As we continue to embrace this technology as a nation, food waste disposers will play an increasingly pivotal role in a total waste management solution.



- <sup>1</sup> ABS - Waste Disposed to Landfill (1370.0 - Measures of Australia's Progress, 2010)  
[http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Chapter~Landfill%20\(6.6.4\)](http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Chapter~Landfill%20(6.6.4))
- <sup>2</sup> Anaerobic Digestion of Biowaste in Developing Countries  
<http://www.eawag.ch/forschung/sandec/publikationen/swm/dl/biowaste.pdf>
- <sup>3</sup> ABS - Waste Account, Australia, Experimental Estimates, 2013 - Waste Generation by Industry and Households  
<http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4602.0.55.005Main%20Features42013?opendocument>
- <sup>4</sup> The Role of Methane  
[http://earthguide.ucsd.edu/virtualmuseum/climatechange1/03\\_3.shtml](http://earthguide.ucsd.edu/virtualmuseum/climatechange1/03_3.shtml)
- <sup>5</sup> Biogass - Anaerobic Digestion  
<http://www.biogass.com.au/anaerobic-digestion.html>
- <sup>6</sup> Anaerobic Digestion of Biowaste in Developing Countries  
<http://www.eawag.ch/forschung/sandec/publikationen/swm/dl/biowaste.pdf>
- <sup>7</sup> Water - Journal of the Australian Water Association  
"Codigestion with Glycerole for Improved Biogas Production" M Dawson & S Fitzgerald
- <sup>8</sup> Yarra Valley Water Turning Your Waste to Energy  
<http://www.yvw.com.au/Home/Aboutus/Ourprojects/Currentprojects/WastetoEnergyfacility/index.htm>