LANDRY INDUSTRIES / RESEARCH INITIATIVE

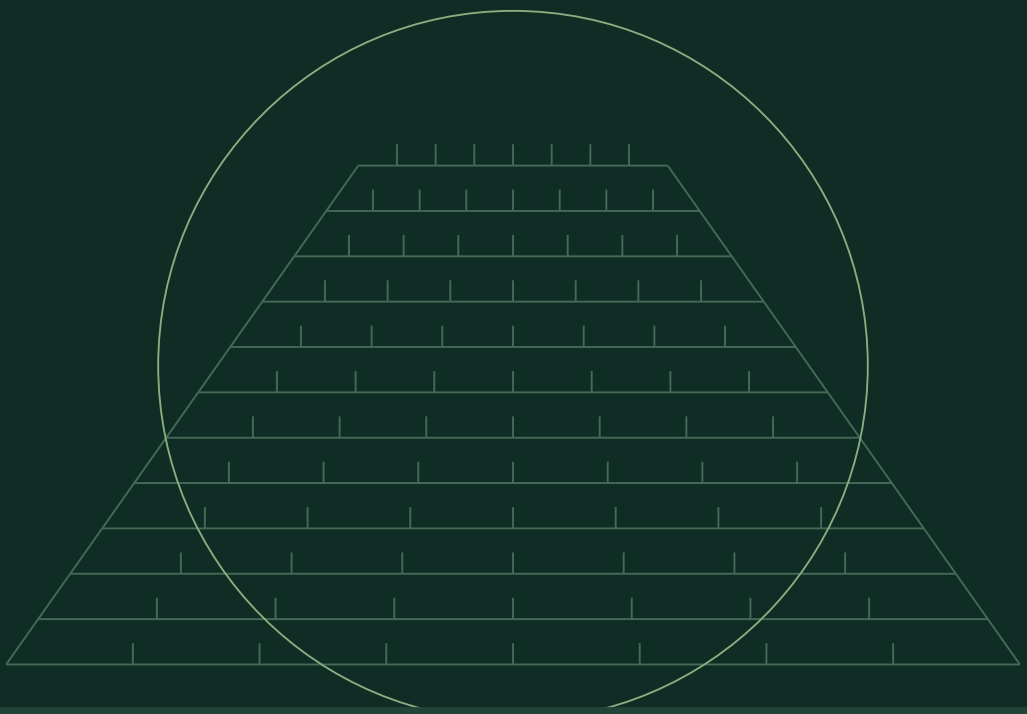
GREEN EARTH 10B

ONE ACRE PER HUMAN

Global Hemp Civilization Programme

Foundational programme charter

An open research hypothesis for a circular civilization supporting ten billion people.



10 BILLION PEOPLE
10 BILLION ACRES

VERSION 0.1
15 NOVEMBER 2026

PROPOSED RESEARCH • NOT VALIDATED ENGINEERING

01 / Mission & hypothesis

Mission. Investigate the scientific, agricultural, technological and industrial foundations for a circular civilization supporting 10 billion people. Industrial hemp is proposed as a foundational renewable carbon feedstock, complemented by other crops, metals, minerals, water systems and low-carbon energy.

Research question. Can one acre of productive hemp cultivation surface per person supply a substantial share of civilization-wide renewable material demand, including its initial construction and long-term maintenance? The initial 73-billion-hectare hypothesis is superseded as a baseline by a smaller, testable one-acre-per-human scenario, not by a proven optimum.

10 billion
People supported

10 billion
Acres of cultivation

4.047 billion
Equivalent hectares

60.70 Gt
Annual dry biomass*

30.35 Gt
Annual usable output*

3.035 t
Output/person/year*

*Scenario assumptions: 15 tonnes dry biomass per hectare per year and 50% aggregate mass yield into usable products. These are illustrative inputs, not validated hemp-specific indoor yields or conversion rates. Gt = billion metric tonnes.

Programme identity

Element	Proposed responsibility
Landry Industries	Founding initiative and coordination
Hempoxies	Research platform for candidate materials and processes
New Pyramids	Controlled-environment agriculture infrastructure concept
Landricus	Potential transportation applications

02 / Quantitative framework

The cultivation requirement must emerge from measured demand, annual harvest yields and conversion efficiencies, rather than being imposed as a mandatory production target. The following equations define a transparent first-order model.

$$A = P \times a \times 0.40468564224$$

$$B = A \times Y \qquad M = B \times \eta$$

$$F = A / L$$

Use consistent units; F is idealized growing-floor footprint only.

Symbol	Definition
P, a	Population; acres of active cultivation per person
A, Y	Cultivation surface (ha); annual dry yield (t/ha/year)
B, M	Annual dry biomass; usable output (tonnes/year)
η, L, F	Aggregate conversion fraction; growing levels; minimum plan area (ha)

Yield sensitivity at one acre per person

Yield (t/ha/yr)	Biomass (Gt/yr)	Dry t/person	Output* (Gt/yr)
5	20.23	2.02	10.12
10	40.47	4.05	20.23
15	60.70	6.07	30.35
20	80.94	8.09	40.47
30	121.41	12.14	60.70

*Uses a hypothetical 50% conversion fraction. Actual conversion must be resolved by product-specific mass balances to avoid counting the same biomass twice.

Separate construction from maintenance

Stock-building demand depends on infrastructure expansion, while maintenance demand depends on service life, replacement and recovery. For each material stream, quantify gross demand, recycled supply, non-hemp inputs and conversion losses separately. Do not assume recycled material is immediately available during initial build-out.

03 / Circular industrial system

The proposed system connects crop production, whole-plant separation, industrial conversion, product manufacturing and end-of-life recovery. Recovered material displaces some virgin feedstock only when quality and collection requirements are satisfied.

01 **Renewable inputs**
Sunlight or low-carbon energy; water, CO_2, nutrients.

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02 **Hemp cultivation**
Controlled environments with complementary outdoor production.

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03 **Whole-plant biorefinery**
Separate oil, lignin, cellulose, fibre and compatible residues.

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04 **Material development**
Bio-based resins, vitrimers, carbons and candidate composites.

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05 **Civilization applications**
Buildings, transport, utilities, textiles and manufactured goods.

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06 **Material recovery**
Repair, reuse, remanufacture, recycling and residual treatment.

Candidate material streams

Hempseed oil may serve as a bio-based resin precursor. Lignin and cellulose may supply chemical and polymer intermediates. Hemp-derived biochar, carbon nanosheets and carbon fibres are candidate fillers or reinforcements for appropriately validated formulations. Carbonization changes mass, chemistry and energy requirements; each route needs its own measured yield.

Constraint: no projected material performance may be presented as achieved before independent testing. Hempoxies denotes a research platform, not one certified material.

04 / Research workstreams

Ten coordinated research divisions translate the hypothesis into measurable work packages. Each division maintains documented inputs, test methods, uncertainty, quality controls and reproducible outputs.

ID	Research division	Required output
GE-01	Genetics and productivity	Yield distributions by cultivar and production system
GE-02	Controlled-environment cultivation	Growing-area, cycle and climate-control data
GE-03	Energy and lighting	Full electricity and heat budget; solar options
GE-04	Water, nutrients and CO_2	Mass balances, recovery rates and safe input sourcing
GE-05	Biorefinery engineering	Product-specific yields and coproduct inventory
GE-06	Hemp-derived carbons	Characterized carbon morphologies and processing costs
GE-07	Resins and composites	Independent mechanical, thermal and durability tests
GE-08	Manufacturing and construction	Prototype validation and engineering compliance
GE-09	Circularity and recovery	Service life, repairability and realized recycling rates
GE-10	Industrial ecology and economics	Demand, system cost, LCA and scalable feasibility model

Pilot success criteria

A proposed one-hectare integrated pilot must measure dry biomass yield, water and nutrient flows, electricity and heating, material output by stream, waste generation, and cost. Include baseline comparisons against outdoor cultivation, conventional materials and competing bio-based alternatives.

The pilot is successful only if the measured data justify further development; it is not required to confirm the one-acre hypothesis.

05 / Scale & material allocation

For the baseline scenario, 30.35 Gt/year of usable output is allocated below to illustrate possible research priorities. This is a planning exercise, not a demand forecast, commercial production commitment or validated mass balance.



Construction & infrastructure	12.14 Gt/yr	40%
Industrial materials	6.07 Gt/yr	20%
Transportation	4.55 Gt/yr	15%
Energy infrastructure	3.04 Gt/yr	10%
Consumer goods & textiles	3.04 Gt/yr	10%
Other applications	1.52 Gt/yr	5%

Illustrative multilevel cultivation footprint

Growing levels	Minimum footprint (million ha)	Area in million km²
1	4,046.86	40.469
5	809.37	8.094
10	404.69	4.047
20	202.34	2.023
50	80.94	0.809
100	40.47	0.405

Floor area divided by levels does not include corridors, service cores, processing, power generation, setbacks or logistics. Vertical stacking does not itself reduce photon, water or nutrient requirements.

Energy is a hard feasibility constraint

Artificial lighting may dominate energy use. A first-order electricity scenario is $E = A \times 10{,}000 \times I$, where I is annual kWh per square metre of active growing surface. At an illustrative 400 kWh/m²/year, the one-acre hypothesis would require approximately 16.19 million TWh/year for that assumed intensity alone. This is not a measured hemp-specific value. Prioritize daylight-driven layouts, energy metering and system-level comparison before scaling.

06 / Roadmap & scientific gates

2026–2027	**Scientific foundations** Demand model, literature inventory, controlled experiments and research partnerships.
2027–2030	**Pilot infrastructure** One-hectare demonstration concept; metered cultivation and integrated processing.
2030–2040	**Industrial demonstration** Conditional prototype production, safety testing and recovery systems.
2040–2050	**International replication** Conditional commercial deployment, standards and independent validation.
2050–2100	**Long-term transition** Scale only when justified by evidence, actual demand, economics and ecological limits.

Non-negotiable decision gates

Protect biodiversity and food security; respect local law, land rights and community consent; maintain complete mass and energy balances; verify lifecycle emissions including energy and end-of-life processes; require independently reproducible evidence; and compare total cost and functionality against existing materials. Gross biological CO_2 uptake is not permanent sequestration.

Next deliverable: an auditable material-flow and techno-economic model for one hectare of integrated hemp cultivation and processing. Parameter uncertainty, failure scenarios and alternative feedstocks must remain visible. Revisit the acre-per-person requirement after the first defensible demand and yield estimates.

Evidence status. This charter consolidates an exploratory programme discussed on 15 November 2026. Conversion uses the exact international acre-to-hectare factor. Apart from arithmetic, production, allocation, energy intensity and milestone assumptions are illustrative; no external literature review, pilot test or engineering certification was performed for this edition.

10 billion people. 10 billion acres. One circular civilization.

Grow. Manufacture. Build. Recover. Regenerate.