

A COMMERCIAL CYCLE → FOR BIOCHAR MARKETS

A model to assist the BIOCHAR INDUSTRY by identifying the diverse community participants in a largescale biochar–CARBON commercial cycle, showing how each sector links to others, and how everyone can invest in and benefit from making and using BIOCHAR, a stabilised carbon made from sustainable waste-biomass material.

**Making and using biochar contributes to “EARTH-CARE” management goals —
(1) utilise waste, (2) support healthy soils, (3) sequester CO₂eqv gases**

By K. Enkelaar, Tasmania, Australia. Third Edition, October 2021

2 FEEDSTOCK SUPPLIERS

Waste-biomass audits by Information Bodies identify largescale **feedstock** suppliers and **applicants**, such as:

- plantation/private-forest thinning
- parks fire-hazard reduction programs
- biomass-manufacturing residues (timber, poppies, bioenergy, etc.)
- civil works (road/suburb clearing)
- weeding, trimming, pruning, mowing (e.g. Landcare/NRMs, farms, golf courses, botanic gardens, campuses, council collections/maintenance, etc.)

1 INFORMATION BODIES: ANALYSE, EDUCATE and PROGRESS

The cycle begins with Information Bodies:

- **Industry sector developers** (representative groups, agronomists, consultants, etc.)
- **Public-sector administrators** (all forms of government, incl. EPAs, CSIRO)
- **Researchers, scientists, teachers**, etc.

These important bodies are funded to perform data-collection and audits, analyses, forecasts, and **record** all **investments**. They link, guide and educate all biochar makers and users in the commercial cycle. They may create and record how biochar contributes to a carbon/GHG/CO₂eqv credit/offset/trading scheme.

10 END PRODUCT CONSUMERS and FEEDBACK

Consumers purchase biochar-related products, having been given knowledge from the Information Bodies and processors/advertisers about the individual and largescale-environmental benefits of their purchase and use.

By purchasing these items, consumers could also be investing in **CO₂eqv credits**.

Finally, the general public responds and provides feedback to the Information Bodies and processors about their experiences and health outcomes after using biochar-related products.

3 WASTE-BIOMASS PROCESSORS

Purchase the waste feedstock and supply equipment and labour to **organise/refine** it, if needed, for pyrolysis:

- collecting
- sifting/sorting/cleaning
- chipping/milling
- drying
- transporting, etc.

Collection of and work done on feedstock waste may affect its price/value

4 TECHNOLOGY SUPPLIERS

Engineer, make and sell technology to create, process and manage biochar:

- gasifiers and retorts, etc.
- energy capture, conversion, storage
- driers, mills, augers, conveyors
- packaging, handling, storing, transporting biochar (e.g. recycled and reusable plastic gabion walls/effluent and run-off filters for dairies or sewerage systems, urban drains, construction sites, etc.)
- specific waste digesters/ponds

5 BIOCHAR MAKERS

Buy technology and, using their own or purchased feedstock, create biochar *different grades* and wood vinegar—to keep for own use, or to sell wholesale to retail biochar markets

Note: This can include “engineered biochar” mixed feedstock and mineral combinations

*Feedstock value may raise its grade and its **cost value**.*

6 USERS OF WHOLESALE/RETAIL BIOCHARS

Depending on their quality, the wholesale biochars can be purchased by public and private organisations and be used for the following suggested purposes. This purchase could also be linked to a **carbon/CO₂eqv**-trading/offset/credit scheme that is organised, recorded and maintained by the Information Bodies:

A. Uncontrolled-quality biochars (grades made from unqualified or inconsistent feedstock):

- Urban- or farm-water run-off drainage
- Sewerage effluent filters
- Contaminated site remediation
- Compost additive for horticulture where there is *no* ingestible interface (fairways, flowers, trees)

B. Controlled-quality biochars (grades made from qualified, untreated and consistent feedstock):

- Compost additive for horticulture and pastures/agriculture where there *is* an ingestible interface
- Farm-effluent capture or anaerobic digestion systems (dairies, calf sheds, fish farms, etc.)
- Weed, etc., barriers surrounding the base of fruit trees or vines (see bees and “guttation”)
- Digestive aids (like activated charcoal)
- Personal hygiene and cleaning products (e.g. toothpastes, face masks, soaps)
- Building- and road-material composites
- *More uses to be found with waste combinations.*

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By K. Enkelaar, Tasmania, Australia. Full Version. Second edition, June 2020

This disk on which these biochar-cycle participants sit symbolises their community connection to one another on a micro level, and all communities’ links to planet Earth on a macro level, all contributing to widescale “Earth-care management” that utilises waste, raises soil health, and sequesters CO₂eqv gases

9 PROCESSORS and RETAILERS/ MARKETERS/ADVERTISERS

These have an important role in the cycle by being the interface between consumers and growers, whose produce they buy. In collaboration with Information Bodies, they are crucial in educating markets that their biochar-related products demonstrate:

- Responsibility to land managers by ensuring that sustainable land-care as well as **Earth-care management** is being applied in the growing of their products
- Responsibility to consumers in branding and advertising about the growing practices and health benefits of their products (i.e. sustainable land/Earth management; and economic and social support to allow for the longevity and pride of **rural communities**, particularly positive for engaged **rural farming youth**)

8 GROWERS/PRODUCERS/LAND MANAGERS

Biochar-fertilisers are purchased by growers and land managers to transition to organic production and sustainable, regenerative **Earth-care** farming practices. It is up to the Information Bodies and processors to recommend to and guide growers and land managers on the following benefits about biochar-fertilisers (for example):

- They are less harsh on soils or seeds, contain soluble organic matter to enrich soils and, with carbon, are less likely to leach so they will remain available to plants for longer than conventional fertilisers.
- Given that **this organic fertiliser application assists with holding nitrogen, phosphorus, water and stabilised carbon** in soils, their purchase and use could attract high-level CO₂eqv credits/tax offsets.

The higher the demand for these fertilisers, the more efficiently they could be produced in the cycle, and the cheaper they might be for growers and land managers.

7 INOCULATED-BIOCHAR/FERTILISER PROCESSORS

Biochars inoculated or enriched with wastes, manures or digestates that are sold and collected from dairies, farms and waste utilities can be purchased by composters and fertiliser companies to process and sell:

A. Unqualified-grade biochar-fertilisers for:

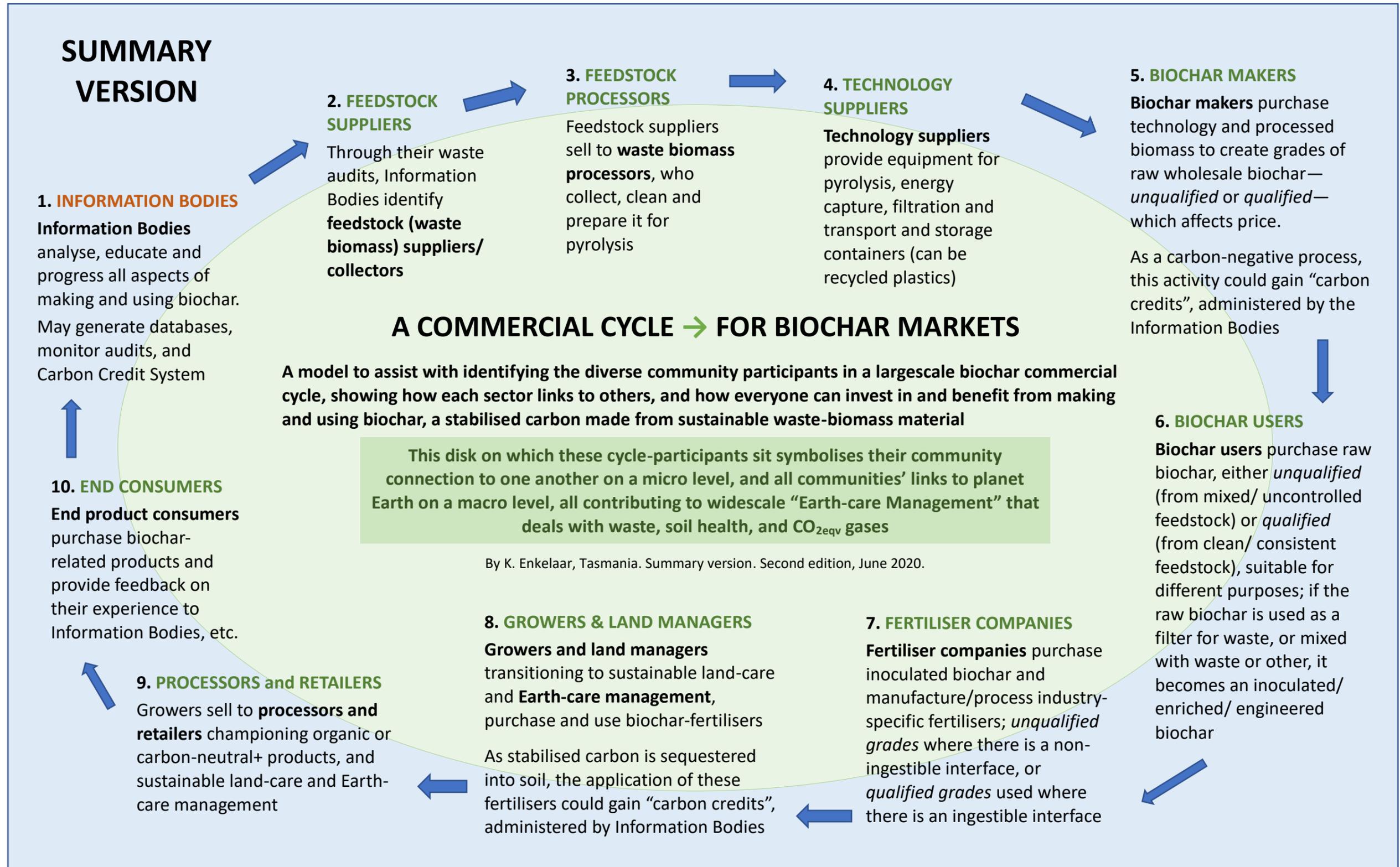
- Broad-scale civic uses – public gardens, golf courses, mine-site remediation, etc.
- Non-ingestible horticulture (flowers, trees, etc.)

B. Qualified-grade biochar-fertilisers for:

- Broad-scale cropping, orchards, vineyards, etc.
- Animal pastures, sports fields

These fertilisers can be manufactured into formats to suit each industry destination so they can be applied using existing equipment (i.e. no new equipment should be needed). Their purchase could gain carbon credits.

Summary Version



MINI Version

