SANAATCHI
INDUSTRIAL VISION GROUP

# Biochar Production Line

Complete Turnkey Business Proposal


*Made-in-China supplier reference: real biochar production line equipment.*

| | | | |
|---|---|---|---|
| **200-300 kg/h**<br>**continuous option** | **1 feed**<br>**controlled residue** | **sealed cooling**<br>**fire control** | **6-10**<br>**entry workforce** |

Prepared for investment planning in Afghanistan and regional export markets. Final specifications, pricing, civil works, and utility loads require supplier quotation and site survey.

# Executive Summary

A micro/small controlled-pyrolysis line converting one clean Afghan crop or wood residue into soil-grade biochar through feedstock identification, contaminant removal, size control and drying, oxygen-limited batch retort or small continuous carbonization, syngas afterburn and flue-gas treatment, sealed oxygen-free cooling, optional crushing and screening, safe conditioning, laboratory characterization and dust-controlled packing. It is distinct from activated carbon and fuel-briquette production.

## Why this project fits Afghanistan

- Orchard prunings and clean crop residues can become a stable soil-carbon product.
- A controlled retort prevents the smoke and fire risks of open pits.
- One feedstock produces more consistent carbon and ash results.
- Environmental approval, PAH testing and local soil trials are essential.

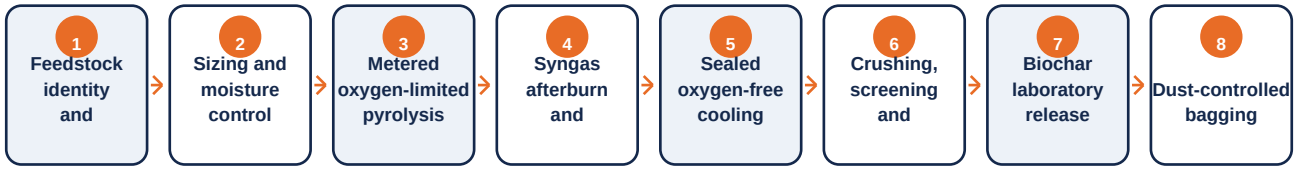
## Sanaatchi delivery scope

- Factory setup planning, supplier pre-qualification, and technical comparison
- Complete production-line and individual equipment supply
- Factory layout, utilities, civil-work coordination, installation, and commissioning
- Raw-material sourcing, trial-batch qualification, and repeat supply planning
- International logistics, customs documentation, operator training, spare parts, and after-sales support

| | |
|---|---|
| **Recommended configuration** | Start with one naturally dry pruning or clean wood-residue feed and a sealed batch retort or 200-300 kg/h continuous reactor only if the supplier includes controlled feeding, gas-tight discharge, afterburner, particulate treatment, temperature logging and sealed cooling. Sell only after independent soil and contaminant tests; do not claim activated-carbon adsorption performance. |

# Manufacturing Process & Product Portfolio

## Integrated process flow




## Target products

| Product | Typical specification | Primary market |
|---|---|---|
| Soil-grade biochar | Feedstock, production temperature, particle size, moisture, ash, fixed carbon, pH, EC, stability, metals and PAH limits | Soil amendment and compost blending only after local agronomic trials |

Biochar is not activated carbon and must not be marketed for drinking-water or medical purification. Acceptance measures mass balance, temperature/residence profile, oxygen leakage, syngas combustion, visible emissions, cooling safety and yield. Independent testing covers fixed carbon, volatile matter, ash, pH, EC, nutrients, metals, PAHs and stability using a named biochar method.

# Core Equipment Schedule

| Step | Equipment | Function | Indicative parameter |
|---|---|---|---|
| 1 | Feed cleaner, crusher and dryer interface | Prepares one residue safely | Moisture limit fixed |
| 2 | Sealed retort or continuous carbonizer | Runs oxygen-limited pyrolysis | Logged temperature |
| 3 | Afterburner and gas-cleaning train | Destroys vapors and controls particles | Environmental design |
| 4 | Gas-tight discharge and sealed cooler | Prevents re-ignition | No hot open discharge |
| 5 | Crusher, screen and dust extraction | Produces selected biochar size | One soil grade |
| 6 | Biochar laboratory and bagging | Releases safe traceable product | Named test methods |

Equipment models are indicative and will be matched to the selected capacity, local raw-material tests, available utilities, and preferred automation level.

# Reference Equipment Gallery


*Made-in-China supplier reference: real biochar production line equipment.*


*Made-in-China supplier reference: second real machine configuration for biochar production line.*

Images are supplier references for configuration discussion; final equipment appearance and model may differ.

# Plant, Raw Materials & Utility Requirements

## Raw materials

- One clean documented pruning, shell or wood-residue feed
- Water only for validated conditioning after complete cooling
- Fire-safe bulk bags or moisture-resistant sacks
- Labels with feedstock, lot and application limitations

## Utilities & infrastructure

- Stable three-phase electricity with verified connected load
- Guarded machinery, lockout, ventilation and fire protection
- Covered segregated raw-material and finished-goods storage
- Maintenance tools, safe lifting and critical spare parts
- Environmental permit, chimney monitoring points and firefighting water
- Explosion/CO monitoring and restricted hot-process zone
- Independent laboratory access for PAH, metals and carbon tests

## Quality, safety and environmental controls

- Reject treated wood, plastics, soil and mixed waste
- Control feed moisture and particle range
- Log reactor temperature, residence, pressure and oxygen leakage
- Verify afterburner and visible-emission performance
- Confirm complete sealed cooling before air exposure
- Test carbon, ash, pH, EC, metals, PAHs and stability

A final factory layout must reserve safe forklift routes, maintenance clearances, raw-material segregation, finished-goods storage, fire protection, ventilation, and future expansion space.

# Indicative Investment & Implementation Plan

**LOW-ENTRY CONFIGURATION**

The lowest responsible entry uses one dry clean feedstock, a sealed batch retort and full afterburn/cooling safeguards. Open pits, treated wood and activated-carbon claims are excluded.

| Component | Indicative range | Notes |
|---|---|---|
| Feed preparation and handling | US$12k-30k | One dry residue |
| Retort/carbonizer, afterburner and sealed cooler | US$45k-125k | Controlled emissions |
| Screening, fire safety and laboratory | US$18k-48k | Soil-grade release |
| Freight, installation and commissioning | US$18k-45k | Hot trials included |
| Indicative installed low-entry total | US$93k-248k | Building, dryer and permits excluded |

## Implementation sequence

| | | |
|---|---|---|
| Phase 1 | 2-5 weeks | Confirm product specification, representative raw material, buyer, capacity, site and utilities |
| Phase 2 | 3-7 weeks | Run supplier trials with the buyer material and freeze the balanced machine, tooling and utility scope |
| Phase 3 | 8-22 weeks | Manufacture or refurbish, inspect, document and ship the contracted equipment |
| Phase 4 | 3-12 weeks | Install, commission, train operators and pass material-specific acceptance tests |

Ranges are planning targets for a low-cost entry configuration, exclude land, and remain subject to confirmed capacity, supplier quotation, freight, duties, exchange rates and site conditions.

# Next Steps & Contact Information

## Recommended next steps

- Confirm target products, hourly output, and packaging formats
- Test representative raw materials and document quality requirements
- Complete site survey covering electricity, water, fuel, drainage, roads, and warehouse space
- Request comparable technical and commercial quotations from shortlisted suppliers
- Finalize financing, logistics, installation, training, and spare-parts plan

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## Research and image references

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