

# Biochar

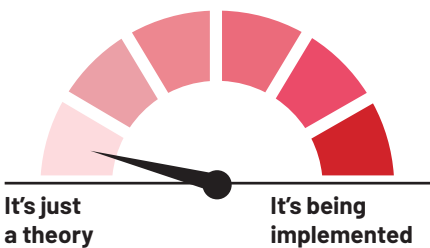
**POINT OF INTERVENTION**



**OVERVIEW**

Biochar describes a method of converting biomass into charcoal and then mixing it into soils to store the burnt carbon. The charcoal is produced through a process known as pyrolysis, where organic material undergoes decomposition in very low oxygen and high temperature conditions. The resulting solid residue is highly enriched in carbon and called “char.” Promoters of biochar point to Amazonian Terra Preta black soils, where indigenous groups bury charcoal and other organic matter to enhance their soil’s fertility. Used on today’s crops, however, the claim that biochar boosts

**REALITY CHECK**



Biochar for sale as a soil enhancer (Green Energy Futures)

agricultural productivity has not been consistently demonstrated. In order to be effective, biochar would need to be produced at an industrial scale and would require large land areas for biomass plantations to be turned into charcoal. In fact, in the first peer-reviewed biochar field trial, researchers were surprised to find that biochar-treated soils sequestered less carbon than other soils: adding more carbon stimulated the soil microbes to release more

CO<sub>2</sub>.<sup>1</sup> Other schemes involve “waste-to-biochar,” where so-called forestry and agricultural wastes are converted to charcoal.

**ACTORS INVOLVED**

Shell has been involved in the International Biochar Initiative and their chief Lobbyist, David Hone, is evangelical about “negative emissions.”<sup>2</sup> Expanding biochar research has since been funded by ExxonMobil, Chevron and Encana.

Corporate support has mainly come from the Canadian tar sands industry. Cenovus is planning a tar sands “waste-to-biochar” reclamation project, co-owned by Conoco Philipps,<sup>3</sup> who have been promoting biochar among a wider range of ‘carbon sequestration’ geoengineering approaches as one way of ‘greening’ the image of one of the world’s most destructive industries.

Biochar is also being promoted by geoengineering proponents such as the Gates Foundation and Richard Branson’s Carbon War Room. Small biochar projects in the Global South continue to multiply. Few of them are accompanied by scientific studies and many appear to serve mainly to try and attract greater investment for biochar.<sup>4</sup>

### IMPACTS

In 2010, Nature Communications published an article suggesting that 12% of the world’s annual greenhouse gas emissions could be offset with “sustainable biochar”.<sup>5</sup> This figure assumed that 556 million hectares of land would be converted to biochar production, an area 1.7 times the size of India, and confirmed fears that an ambitious global biochar programme would require land-conversion to plantations on a vast scale.<sup>6</sup> Demand for biomass is already harming biodiverse ecosystems and replacing them with industrial, chemically-dependent, monoculture deserts.

// **Cutting natural forests for biomass electricity, or biochar, or any other use results in a massive “carbon debt” that can take decades or even centuries to repay.** //

And land grabs for biofuels are already resulting in violent evictions and human rights abuses worldwide. Even if biochar projects are small and do not result in land-grabbing, small farmers can still lose out as a result.<sup>7</sup>

A widely promoted idea is for biochar to be produced in modern pyrolysis plants which also generate heat and electricity. However, such

systems are not technically proven at a commercial scale. Virtually all biochar sold at present and most of the biochar used in scientific studies has been produced through traditional charcoal making methods.<sup>8</sup>

Traditional charcoal making is so inefficient that up to 90% of biomass carbon is lost as CO<sub>2</sub> to



Biochar (Marcia O'Connor/Creative Commons)

the atmosphere in the process.<sup>9</sup> Similar to biomass electricity, biochar proponents claim that burning biomass is “carbon neutral” because the carbon released during combustion will be reabsorbed by new trees or crops. This claim has been soundly and repeatedly refuted.<sup>10</sup> Trees take years to regrow, assuming that they even do so.

have been expanded to include virtually any wood that is not valued as saw logs, so timber harvests are more intense and destructive. In agriculture, there are often better options for residues, such as compost, mulch, animal fodder, and bedding. Industrial forestry and agriculture practices have already wreaked havoc on ecosystems;

**FURTHER READING**

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*// There is no such thing as “waste” in a forest ecosystem – everything is recycled, via decay, to support regeneration and regrowth. //*

Cutting natural forests for biomass electricity, or biochar, or any other use results in a massive “carbon debt” that can take decades or even centuries to repay (i.e. for an equivalent amount of carbon to be reabsorbed in new tree growth).<sup>11</sup>

Biochar proponents also insist that they won’t cut forests or convert ecosystems to provide burnable biomass. Just like the biomass electricity industry, they prefer to talk about burning “wastes and residues.” But there is no such thing as “waste” in a forest ecosystem – everything is recycled, via decay, to support regeneration and regrowth. In many places, definitions of waste

creating a market for the waste products of unsustainable practices is not a step in the right direction.<sup>12</sup>

**REALITY CHECK**

Despite the concerns around biochar, the number of biochar projects has continued to grow worldwide. A World Bank funded survey in 2011 identified 150 biochar projects in 38 developing countries.<sup>13</sup> However, developers commonly announce successful results without scientific scrutiny or publishing peer-reviewed results. Currently, at least 114 biochar trials are taking place or have done recently throughout the world, with a number of pilot pyrolysis plants being built.<sup>14</sup>

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4. Biofuelwatch, "Biochar: Unproven claims," Factsheet, 2013, <http://www.biofuelwatch.org.uk/2014/biochar-3pager/>
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