

CACE Biochar Fact Sheet

Community Action in the Climate Emergency V1.02 Last edited 26 Jan 2019_a

What is biochar?

Biochar is an agricultural grade charcoal that is used as a soil enhancer. Forms of biochar have been in use around the world for 1000's of years. See for example: <https://www.esenergy.com.au/biochar>

What are the benefits of biochar to the soil?

Biochar has a range of scientifically established benefits including:

- Water holding capacity
- Nutrient holding capacity
- Promotional of positive fungal and bacterial functions
- Reducing acidity in soil
- Reducing nutrient run off.

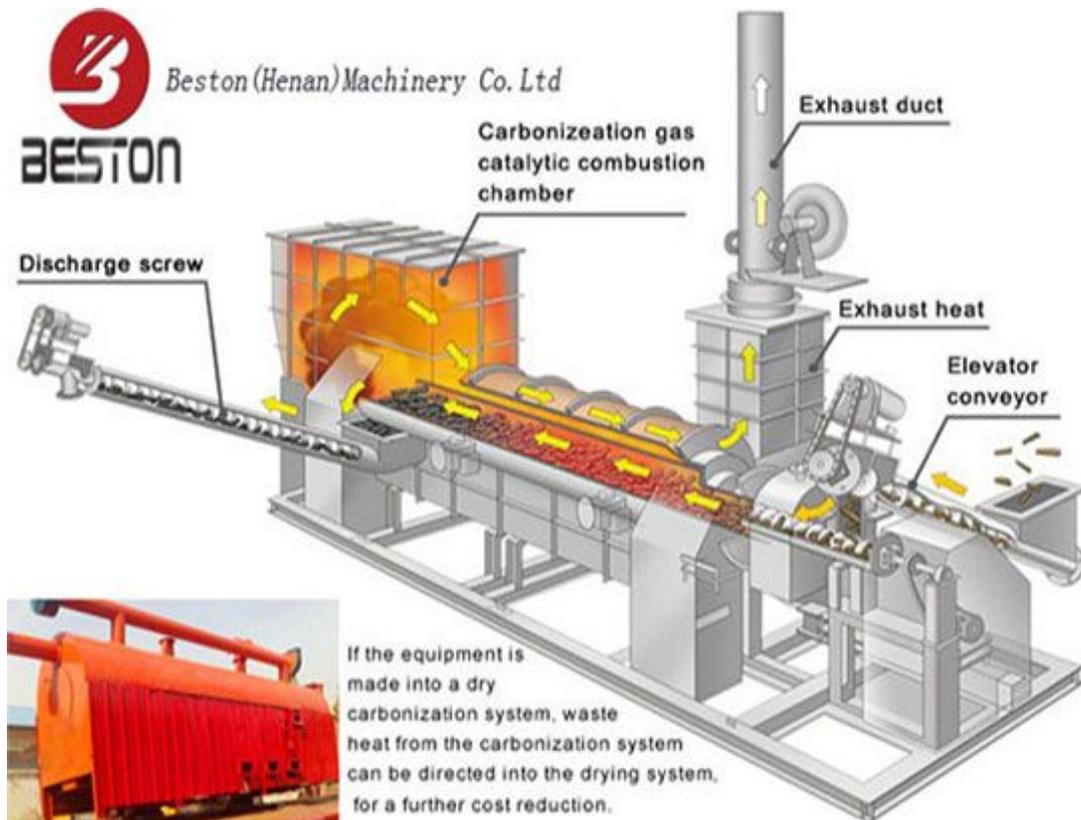
If pre "charged" with nutrients it can act as an effective slow release fertiliser. Biochar can also be beneficially fed to animals such as cattle where it supports the digestion and health of the animal and is eventually returned to the soil through the animals dung. Biochar is sold commercially around the world. See the NSW Department of Primary Industries

<https://www.dpi.nsw.gov.au/content/research/topics/biochar> for more information of benefits.



How is biochar made?

Biochar is made by heating organic matter in a low oxygen environment and allowing a pyrolysis reaction to take place. This can be done at an industrial scale down to a backyard scale.



See <http://wasterecyclingplant.com/biochar-making-machine/> or <https://pacificbiochar.com/bigchar-biochar-production-technology/>

Why biochar in the climate emergency?

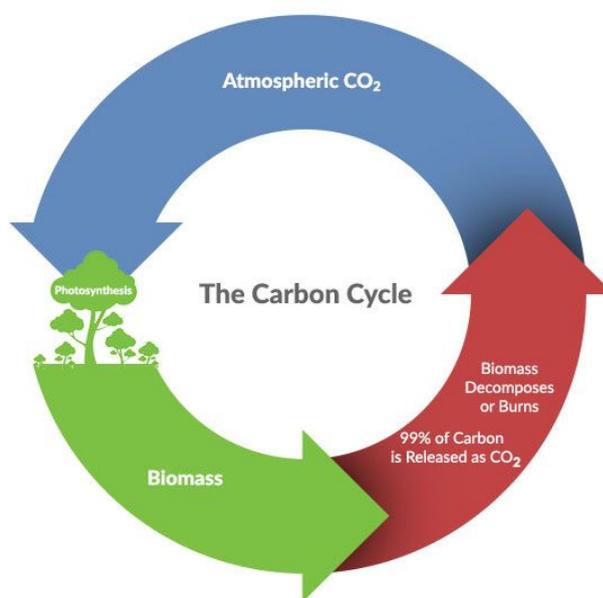
Importantly biochar is **one of the few options** for councils to **directly contribute to drawdown** of past and current CO₂ emissions. Estimates for the drawdown potential of biochar range between 10-20% of Australia's current yearly emissions if all available biomass was used (excluding residue from native forest logging and land clearing) combined with some additional biomass grown specifically for the dual goals of biochar production and agricultural soil remediation (e.g. salinity and erosion control).

Other options to draw down past and current emissions include revegetation or soil carbon building, which in most cases replaces the carbon lost when the land was originally cleared.

Biochar can potentially reduce emissions in other ways:

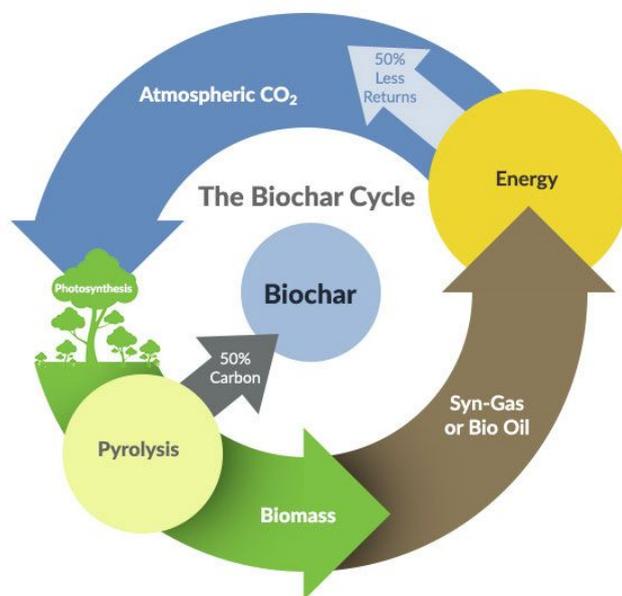
- reduce agriculture emissions (from reduced nitrous oxide from soil, fuel and fertiliser use, and water use efficiency)
- decreased emissions from waste biomass (including avoided methane generation from landfills and compost production)
- increased agricultural productivity (increased biomass yields create a positive feedback loop)
- increased sequestration new soil carbon.

See <http://pacificpyrolysis.com/technology.html#carbon>



Other options for council biomass disposal that don't produce any significant drawdown include:

- burying organic waste in sealed tips - the carbon converts to methane which must be managed.
- composting - supporting agriculture and food growing but carbon returns rapidly to the atmosphere as CO₂ or methane
- converting green waste to mulch - carbon returns rapidly to the atmosphere
- burning the biomass for energy - producing energy but no drawdown



How could your council make its own biochar?

Many municipal areas produce significant volumes of green and organic waste. This waste could be treated in a biochar facility. The facility might service just one or a number of councils for better economic outcomes. Economics depends upon factors such as feedstock, carbon pricing policies, productive use of waste heat, the market for biochar and size of the facility. Biochar is being made by councils in the USA, Australia (<https://climatesafety.info/thesustainablehour204/#drawdown>) and Sweden (http://www.nordregio.org/sustainable_cities/stockholm-biochar-project/)

For more information see: <http://www.caceonline.org/nuts-and-bolts-toolbox.html>