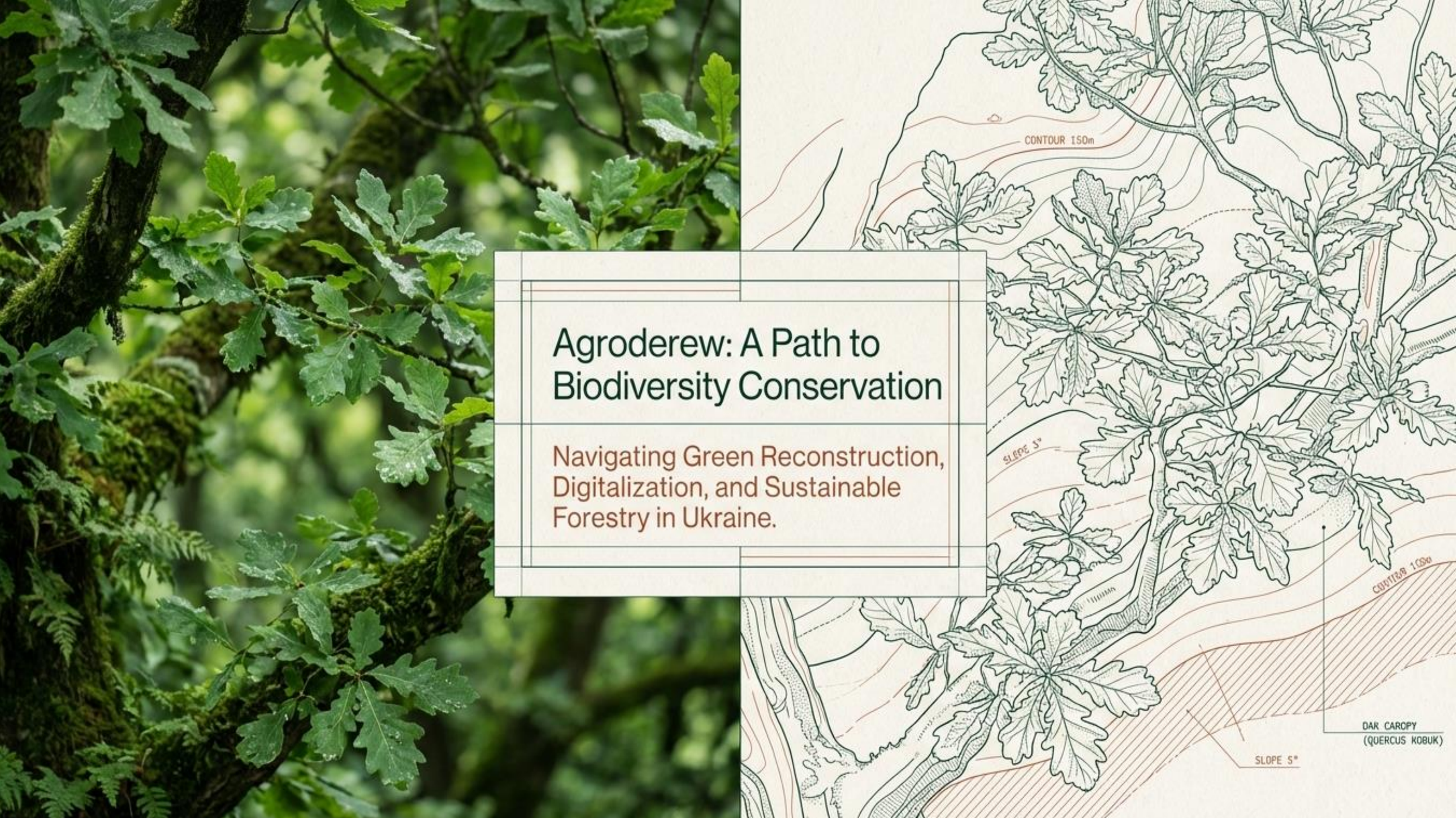
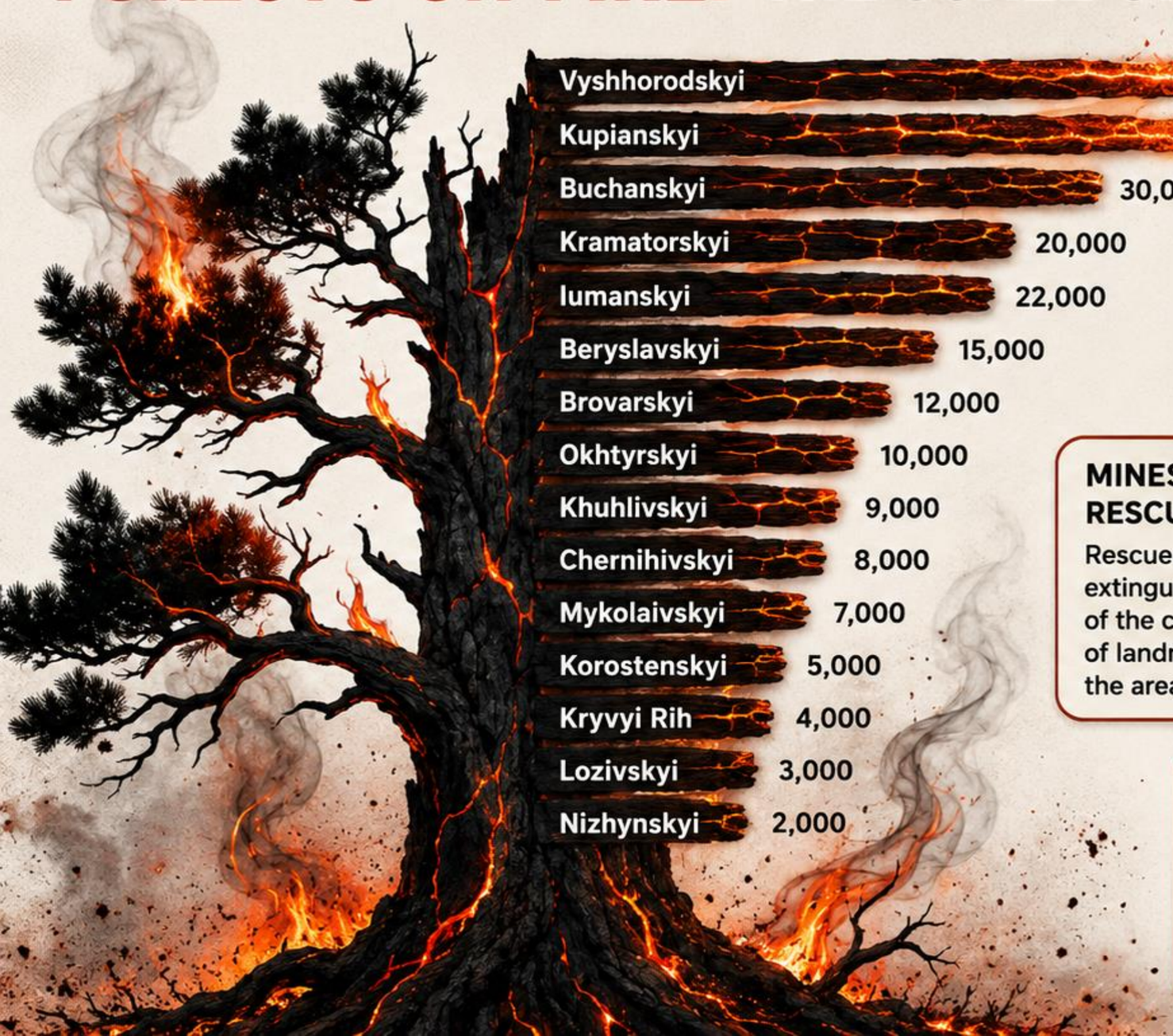


Agroderew: A Path to Biodiversity Conservation

Navigating Green Reconstruction, Digitalization, and Sustainable Forestry in Ukraine.

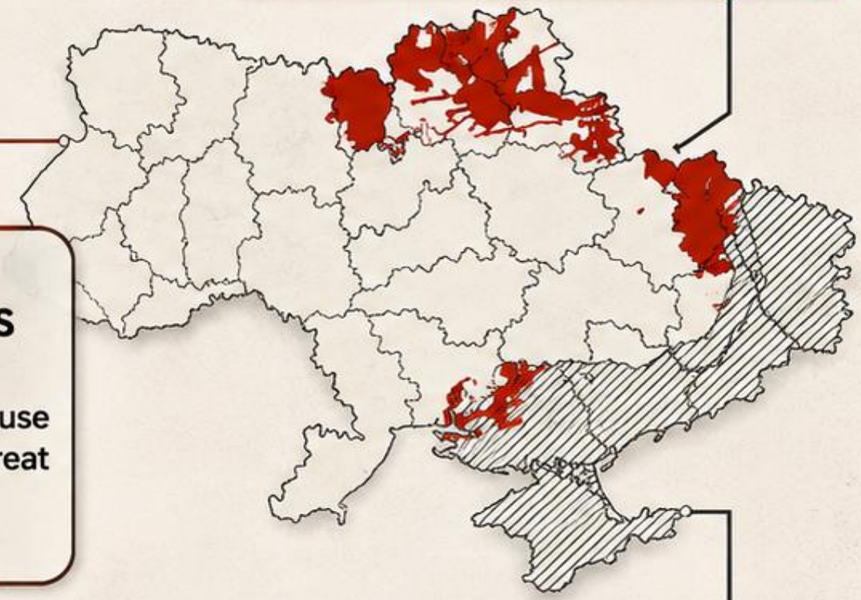
FORESTS ON FIRE: THE SCALE OF PYROGENIC DESTRUCTION



Vyshhorodskyi	>40,000
Kupianskyi	>40,000
Buchanskyi	30,000
Kramatorskyi	20,000
Iumanskyi	22,000
Beryslavskyi	15,000
Brovarskyi	12,000
Okhtyrskyi	10,000
Khuhlivskyi	9,000
Chernihivskyi	8,000
Mykolaivskyi	7,000
Korostenskyi	5,000
Kryvyi Rih	4,000
Lozivskyi	3,000
Nizhynskyi	2,000

> 1,000 km²

Area of forests completely destroyed by fire as a result of hostilities.



MINES BLOCK RESCUE EFFORTS

Rescuers cannot extinguish fires because of the continuous threat of landmines in the area.

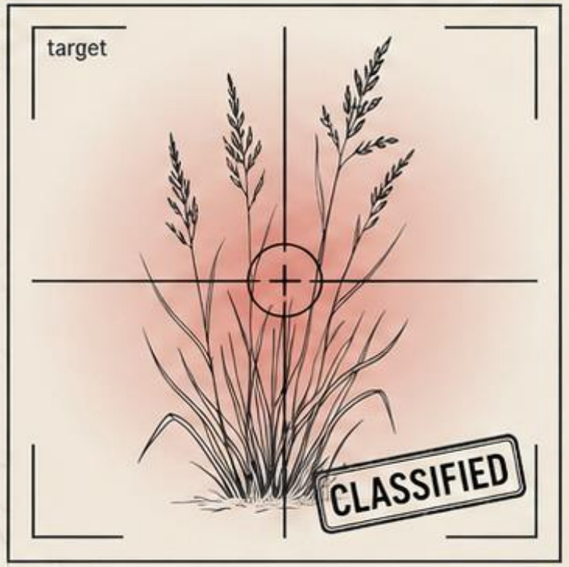
HOTSPOT DATA PANEL

- **KYIV REGION:** ~74.5 thousand ha of mined forests.
- **KHARKIV REGION:** ~41.1 thousand ha of mined forests.
- **POST-FIRE EFFECT:** Fires create ideal conditions for the spread of fungal diseases among trees.

WAR AS AN OFFICIAL EXTINCTION DRIVER.

For the first time in history, the updated IUCN Red List of Threatened Species officially recognized war as a direct threat to species survival.

classified target list







IUCN Red List



STEPPE BIOTOPES

- They are home to one third of Ukraine's Red List species.
- Physical destruction of ecosystems, 30% of habitats in the Askania-Nova Biosphere Reserve burned.

FRESHWATER MOLLUSKS (MALACOSTRACA)

Six rare species at risk of extinction due to hostilities in aquatic habitats.

TOP SECRET
BIOLOGICAL DOSSIER

ANOTHER THREAT: SILENT KILLER — DROUGHT.

The war is loud, but the drought kills quietly and on a massive scale.

20–25 mm: Total precipitation in the Kherson region in May 2024.

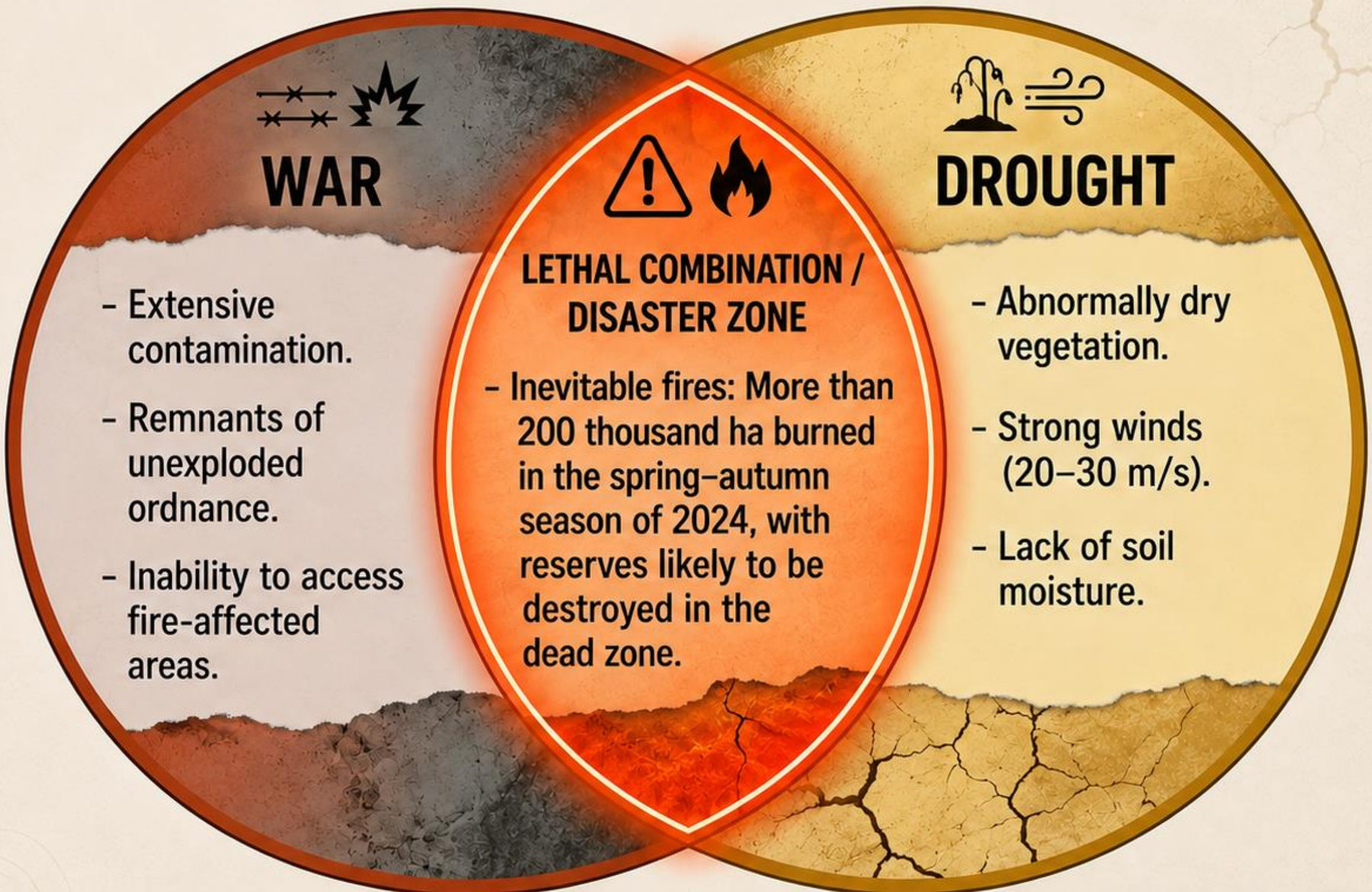
20-25 MM

> 600 tonnes/ha: Loss of the fertile topsoil layer due to increased drought and strong winds (20–30 m/s).

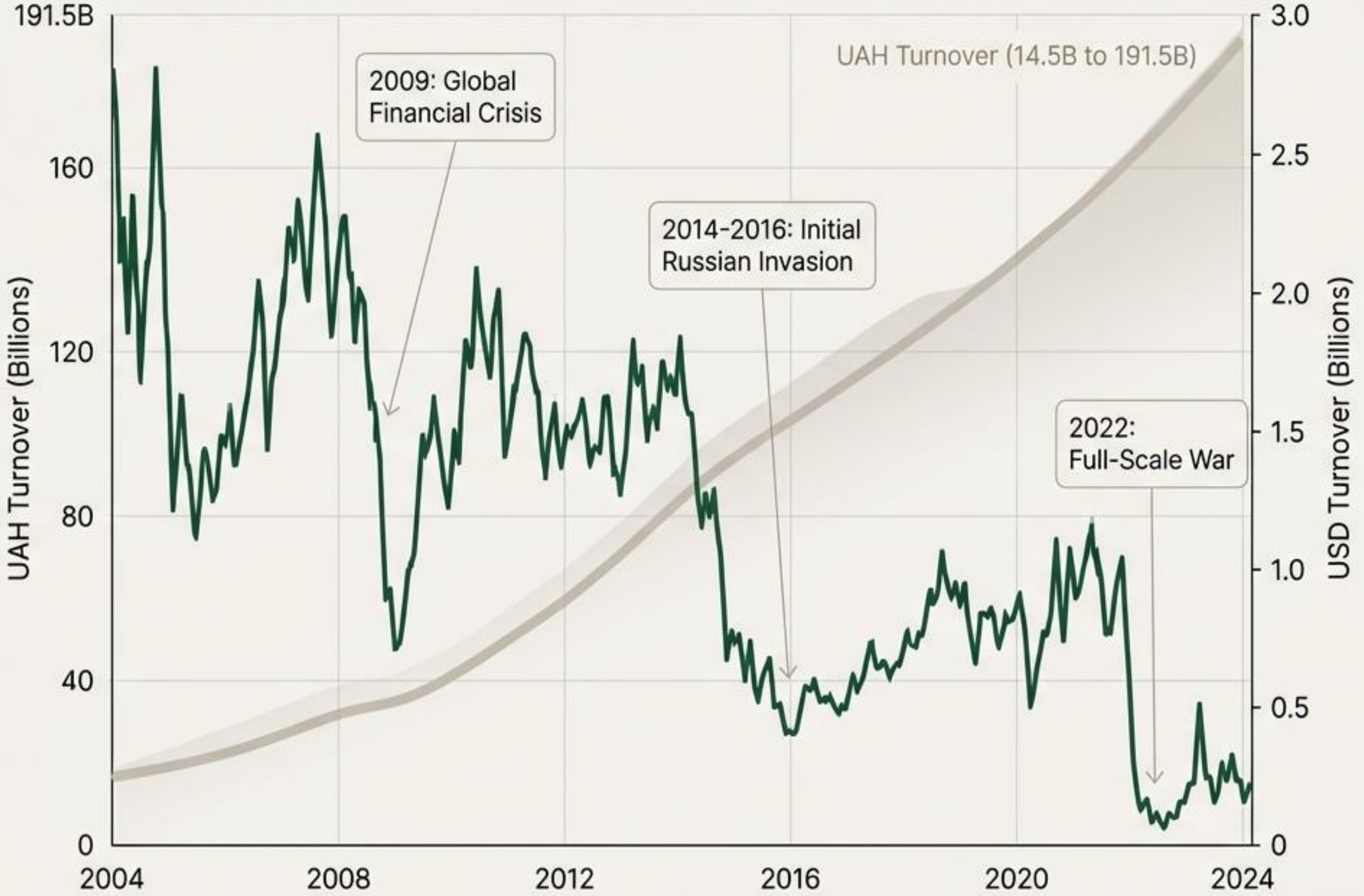
Nearly 70% of the region is already experiencing the highest level of water stress.



WHEN WAR MEETS DROUGHT



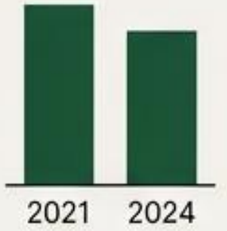
Currency Devaluation Masks a Sector in Crisis



Harvested Wood Drop

17.6M m³ (2021) →

14.9M m³ (2024)



Woodworking Turnover (2022)

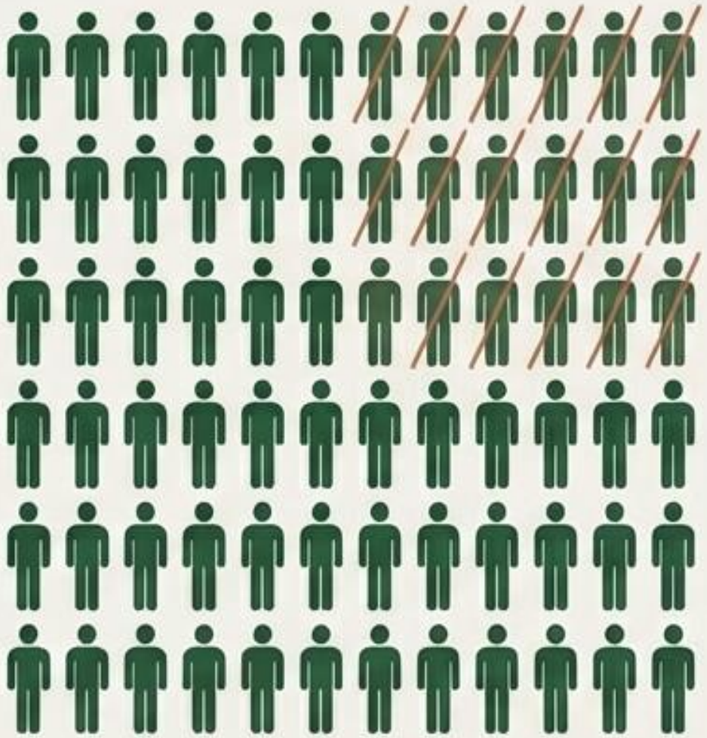
-17% ↓

Furniture Turnover (2022)

-34% ↓

The Human and Structural Toll of the Conflict

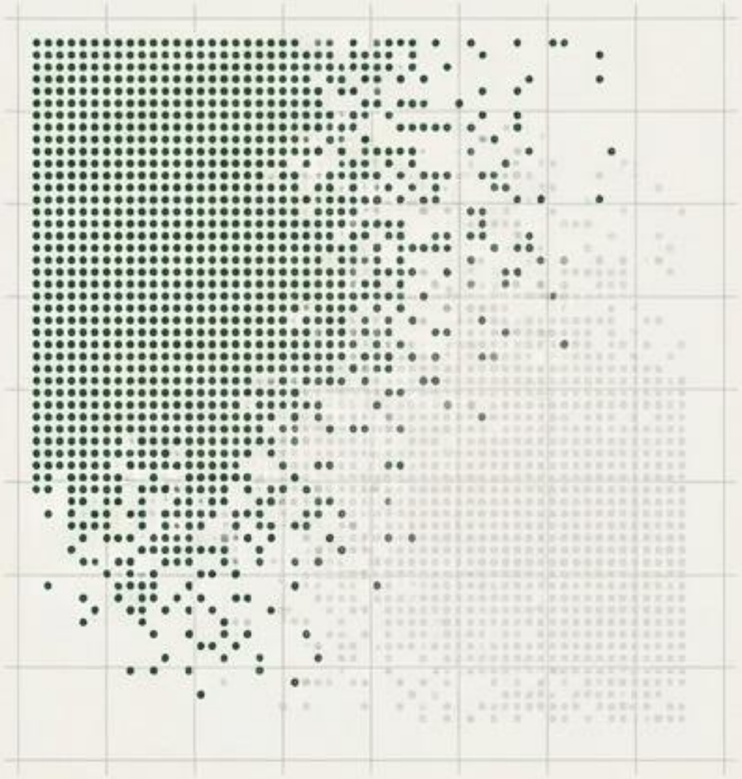
Labor Drain



50,100 total employees lost (2021-2023)

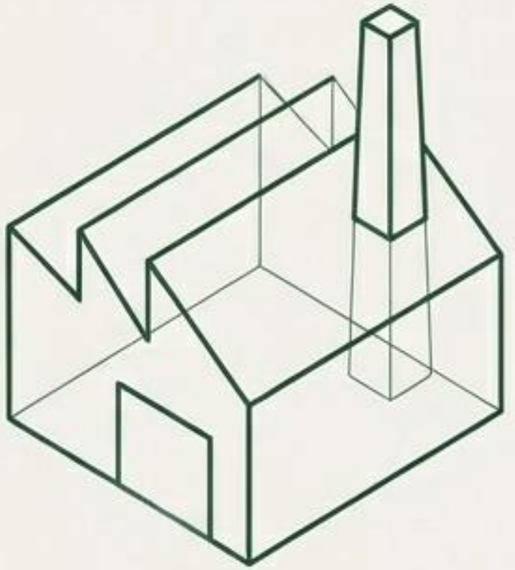
-14.4k from Furniture; -13.4k from Woodworking.

Enterprise Contraction



2,400 business entities shut down.

The “Average” Survivor



The 2023 Average Woodworking Enterprise

4
Employees

$128.3k
Annual Turnover

Preserving what we have: Business Responsibility.

Despite colossal losses from the war and climate challenges, Ukrainian business is choosing the path of responsible management. Wood processing and furniture enterprises are introducing environmentally friendly solutions and developing sustainable practices, minimizing their impact on forests and preserving natural resources.



They prove that even in the most difficult times, it is possible to develop the economy, create jobs, and have a positive impact on the environment at the same time.

Responsibility begins with everyday choices.

Agroderew LLC Operating Profile



Foundation

Established 1995
(27+ years expertise)

Scale

130 Employees

200 m^3/month
premium furniture
boards

Philosophy

Zero-waste production

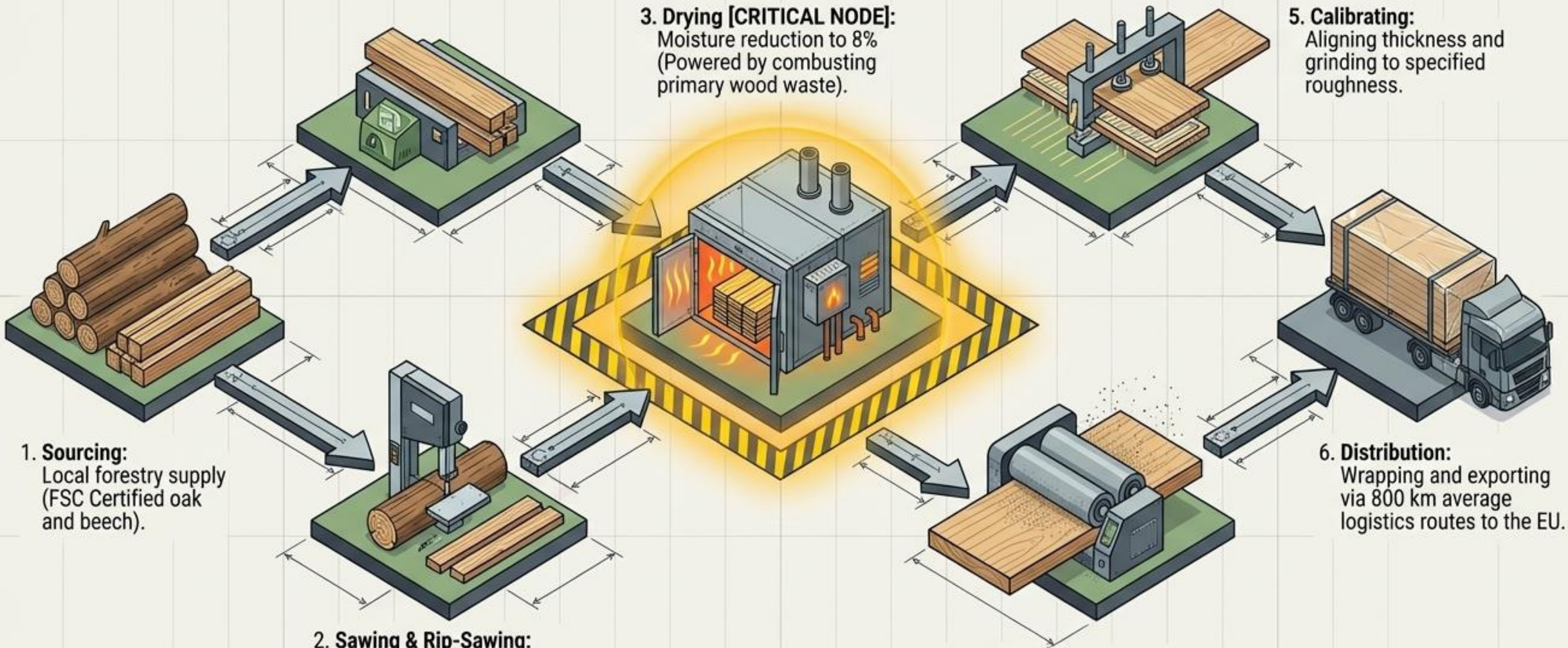
We process a tree,
we plant a new one.

Certification

FSC® CoC
Certified

FSC

Tracing the Production Ecosystem from Log to Export



1. **Sourcing:**
   Local forestry supply (FSC Certified oak and beech).

2. **Sawing & Rip-Sawing:**
   Conversion to raw lumber using precision bandsaw machines.

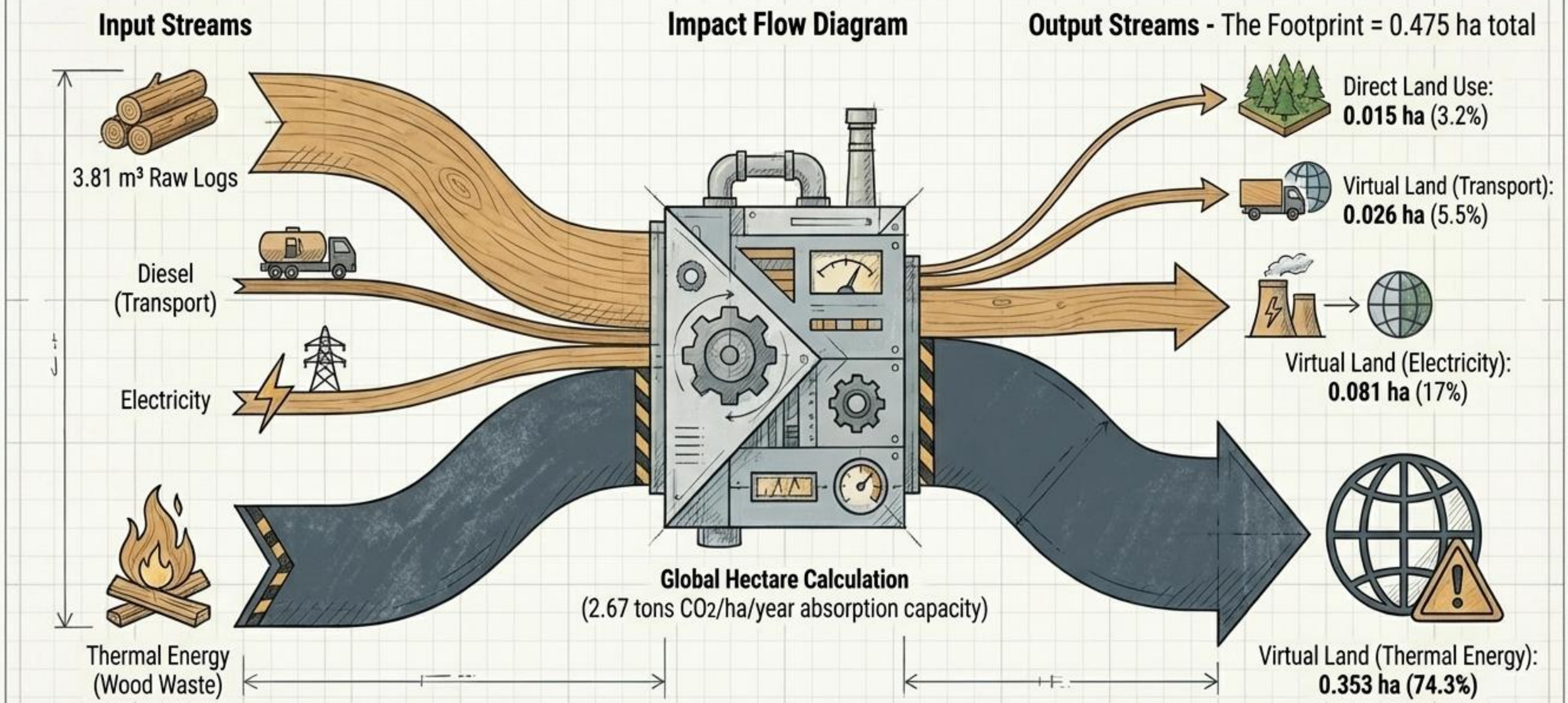
3. **Drying [CRITICAL NODE]:**
   Moisture reduction to 8% (Powered by combusting primary wood waste).

4. **Gluing & Pressing:**
   Creating defect-free, solid or joined boards.

5. **Calibrating:**
   Aligning thickness and grinding to specified roughness.

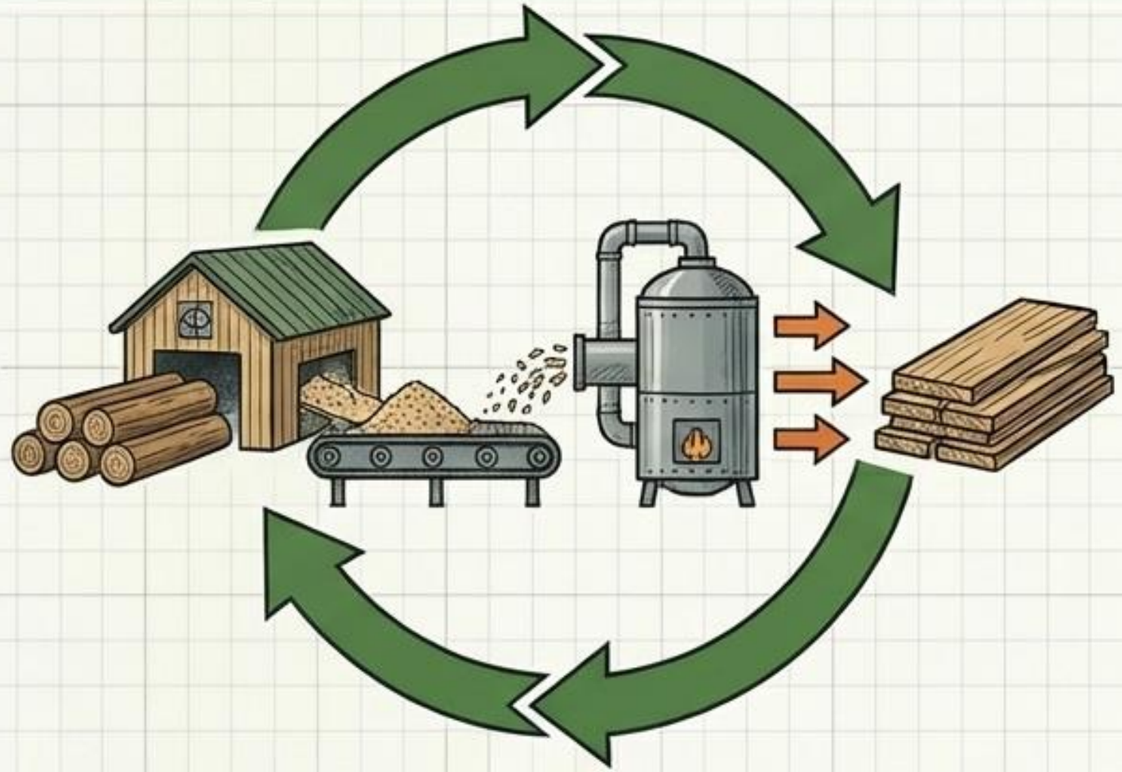
6. **Distribution:**
   Wrapping and exporting via 800 km average logistics routes to the EU.

The Anatomy of an Ecological Footprint (1 m³ of Furniture Board)



The Green Paradox: Uncovering the True Cost of Thermal Energy

Perceived Circularity (The Illusion)



Burning primary production waste (sawdust/shavings) to dry rough-sawn stock appears to be a perfect zero-waste, fossil-fuel-free circular economy.

Actual Environmental Cost (The Reality)

Burning **688 kg** of wood waste per 1 m^3 of board releases **CO2, Nitrous Oxide (N2O),** and **Methane (CH4).**

Requires **0.353 hectares** of virtual forest to absorb emissions. This accounts for a massive **74.3%** of the entire product footprint.

Scaling the Impact to the Enterprise Level

Primary Output

Furniture Board Production requires an offset of 1,140 hectares/year.

1,140

Byproduct Output

Fuel Product Manufacturing requires **11.55** ha/mo (drying) + **6.21** ha/mo (electricity).

Facility Support

Premises Heating (combusting 67.9 tons of wood waste) requires 34.86 ha/mo.

34.86 ha/mo.

Water Usage

Totals 100 m^3/month.

100 m^3/month.

Total Monthly Ecological Footprint

147.6 ha (Heating Season) // 112.7 ha (Non-Heating Season)

The Integrated Triple-Layer Business Model

Economic Resiliency

Export-oriented B2B model heavily reliant on raw material price stability and undisrupted EU logistics.

Environmental Dependencies (ENCORE)

Reliance on intact ecosystem services: Water purification for daily operations, and long-term climate stability to stability to guarantee the supply of oak and beech forests.

Social & Community Capital

Anchor Role:
One of the largest taxpayers and employers (118 staff) in the Rava-Ruska community.

Engagement:
Active in local reforestation campaigns and official sponsorship of the local football team, FC Synkovychi.

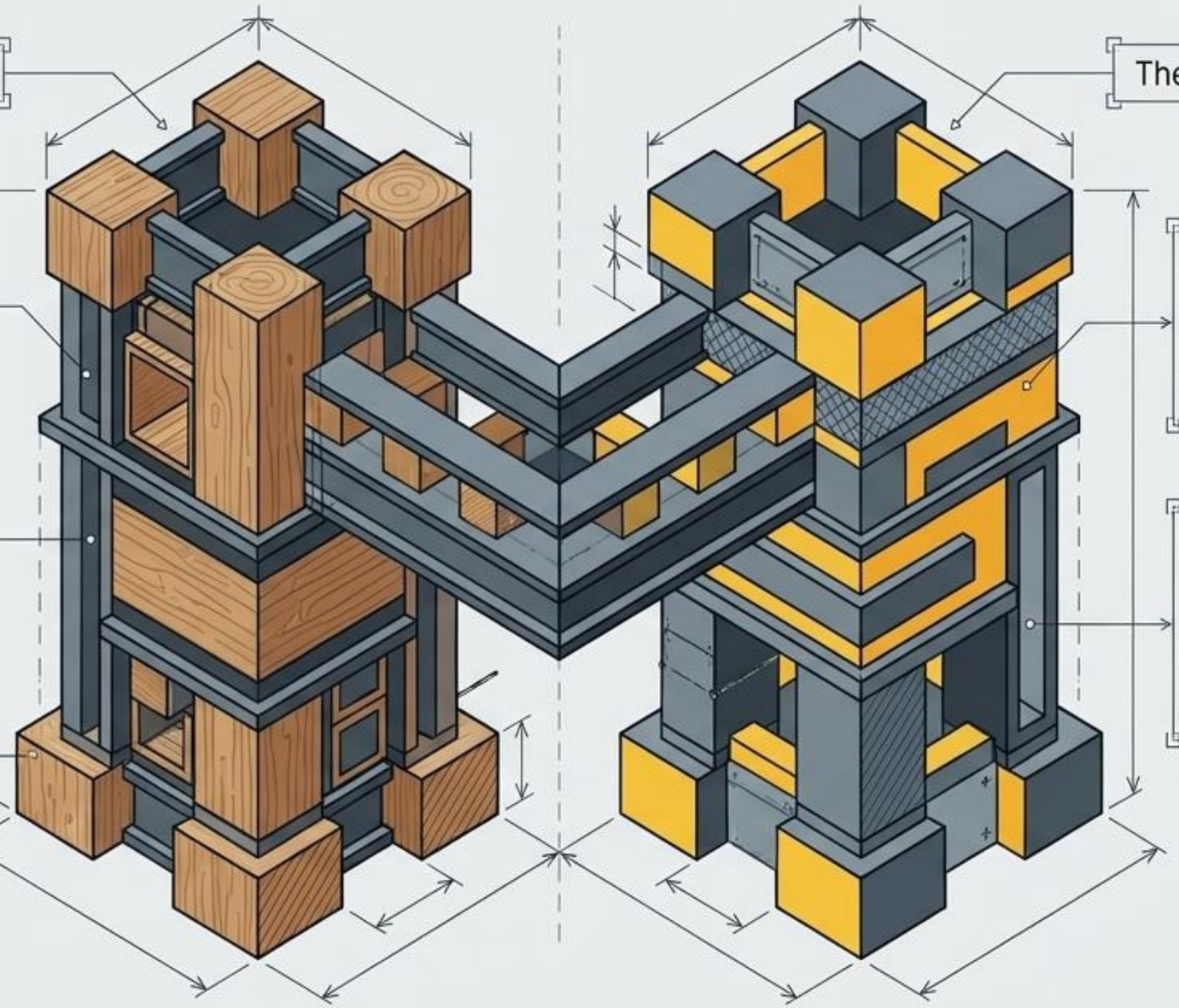
Economic and Social Layers Form the Operational Foundation

The Economic Pillar

Value Proposition:
Deforestation-free, fully EUDR-compliant, FSC-certified timber products.

Revenue Streams:
Narrow profiling for specific B2B wholesale clients in the EU, with emerging retail segments.

Key Resources:
130 skilled human resources and advanced European processing infrastructure.



The Social Pillar

Community Anchor:
Among the largest taxpayers and leading employers in the Rava-Ruska territorial community.

Engagement:
Active sponsorship of local sports (FC Synkovychi) and regular participation in professional reforestation campaigns.

The Environmental Layer Balances Immediate Impacts with Long-Term Storage

Negative Impacts (-)



- **High Global Warming Potential (GWP):** Production activities, specifically heat generation, account for 48% of the company's GWP.
- **Acidification Potential (AP):** Lumber drying drives 46% of AP.

Positive Benefits (+)



- **Carbon Storage Effect:** Sequestering atmospheric carbon within durable wood products for decades.
- **Substitute Effect:** Displacing carbon-intensive construction and furniture materials in the EU market.
- **Emerging Initiatives:** Initial steps toward substituting fossil-dependent grid electricity with renewable alternatives.

Digitalization Framework & EUDR Readiness



CRM, E-Commerce & Online Configurator

Enabling B2C sales with 3D product visualization and dynamic pricing modules.

ERP & CAD/CAM Integration

Centralized control over production, logistics, and rapid design-to-manufacturing pipelines.

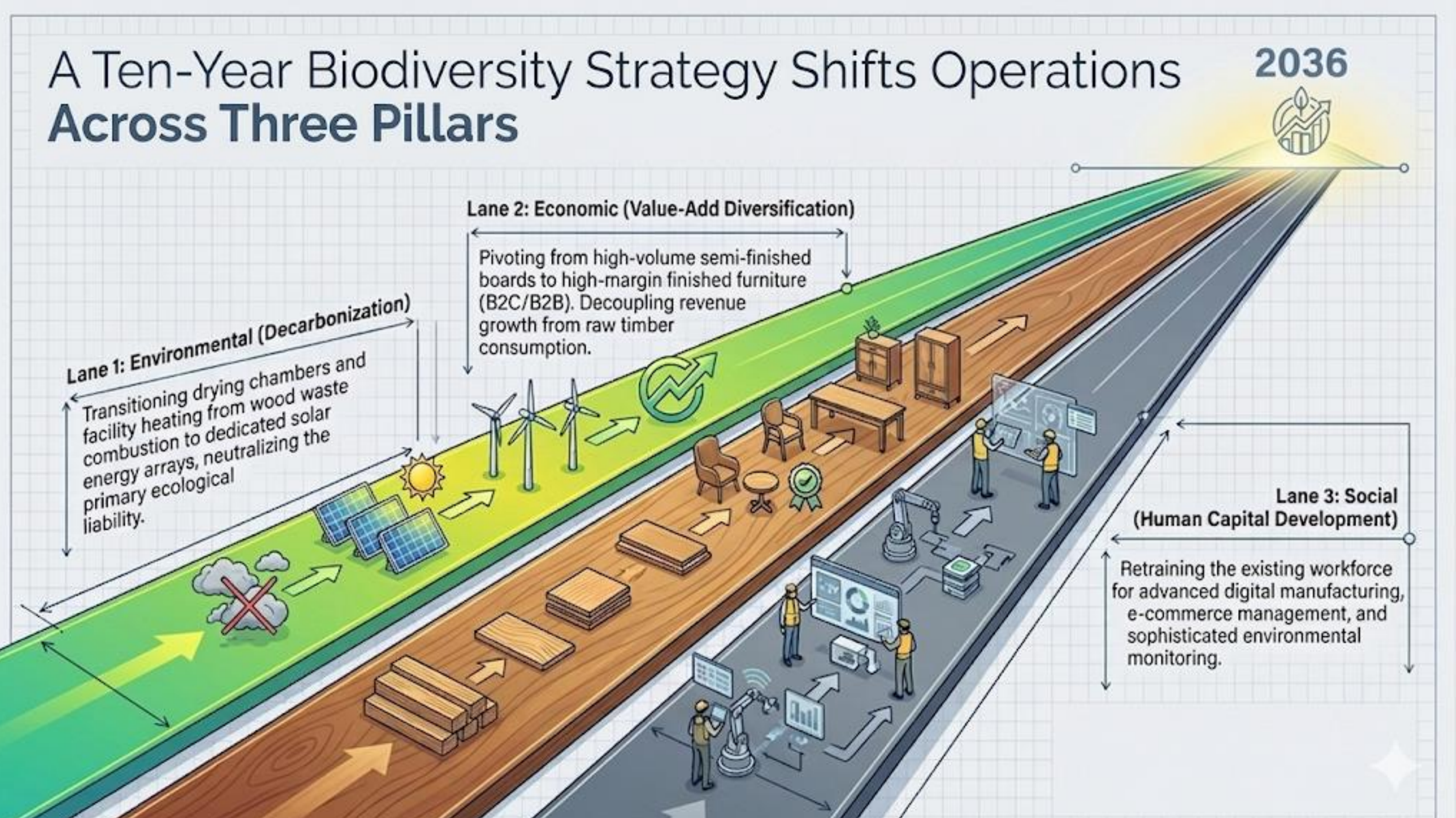
IoT & Environmental Monitoring

Real-time tracking of equipment efficiency, predictive maintenance, and energy usage.

FSC Trace & Digital Logistics (EUDR Compliance)

The critical compliance layer. Tracking exact GPS coordinates of harvested plots to ensure 100% transparent, deforestation-free supply chains mandated by the EU market.

A Ten-Year Biodiversity Strategy Shifts Operations **Across Three Pillars**



The Blueprint for Green Reconstruction

Measuring Success: Integrated KPIs

Performance Matrix

Metric	2025 Baseline	2036 Target (Solar Gold)
Environmental		
Ecological footprint per m^3	0.475 ha	< 0.1 ha
Solar energy share in heat	0%	> 90%
Restored forests (monitored)	0 ha/year	> 50 ha/year
Economic		
Profit growth from value-add	0%	> 500%
Share of finished furniture exports	0%	> 30%
Social		
New green jobs created	0	> 20
Staff sustainability training	0 hours/person	> 20 hours/person
Employee satisfaction	N/A	> 85%

Forest Sector at a Crossroads: Biodiversity Signals in Ukraine

The tension between immediate wartime survival and long-term EU environmental integration.

Invasion-driven collapse forces enterprises to prioritize immediate financial survival over ecological investments.

1
-50,000
Employees lost (2021–2023).

2
-2,400
Enterprises closed. Current average size: just 6 employees.

3
$160.8k
Average annual turnover per enterprise.

Resource Deficit & Deregulation

Severe harvesting declines have created huge timber resource deficits. To compensate, enterprises are softening or ignoring vital ecological requirements—specifically environmental impact impact assessments. **Direct threat to biodIversity.**



EUDR & European Integration

A dual signal for the sector. Strict EU regulations act as a powerful structural driver.

Short-Term Friction

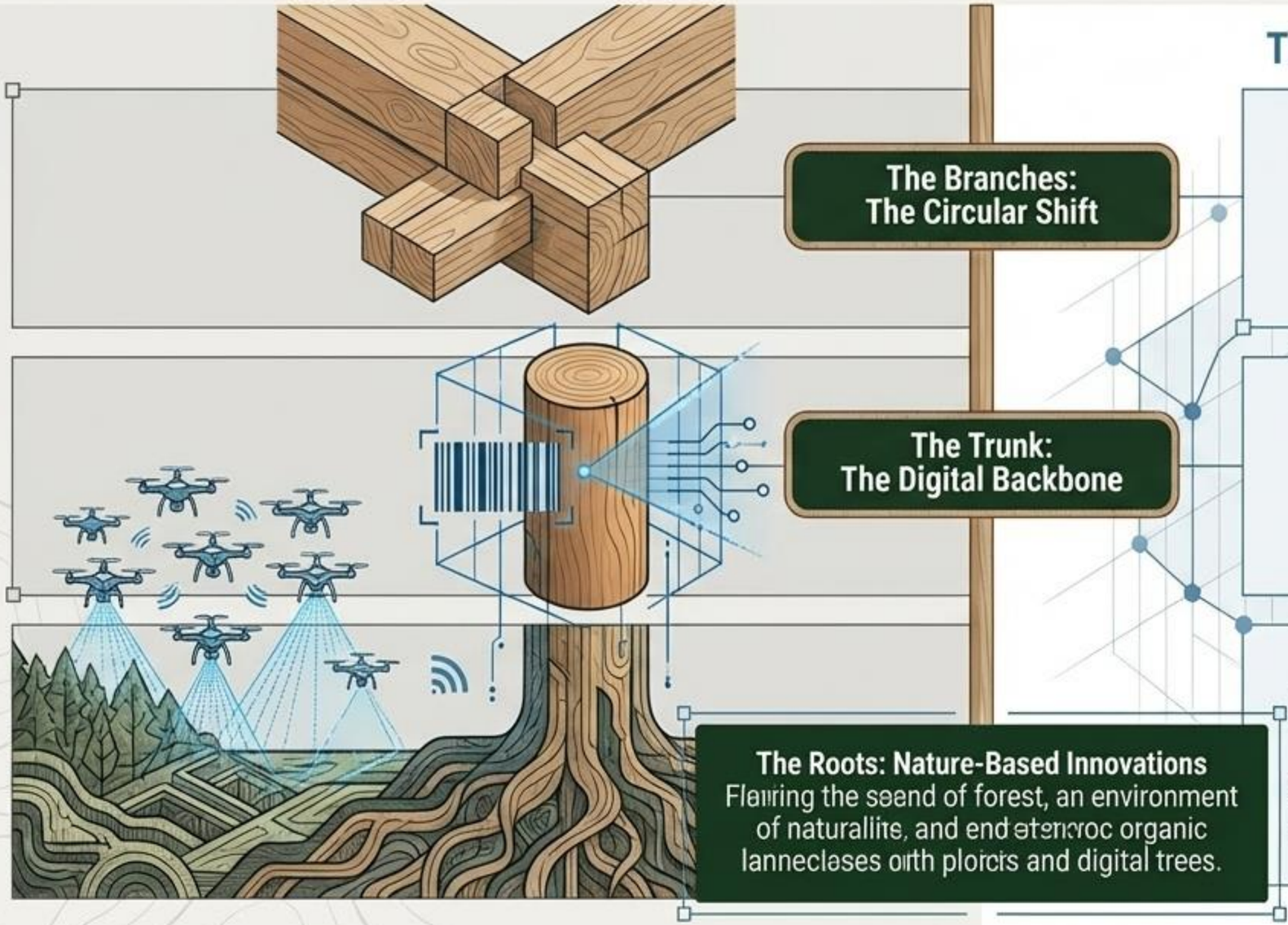
Severe compliance challenges for struggling micro-enterprises (traceability, due dlligence, strict sustainabliity rules).

Long-Term Driver

Forces a structural transition toward transparent, biodiversity-oriented forest management, ultimately unlocking EU market access.

Conservation efforts must bridge the gap between today's resource-starved survival tactics and tomorrow's strict EU compliance requirements.

Moving Beyond Business as Usual: Signals of Innovation



The Branches: The Circular Shift

CLT Production: Pioneers like Rezult House are shifting exports from raw logs to high-value, carbon-storing Cross-Laminated Timber.

FSC Compliance: Over 400 Ukrainian companies now certified to European sustainability standards.

E-Forest & ETA: Mandatory digital passports for logs, reducing illegal logging to just 0.2% of harvesting volume.

Deep Green Ukraine: AI and satellite imagery acting as digital guardians to spot illegal activity in real-time.

Close-to-Nature Silviculture: NGOs like FORZA championing the transition from clearcutting to selective logging and natural regeneration.

The Digital Forester: Deploying remote drone swarms (e.g., Dropla) to safely demine 0.5M hectares of forest without risking human lives.

The Strategic Horizon: Institutionalizing Biodiversity

Macro: Biodiversity Strategy 2035

Integration: Establishing the Emerald Network and adopting the European 30x30 target (protecting 30% of land and sea).

Restoration: Mandating dam removal, wetland recovery, and the demining/rehabilitation of war-affected ecosystems.

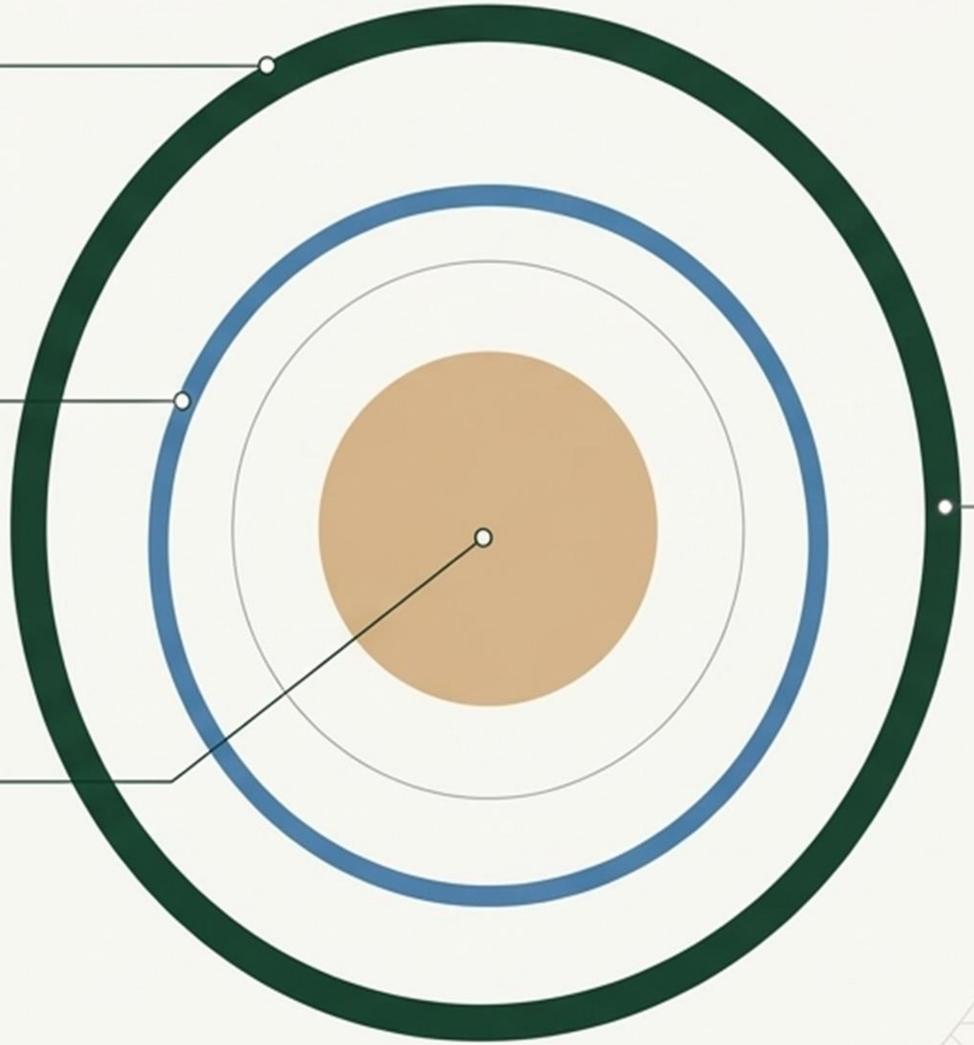
Meso: Regional Development Strategy 2027

Spatial Networks: Connecting fragmented forests and river valleys into unified ecological corridors for safe wildlife migration.

Cross-Cutting Rule: Legal doctrine dictating economic development cannot occur at the expense of nature depletion.

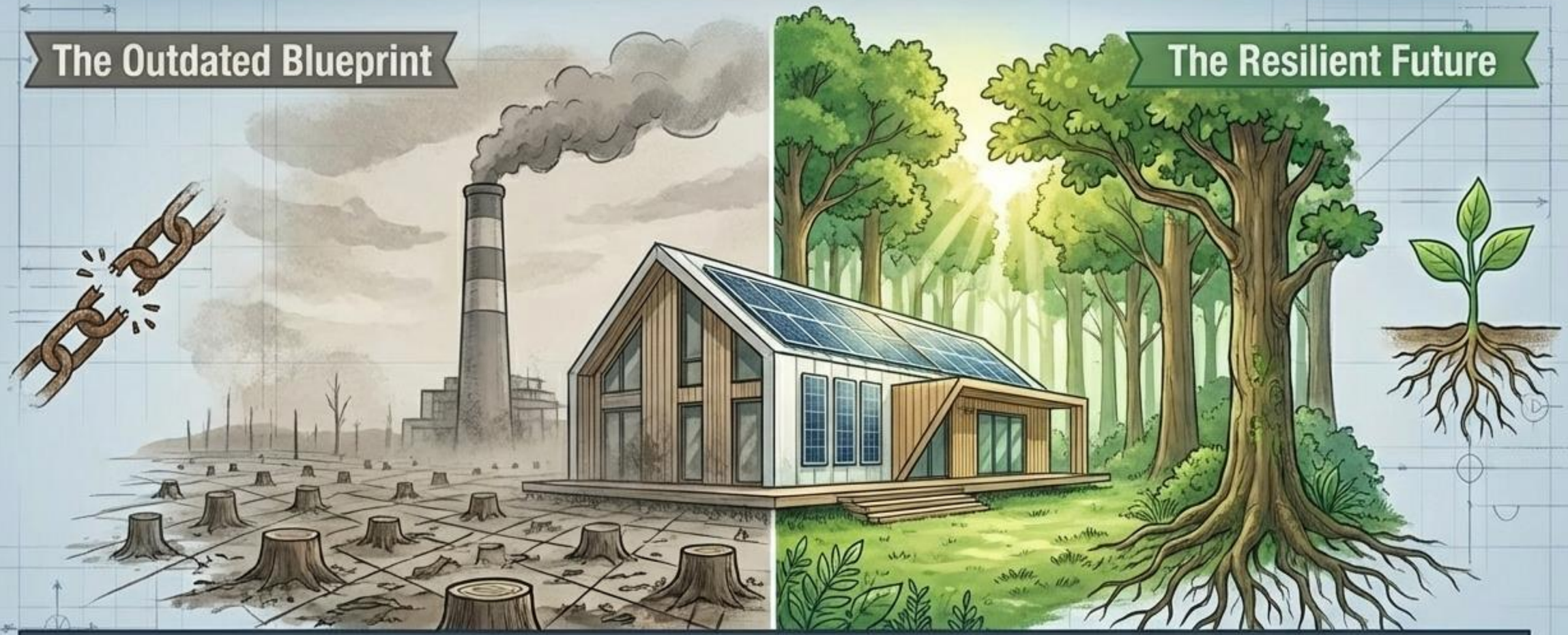
Micro: Regional Application (Lviv Case Study)

Actionable Tactics: Expanding the Nature Reserve Fund (NRF), financing Regional Landscape Parks, and controlling aggressive invasive flora like Sosnowsky's hogweed.



Regional customization is a legislative mandate: Industrial zones tackle emissions, southern regions protect estuaries, and de-occupied zones focus entirely on humanitarian ecosystem demining.

From Path-Dependency to Ecological Resilience



The war has forced a **radical departure from "business-as-usual."** For the Ukrainian forest sector, **decarbonization, digital transparency**, and **biodiversity conservation** are no longer regulatory burdens—they are the **exact blueprints for survival, competitive advantage,** and deeply **rooted resilience.**