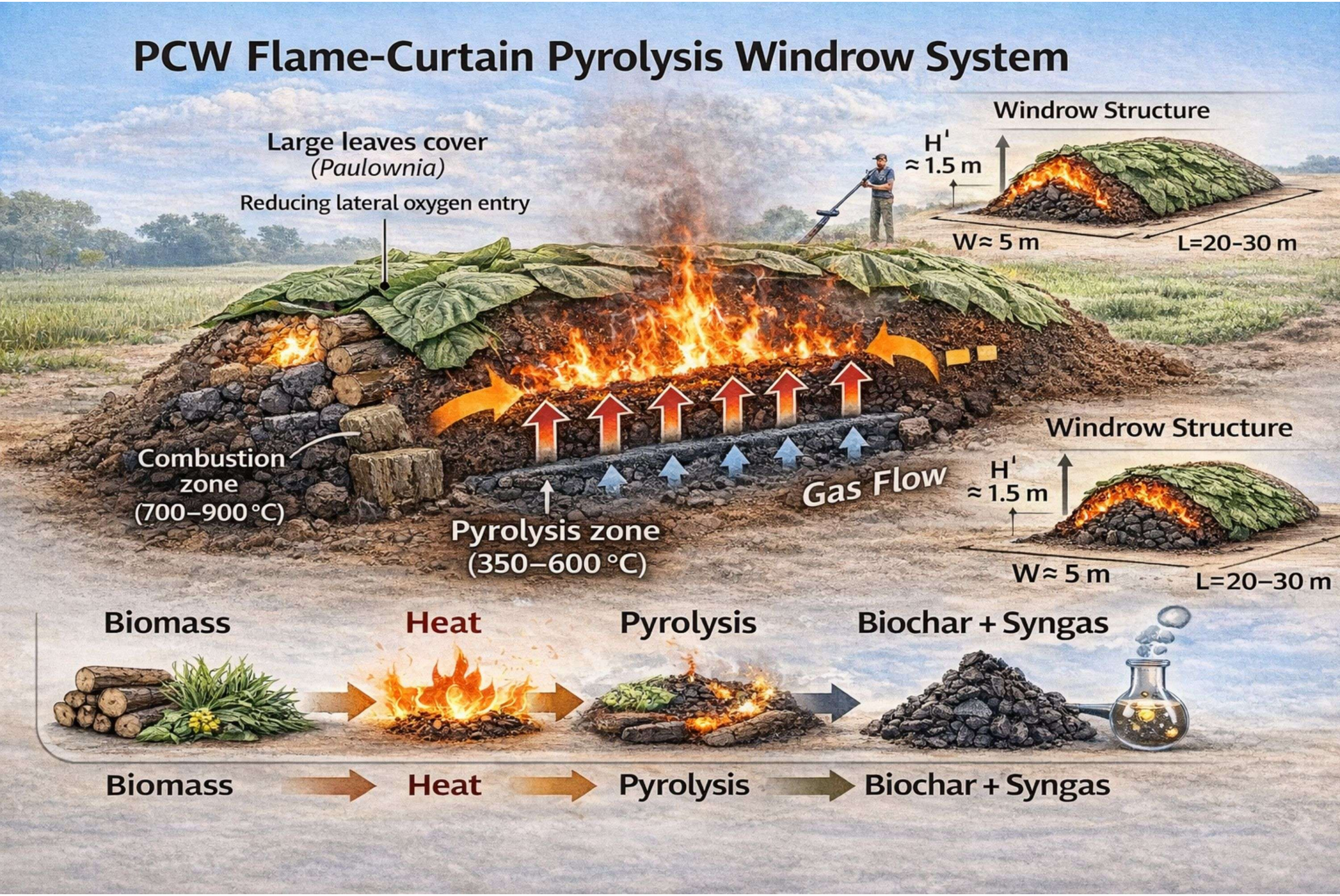
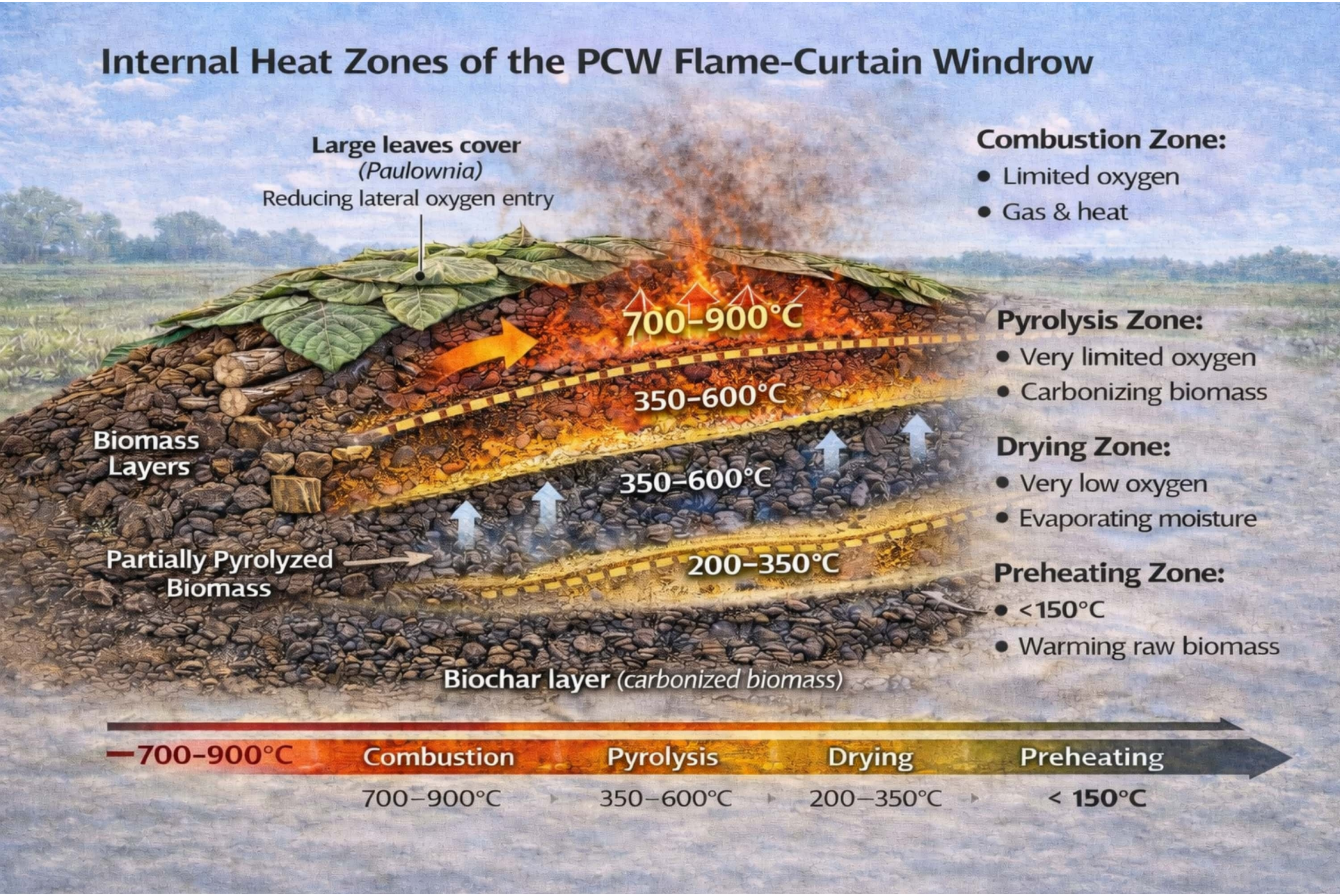


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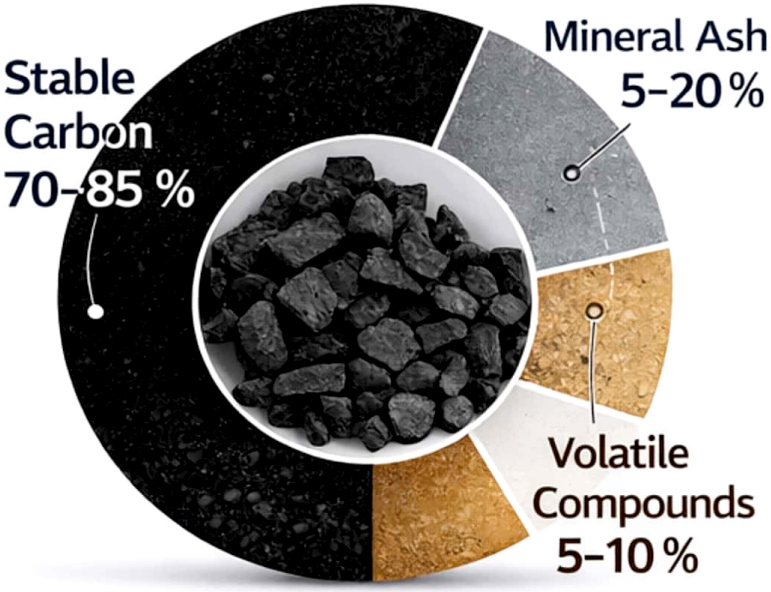


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Carbon Composition and Sequestration Potential of Biochar

Flame-Curtain Pyrolysis Windrow (PCW) System • Sustainable Carbon Storage

BIOCHAR COMPOSITION

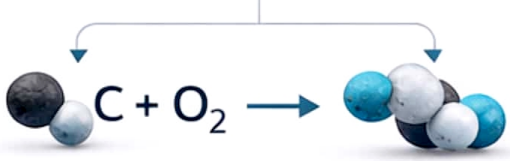


CARBON CONVERSION

1 ton of Carbon (C)

=

3.67 tons of CO_2



EFFECTS ON SOIL



Long-term carbon sink



Improves soil fertility



Reduces emissions



Enhances water retention



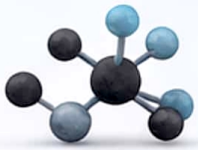
Increases microbial activity

PRODUCTION EXAMPLE



25 t biochar / ha

STABLE CARBON



≈ **18** t Carbon

CO_2 SEQUESTERED



≈ **65** t CO_2-eq

STABILITY DURATION: **100 - 1000 years** in soils

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Comparison of Biochar Production Methods

Method	Principle	Biochar production cost	Biochar yield	CO_2 emissions in use	Production per hectare	Complexity
Industrial pyrolysis plant	Controlled closed reactor	$800 – 2000 /t	30 – 40 %	**Low** but depends on biomass transport	Depends on feedstock supply	**Very high**
Artisanal metal kiln	Limited oxygen combustion	$200 – 600 /t	20 – 30 %	**Moderate** (smoke)	**Low**	**Medium**
Kon-Tiki / flame curtain	Open pyrolysis with gas combustion	$50 – 150 /t	30 – 40 %	**Low** (burned gases)	**Medium**	**Low**
In-situ agricultural pyrolysis	In-field pyrolytic windrow	$5 – 50 /t	35 – 45 %	**Very low** (burned gases)	**Very high**	**Low**

Estimated net CO_2 balance (order of magnitude)

Method	CO_2 emitted during production	CO_2 stored per ton of biochar	Overall balance
Industrial	→ High	High	Positive
Artisanal	→ High	Medium	Moderate
Kon-Tiki	→ Low	High	Very positive
In-situ	→ Very low	Very high	Extremely positive



Cost | CO_2 emitted during production | CO_2 stored per ton of biochar | High | Medium | Low

The **in-situ agricultural system** is the most **cost-effective, productive** and **climate-friendly.**

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GLOBAL CARBON SEQUESTRATION POTENTIAL

— OF THE **PCW (IN-SITU AGRICULTURAL PYROLYSIS)** SYSTEM

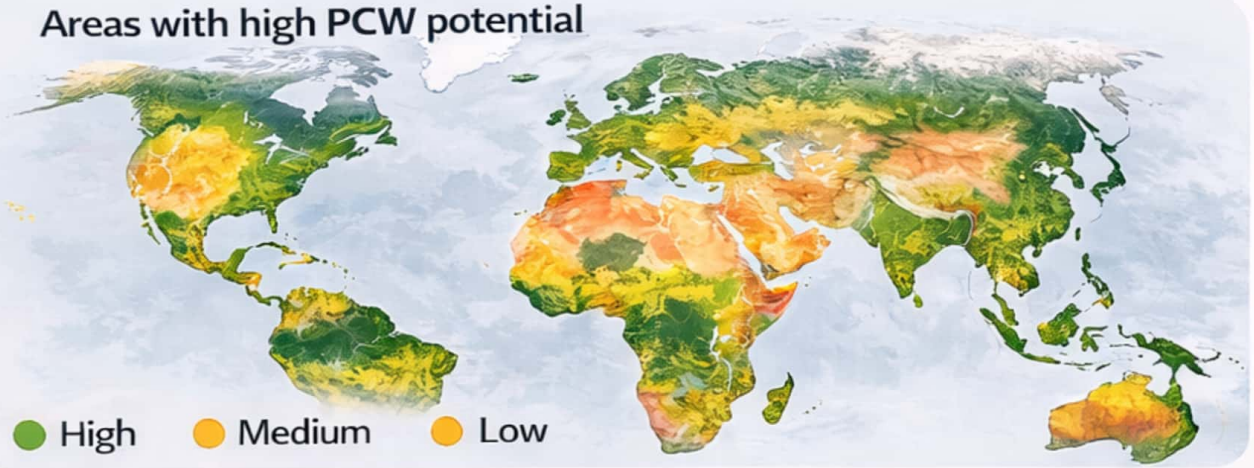
Agricultural land suitable
1–2 Billion ha
(~20% of global farmland)

Potential biochar production
1.6 – 3.2 Gt
per year

CO_2 sequestered
3 – 6 Gt CO_2
stored per year
(~11–15% of global CO_2 emisions)

Yield increase
+10 – 25%
crop productivity

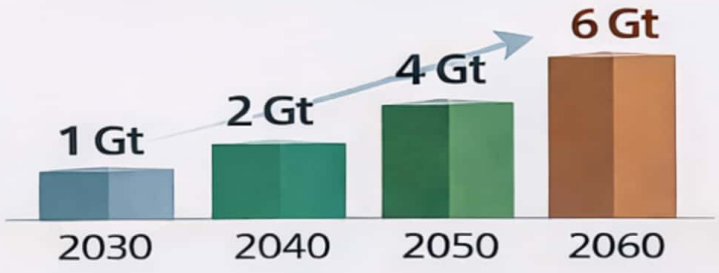
Areas with high PCW potential



Impact on soil & climate

- Improves soil fertility
- Reduces erosion & drought
- Captures long-term carbon
- Restores degraded lands

Annual carbon storage potential



Cost advantage

- Industrial
- Artisanal
- Kon-Tiki
- In-situ PCW

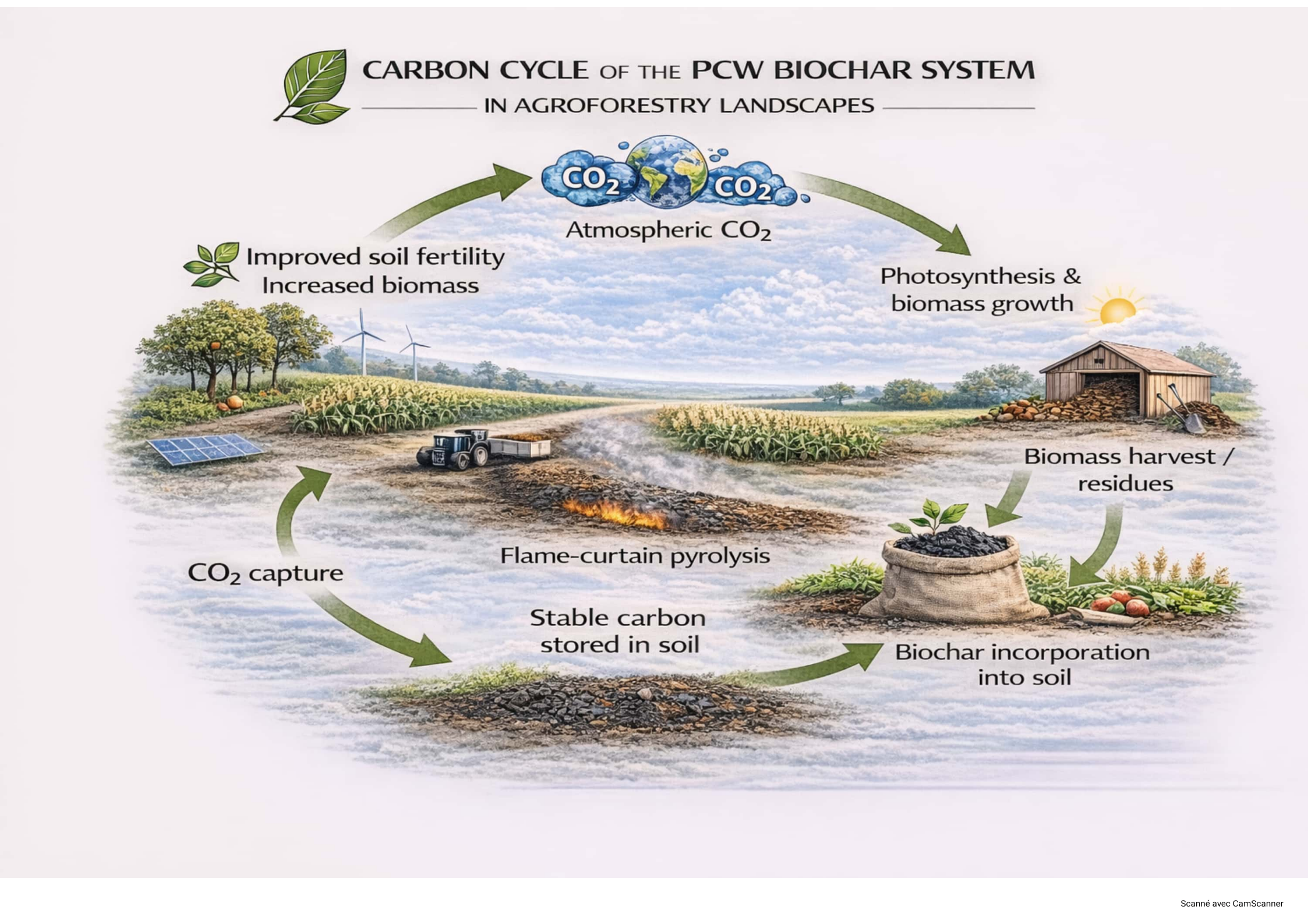


A scalable climate solution



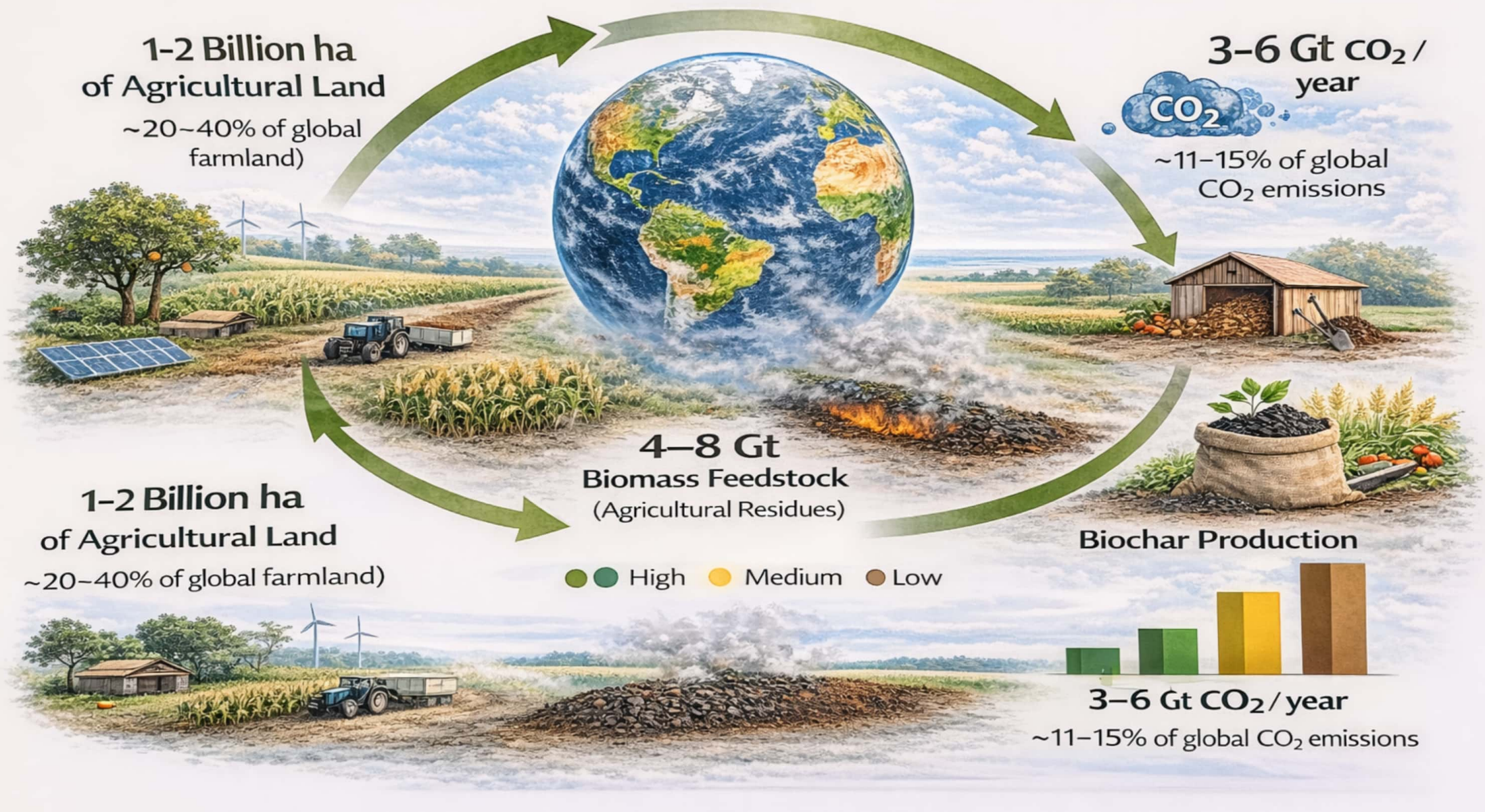
PCW in-situ pyrolysis is a scalable, low-cost and high-impact solution for climate mitigation.

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Global PCW Biochar System Deployment Model



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