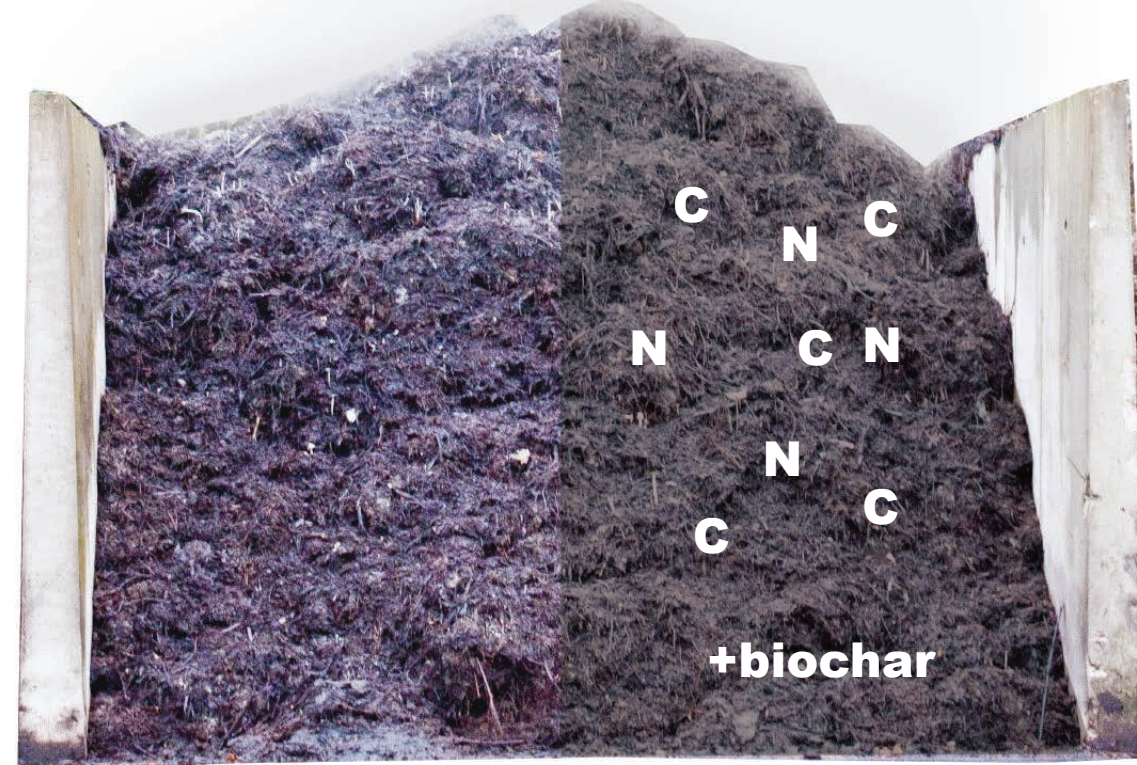
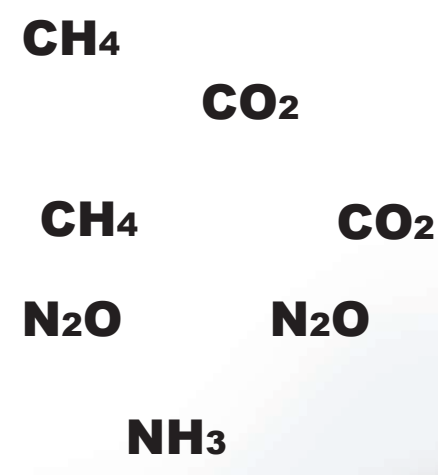
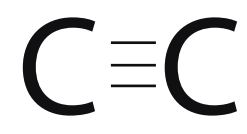
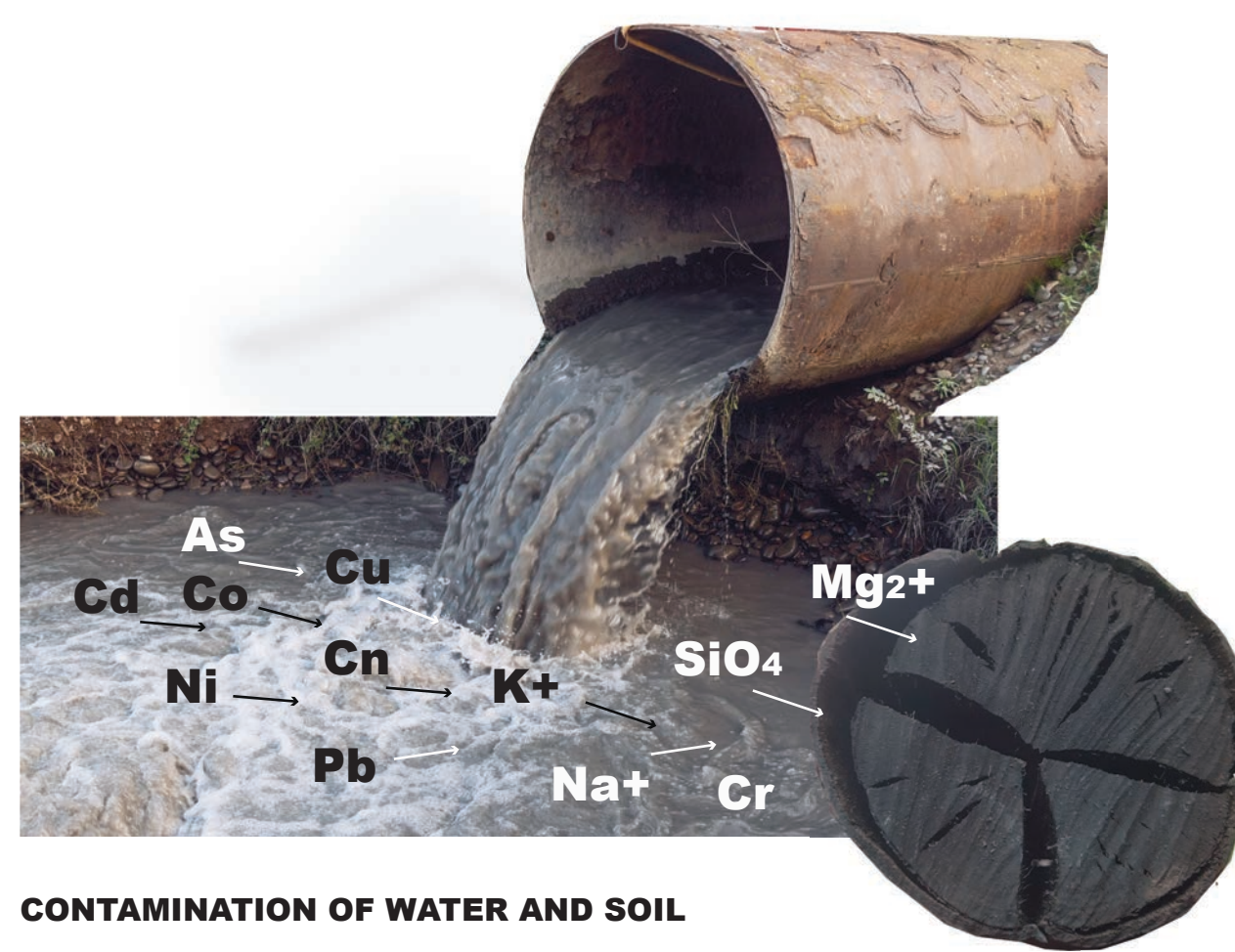


## BIOCHAR



COMPOST



CONTAMINATION OF WATER AND SOIL

Numerous studies have evaluated the impact of biochar on organic waste composting. Its advantages lie in:

- (1) improving aeration conditions
- (2) reducing odors and GHG emissions
- (3) accelerating the decomposition and humification of organic matter (OM)
- (4) reducing N losses mainly originating from ammonia (NH<sub>3</sub>) volatilization
- (5) improving the quality of end compost
- (6) reducing the bioavailability of heavy metals
- (7) providing a suitable habitat for microorganisms and thus enhancing their activity

(Shaohua Wu et al. 2017 Role of biochar on composting of organic wastes and remediation of contaminated soils—a review).

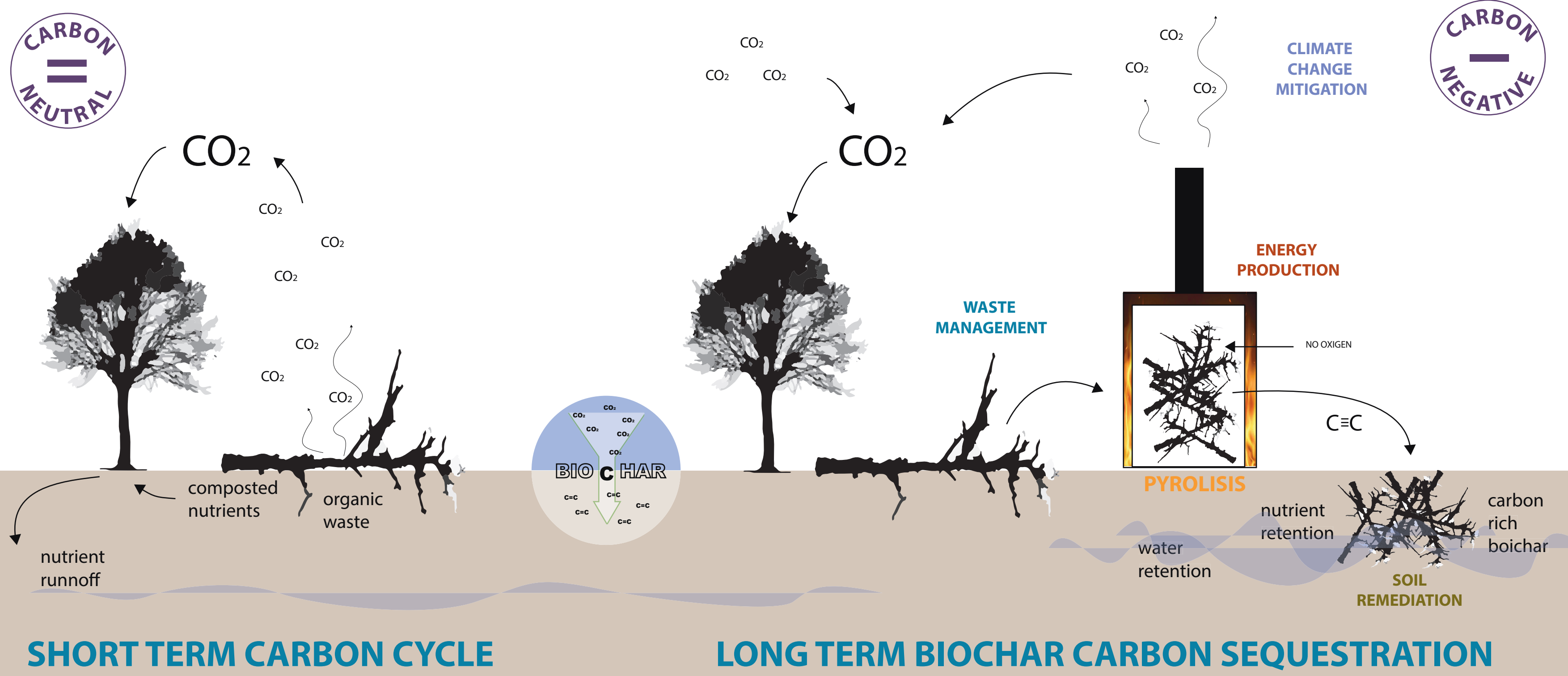
The possible mechanisms of biochar interactions with heavy metals are:

- (1) electrostatic interactions between metal cations and negatively charged biochar or soil surfaces.
- (2) ligand complexation involving in the surface functional groups of biochar .
- (3) cation exchange with Na<sup>+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>, Al<sup>3+</sup>, and other cations associated with biochar .
- (4) precipitation or co-precipitation by forming oxides, hydroxides, phosphates, carbonates, silicates, and chlorates .
- (5) sorptive interactions between d-electrons of metals and delocalized π-electrons of biochar.
- (6) the increased soil DOC and pH by biochar

(Shaohua Wu et al. 2017 Role of biochar on composting of organic wastes and remediation of contaminated soils—a review).

### Terra Preta de Indio - Amazonian Dark Earths

The use of biochar, or black carbon, as a soil amendment has received increased attention since the discovery of the Terra Preta de Indio soils (approximately 7000 year old anthropogenic influenced soils) in the Amazon. It is proposed that these soils have received historical applications of charcoal, which provide a number of beneficial properties to the soil today. Studies on the Terra Preta de Indio soils have shown that they have greater cation exchange capacity, fertility, and nutrient retention, and stable stored carbon compared to nearby pedogenically similar soils. <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/terra-preta>



### URBAN FEEDSTOCK

