Combustion of waste biomass

Some people have concerns about the combustion of waste biomass such as demolition timber, municipal refuse and industrial biomass waste. An example is Waste to energy plants 'wasteful'. The News-Westport, Westport by Lee Scanlon, 08 Jun 2018.

Combustion of waste biomass is no different than the combustion of wood. However, because some waste biomass may have contaminants the combustor may have to have a higher level of emissions treatment prior to discharges to air.

The concern	Misplaced information[1]	The truth
Burning waste was wasteful and discouraged recycling	More than 90 percent of the materials that ended up in incineration plants and landfills could be recycled or composted. Burning them to generate electricity discouraged efforts to preserve resources and encouraged generating more waste. It was typical for countries that encouraged waste burning to have low recycling rates. Data on household waste in Denmark clearly showed this trend - regions with high incineration rates recycled less and vice versa.	In NZ biomass that is used as a combustion fuel comes from the residuals after any good waste is recycled or reused. "Good" waste is not used as a combustion fuel. The waste hierarchy sets out that only residual waste that can't be recycled or reused is either composted of used as a fuel for the production of heat.
Waste was not an effective fuel.	Incinerators wasted large amounts of reusable materials producing small amounts of energy. On the other hand, recycling and composting could save up to five times the amount of energy produced by burning waste.	The biomass waste which is used as a fuel for the production of heat is little different than wood which may be used as a fuel. Both need pretreatment so that the biomass is in a form suitable for combustion.
Waste incineration was not a source of renewable energy. Incinerator companies often marketed WtE as a source of renewable energy.	But unlike wind, solar or wave energy, waste came from finite resources - minerals, fossil fuels, and forests felled unsustainably. Subsidies to support incineration could be better invested into environmentally friendly, energy saving practices like recycling and composting.	In NZ residual organic waste is defined as a renewable fuel.

[1] Zero Waste Energy

Continued

The concern	Misplaced information[2]	The truth
Burning waste produces toxic emissions to air	Even the most advanced technologies released vast amounts of pollutants that contaminated air, soil and water, and ended up entering the food chain. Incinerators were major emitters of carcinogenic pollutants and tiny dust particles that could lead to decreased lung function, irregular heartbeat, heart attacks, and premature death.	In NZ the Resource Management Act 1991 sets rules and procedures for controlling the emissions to air so that there is no adverse effects on anyone. The National Air Quality Standards specify the limits for pollutants in airsheds. An applicant for a resource consent for a facility that will discharge any contaminants to air must be able to demonstrate to the consent authority that they will have appropriate equipment and on-going monitoring of emissions so that any discharges will be below the specified national standards. The establishment of standards, rules and consent conditions are open to public scrutiny and participation. No toxic emissions would ever be allowed and if they occurred anyone can lodge a complaint with the consenting authority who must take appropriate action.
Burning waste contributed to climate change. Incinerators emitted more CO_2 (per megawatt hour) than coal-fired, natural gas-fired or oil-fired power plants.	Denmark, the poster child of Europe's incineration industry, recently discovered its incinerators were releasing twice the amount of CO_2 than originally estimated. This led to Denmark missing its Kyoto Protocol greenhouse gas reduction targets.	The fuels to produce process heat are relative with regard to their CO_2-e emissions. Thermal treatment of biomass and organic wastes to produce heat is less of an emitter than the combustion of fossil fuels. Combustion of biomass and organic waste is considered by the IPCC to be carbon neutral so the statement that it is worse than combustion of fossil fuels is clearly not true. The IPCC rules for calculating targets is well known.

[2] Zero Waste Energy

Continued

The concern	Misplaced information[3]	The truth
Waste incinerators were a financial burden. Incinerators were the most expensive method to generate energy and to handle waste, while also creating a significant economic burden for host cities. Many cities have ended up in debt because of them.	Others had been trapped in long term contracts compelling them to deliver a minimum quantity of waste for 20 to 30 years, to repay investment costs. Harrisburg, in Pennsylvania, in 2011 became the largest US city to declare bankruptcy due to financial costs of upgrading the city's incinerator.	Poor decision making should not be blamed on the technology. There are many facilities around the world which produce process heat or district heating from using biomass or organic waste as a fuel. Cities with good waste management plans will be able to decide what is the best methods for treating organic waste rather than to landfill. Organic waste can be a valuable resource for the sourcing of biochemicals, energy, and bio-fertiliser.
Burning waste created fewer employment opportunities than recycling. WtE plants offered relatively few jobs when compared to recycling, which created 10 to 20 times more jobs than incineration.		Production of energy from residual organic waste is not an alternative to recycling. Minimisation and recycling of wastes should always be the first priority. Only the residual organic wastes which can't be recycled should be used to produce energy or be used for composting.
Waste incineration didn't fit into sustainable circular economy	Incinerators destroyed valuable materials in a polluting manner. By reducing the volume but increasing the toxicity of waste, incineration replaced one waste stream with another. Incinerators extracted virgin materials only to waste them at the end.	Combustion of biomass to produce energy should only occur if the biomass can not be recycled for a higher value use. Combustion of biomass to produce energy is just one possible component in a circular economy where nothing is wasted. Anaerobic digestion of some "wet" organic wastes is another technology which can produce energy and bio-fertiliser from residual organic wastes.

[3] Zero Waste Energy

The concern	Misplaced information[4]	The truth
The world was embracing zero waste. Developed countries were shifting away from incineration.	Despite having some of the most advanced waste burning facilities, Europe had taken a first step to phase out incinerators. In the US, no new incinerators had been built since 1997 because of public resistance, health risks and high costs. In the EU, higher targets for organics management, recycling, waste reduction and waste diversion had caused incineration overcapacity. There were now more incinerators than waste available for burning. This has led countries like Germany, the Netherlands, United Kingdom, Sweden, Denmark and Spain to import trash from elsewhere.	Because some cities have made bad investment decisions shouldn't be blamed on the technology. Processing biomass and residual organic waste to produce energy and co-products is one of the tools from ensuring that the maximum value is extracted instead of landfilling. Combustion of biomass and anaerobic digestion of wet residual organic wastes are technologies which if designed and built correctly and managed optimally can occur in harmony with neighbouring communities with no adverse effects. A facility which is even noticed by neighbours has not been well designed or operated. This should never occur.

[4] Zero Waste Energy