



TREFADDER

Premium carbon capture and biodiversity

The Missing Layer of Climate Strategy

Why biodiversity belongs in corporate nature strategy and why European forests matter

Biodiversity is a business issue

Why biodiversity belongs in corporate nature strategy and why European forests matter

Biodiversity is the variety of life on Earth.

It is the plants, animals, fungi, and ecosystems that generate the services economies depend on: water regulation, pollination, soil fertility, flood buffering, climate stability, and the raw biological material that underpins our supply chains.

For a long time biodiversity loss was treated as a specialist concern - the domain of ecologists, NGOs, and governments. That framing no longer holds.

In Europe, 81% of protected habitats are in poor or bad ecological condition¹.

Our natural systems are degrading, and the businesses that depend on them are affected whether they have mapped that exposure or not.

This paper argues that **biodiversity is not a secondary agenda** to be addressed after the climate work is done. It is part of the same risk picture, and it deserves a more serious place in corporate strategy than most companies currently give it.



Why biodiversity belongs in corporate nature strategy and why European forests matter

PHYSICAL AND SUPPLY CHAIN RISK

More than half of global GDP is estimated to be moderately or highly dependent on nature and the services it provides², Companies in industries from agriculture and energy to pharmaceuticals and construction carry direct exposure through their supply chains.

INVESTOR AND REGULATORY LANDSCAPE

Stakeholders - customers, employees, NGOs, media, and partners - are applying increasing scrutiny to corporate sustainability claims: Companies need to demonstrate genuine understanding of what nature work actually does to withstand scientific challenge.

This is also becoming a strategic topic. More than 400 organisations have committed to TNFD-aligned processes for assessing and disclosing nature-related dependencies and risks.

In Europe, the direction of travel is clear: toward greater accountability for nature, not just climate.

- The EU Nature Restoration Regulation requires member states to bring at least 30% of degraded habitat area into good condition by 2030 and 90% by 2050. National measures to meet these targets will touch supply chains across sectors³.
- The EU Biodiversity Strategy for 2030 commits to strictly mapping, monitoring and protecting all remaining primary and old-growth forests in the EU⁴.
- The EU Deforestation Regulation creates direct supply chain due diligence obligations for commodities linked to forest loss.
- The EU Forest Strategy for 2030 targets forest quality and structural diversity, not just total tree cover.



Climate and biodiversity are not separate problems

They are the same system seen from different angles

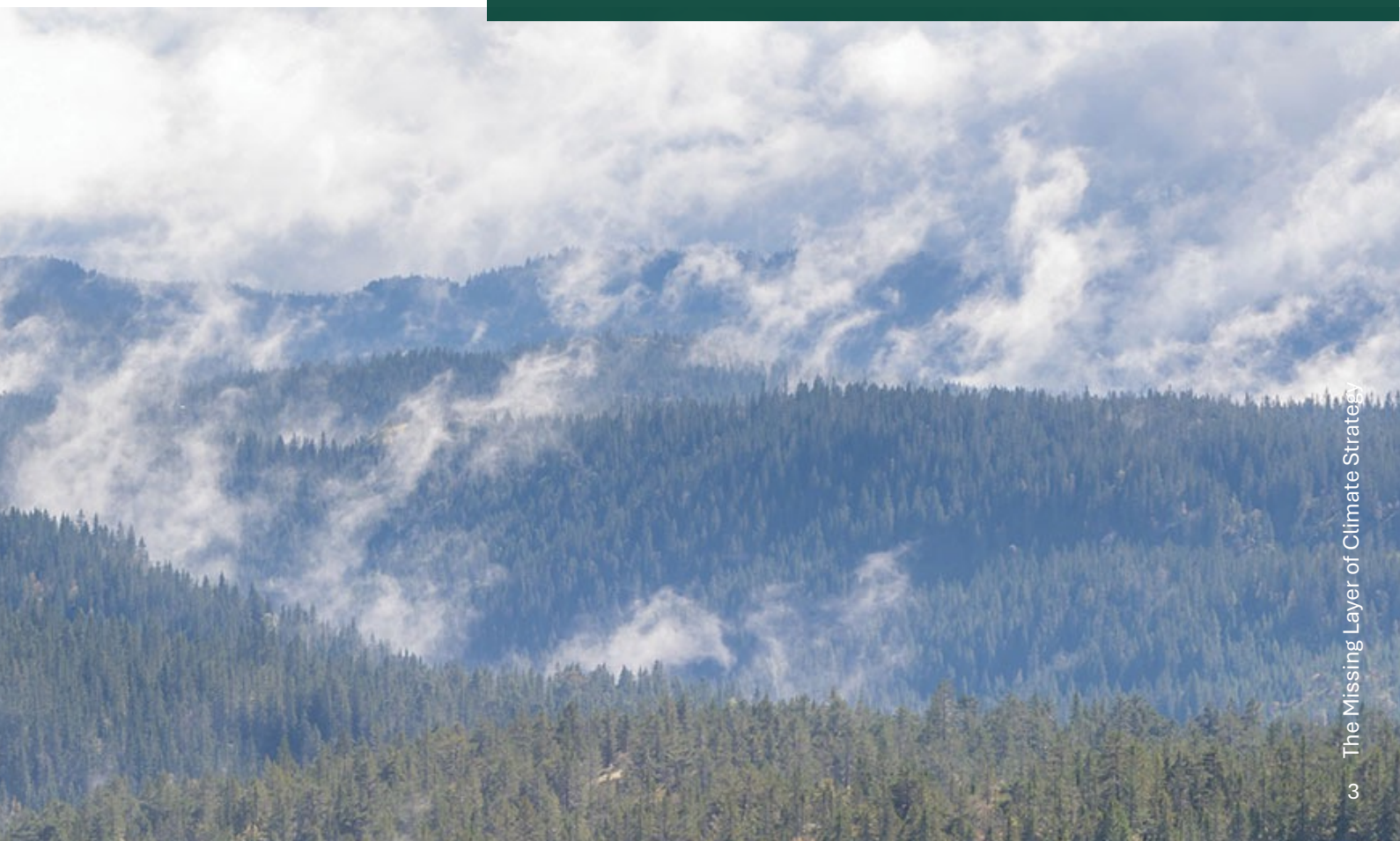
Climate change and biodiversity loss are often discussed as if they were separate topics. In reality, they are tightly coupled and accelerate each other.

Forests sequester and store carbon, but biodiversity determines whether that storage remains stable over time.

Water regulation, soil health, fungal networks, species diversity, are all shaped by biodiversity and influence whether a forest can withstand drought, pests, disease, and disturbance over time and keep carbon locked in.

Climate value is not only about how much carbon a forest can absorb. It is also about whether that carbon remains safely stored as conditions change.

Degrade the biodiversity, and the carbon storage becomes fragile.



Beyond the carbon-biodiversity link

ECOSYSTEM RESILIENCE AS NATURAL INFRASTRUCTURE

The business relevance of biodiversity goes beyond carbon accounting. More diverse ecosystems tend to be more resilient under stress, and the services they provide - flood buffering, soil stabilization, microclimate regulation, habitat connectivity and pollination support - function as natural infrastructure for surrounding land and industry.

As climate stress increases, the difference between a resilient, biodiverse landscape and a degraded one will show up not only in ecological reports, but in operational disruption.

Wild forest pollinators, for example, underpin agricultural yields in surrounding landscapes, and their populations are directly tied to the health of nearby forest ecosystems

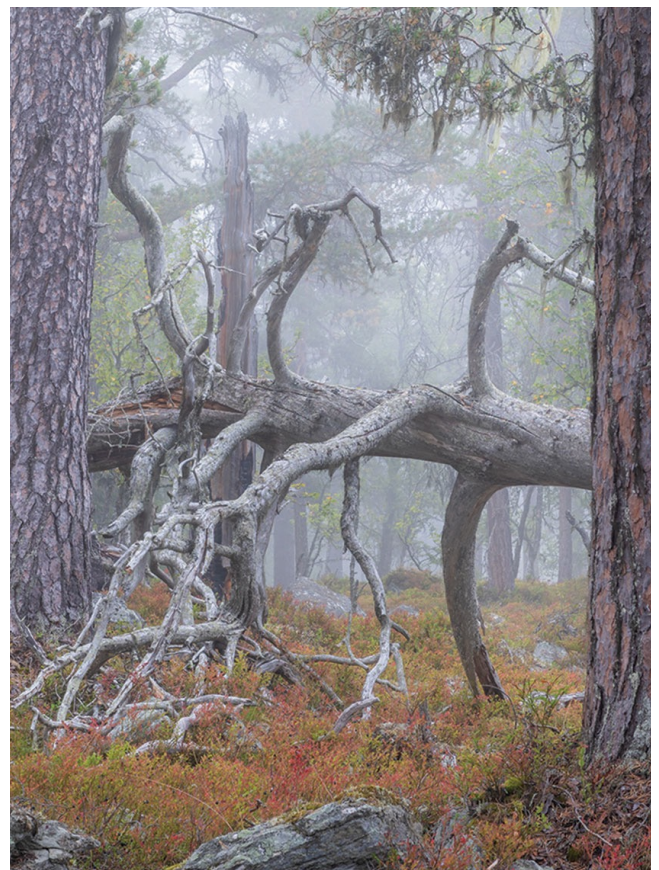
A GENETIC RESERVOIR AND THE IRREVERSIBILITY PROBLEM

Ecologically intact ecosystems are biological archives. Take old-growth forests as an example: Centuries of undisturbed development produce extraordinary concentrations of genetic material. Rare lichens, fungi, understory plants, soil microorganisms, and invertebrates, many of which remain only partly understood by science. That diversity is directly relevant to some of the most pressing challenges humanity (and businesses) face: developing climate-resilient crops, discovering new pharmaceutical compounds, and understanding biological systems well enough to work with them rather than against them.

The commercial value of what has not yet been discovered cannot be quantified precisely. But it can be foreclosed. This is what makes biodiversity loss categorically different from most business risks: it is often irreversible. It is the closure of future options that may turn out to have been highly valuable.

INTACT ECOSYSTEMS AS A BASELINE FOR RESTORATION

Restoration only works if you know what you are restoring toward. With biodiversity declining fast, that reference point is getting harder to establish. The EU Nature Restoration Regulation sets binding targets for member states to reverse decades of habitat degradation, but those targets require intact reference ecosystems to anchor them. Once the last intact ecosystems are gone, the benchmark disappears with them.



AN ILLUSTRATIVE EXAMPLE

The power of biodiversity in overcoming drought stress:

Some tree species can perform ***hydraulic redistribution*** (or ‘hydraulic lift’): In diverse forests, deep-rooted species can take up water from deeper, wetter soil layers and release part of it into drier upper layers through their roots, helping buffer drought stress for surrounding, shallow-rooted vegetation.

Nature ≠ Nature

The link between biodiversity and (old-growth) forests

Forests are home to more than 80% of all terrestrial species - the single most important habitat on land.

But not all forests deliver that value equally. The European Commission states, that primary and old-growth forests are some of the **EU's richest ecosystems**, providing a habitat for many of the EU's endangered and endemic species⁵. In Norway alone, it is estimated that as much as **84% of threatened forest species** are associated with old-growth forests⁶.

In Europe, around 39% of total land area is covered by forest⁷, yet **under 3% of that forest area qualifies as primary or old-growth forest**⁸. The rest is managed, secondary, or regenerated woodland: valuable for timber and carbon, but ecologically different in ways that matter enormously for biodiversity.

OLD-GROWTH FORESTS ARE DISAPPEARING

Between 2001 and 2021, Europe lost 2.25 million hectares of tall, mature forest - an area roughly **half the size of Denmark** - despite a slight overall net gain in tree cover. The Nordic region alone lost 20% of its tall forests over two decades, primarily driven by intensive timber harvesting⁹.

Younger replacement forests can take decades to develop equivalent carbon storage and ecosystem function.

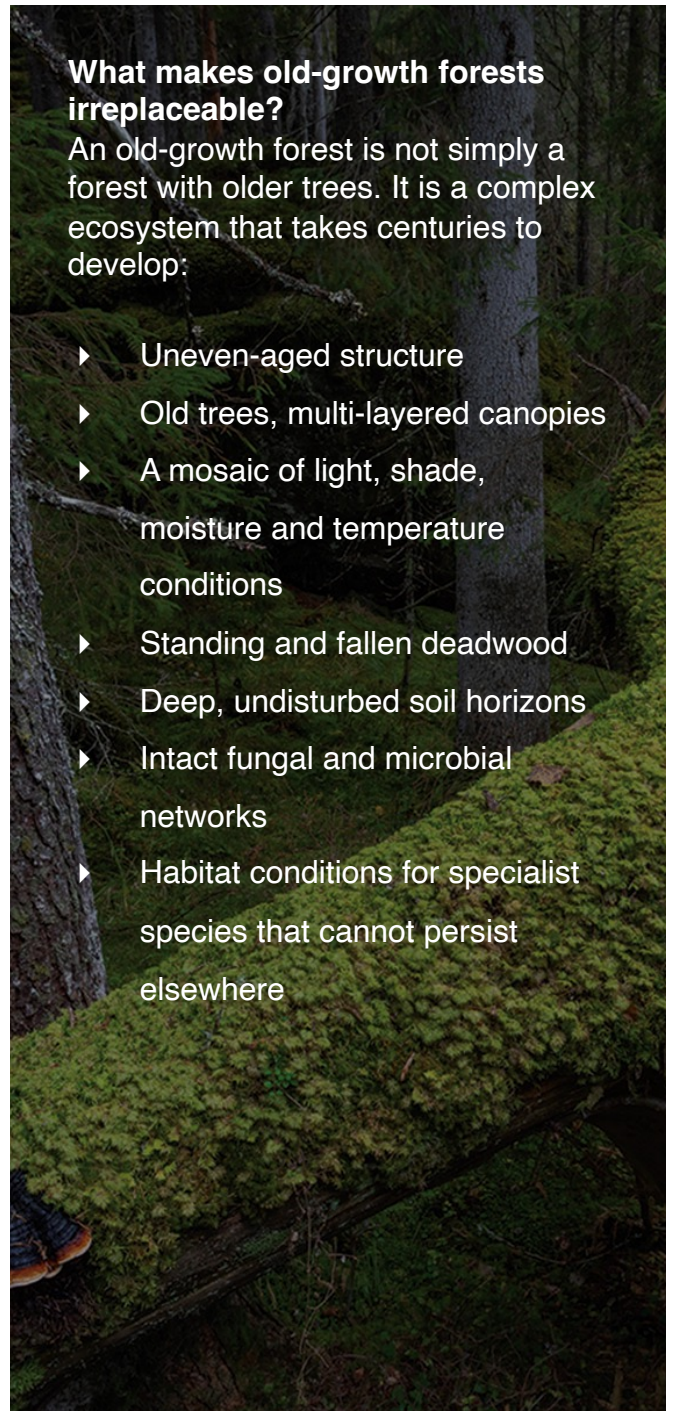
Europe is not losing tree cover; it is losing forest quality¹⁰.

The EFI's review of old-growth forest science adds a critical detail: more than half of Europe's remaining primary and old-growth forests currently have no strict protection status. They are largely on private land, under pressure from commercial forestry, and without legal safeguards that would prevent their loss¹⁰.

What makes old-growth forests irreplaceable?

An old-growth forest is not simply a forest with older trees. It is a complex ecosystem that takes centuries to develop:

- ▶ Uneven-aged structure
- ▶ Old trees, multi-layered canopies
- ▶ A mosaic of light, shade, moisture and temperature conditions
- ▶ Standing and fallen deadwood
- ▶ Deep, undisturbed soil horizons
- ▶ Intact fungal and microbial networks
- ▶ Habitat conditions for specialist species that cannot persist elsewhere



AN ILLUSTRATIVE EXAMPLE

The importance of **deadwood** in enhancing biodiversity:

A fallen log is not just “dead material.” As it decays (and returns nutrients to the soil), it can hold moisture, moderate temperature, reduce competition from dense ground vegetation, and physically shield seedlings from browsing animals.

“**Nurse Logs**” create microhabitats that can improve seedling survival and growth.

What Europe needs to protect and rebuild terrestrial biodiversity

Protect remaining pockets of old-growth and other high-integrity forest fragments - even small areas can hold rare species, genetic diversity, and ecological continuity that are scarce in heavily managed landscapes¹⁰.

Protect forest areas adjacent to old-growth patches¹⁰ - buffering old-growth remnants with protected forest helps reduce edge and disturbance impacts, lower species' extinction risk, and creates conditions for old-growth characteristics to expand outward over time.

Reconnect fragmented forest landscapes - biodiversity depends not only on habitat quality, but on species being able to move, disperse, and recover across connected forest areas.

Raise biodiversity standards in managed forests - mixed species composition, natural regeneration, habitat trees, and deadwood retention can make working forests more resilient and more supportive of biodiversity.



A misty forest scene with large moss-covered trees and a stream. The image shows a dense forest with tall evergreen trees and a stream flowing through the center. The foreground is filled with tall grasses and ferns. The background is shrouded in mist, creating a sense of depth and atmosphere. The text is overlaid on the right side of the image, enclosed in a thin green border.

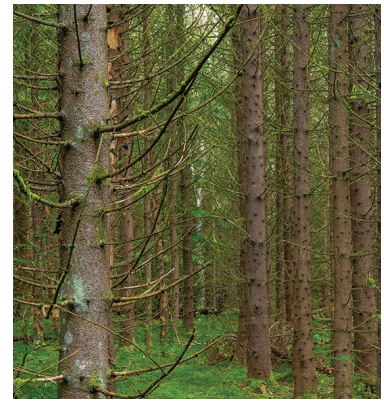
Lose the old-growth forests, and you lose the compass by which you navigate nature recovery.

What serious nature strategy gets right

Conservation, reforestation, and afforestation do different jobs

Understanding what different forest actions actually do is the foundation of credible nature strategy: Nature quantity ≠ nature quality. A landscape can remain forested, or even gain tree cover, while still losing ecological value if mature, structurally rich forests are replaced by younger, simpler, more intensively managed systems.

Newly planted forests, restored forests managed forests, and old-growth forests are all valuable. But they are not ecologically equivalent, and they are not substitutable on the same timescale.



OBJECTIVE	AFFORESTATION & REFORESTATION (ARR) Plant trees (Afforestation) or assist natural regeneration on cleared land	CONSERVATION & PRESERVATION Protect existing forests from deforestation and degradation	IMPROVED FOREST MANAGEMENT (IFM) Enhance resilience of existing production forests through better management practices
CLIMATE MECHANISM	Removal , Actively sequesters carbon dioxide from the atmosphere through growth	Avoidance , Prevents the release of stored carbon into the atmosphere	Removal & Avoidance , Combines stopping harvest (incr. rotation age) and growth
BENEFITS	Creates future value through carbon sequestration, habitat creation, and gradual rebuilding of ecological function ^{9,12} .	Secures ecological value already in place by protecting stored carbon, intact ecosystems, and irreplaceable biodiversity ^{9,12} .	Improves the biodiversity and long-term health of production forests, creates sustainable timber and economic resilience ^{9,12} .

The question of tradeoffs

A biodiversity strategy should not romanticize old-growth while dismissing managed forests.

Forest projects involve **tradeoffs**. A managed forest will never carry the same biodiversity value as a protected old-growth. And preserved forest will not produce timber.

Nevertheless, biodiversity can and should be built meaningfully into managed forest. The EEA identifies several practical approaches to do this.

But there are clear limits. Some species cannot be sustained through integrative management alone.

Managed forests and old-growth forests are additive in conservation value, not substitutable.

Interventions to improve nature quality in managed forests¹¹

- ▶ Retaining deadwood and habitat trees
- ▶ Encouraging natural regeneration
- ▶ Diversifying native species composition
- ▶ Extending rotation periods
- ▶ Avoiding clearcutting
- ▶ Protecting microhabitats
- ▶ Embedding old-growth “islands” or special biotopes within a broader managed landscape.

These measures matter. They improve forest health, resilience and carbon storage in the long-term.



Conservation in practice

Trefadder's old-growth forest protection programme in Norway

Following the logic of this paper, one conclusion follows: protecting existing high-value ecosystems should sit alongside restoration and afforestation in a mature corporate nature strategy.

Norway is often associated with vast forest landscapes, but scale should not be confused with ecological intactness.

Only around 2% of Norway's forested land qualifies as natural old-growth forest¹³. And it is estimated that as much as **84% of threatened forest species** in Norway are associated with old-growth forests⁶.

What remains includes ecologically unique forest types of wider European significance, including coastal boreal rainforest and old pine systems.

Much of the old-growth forests remain on private land and under pressure.

Even when forests qualify for protection under Norway's national conservation scheme, many are left unprotected due to lack of funding and remain at risk of land-use change and **permanent loss**.

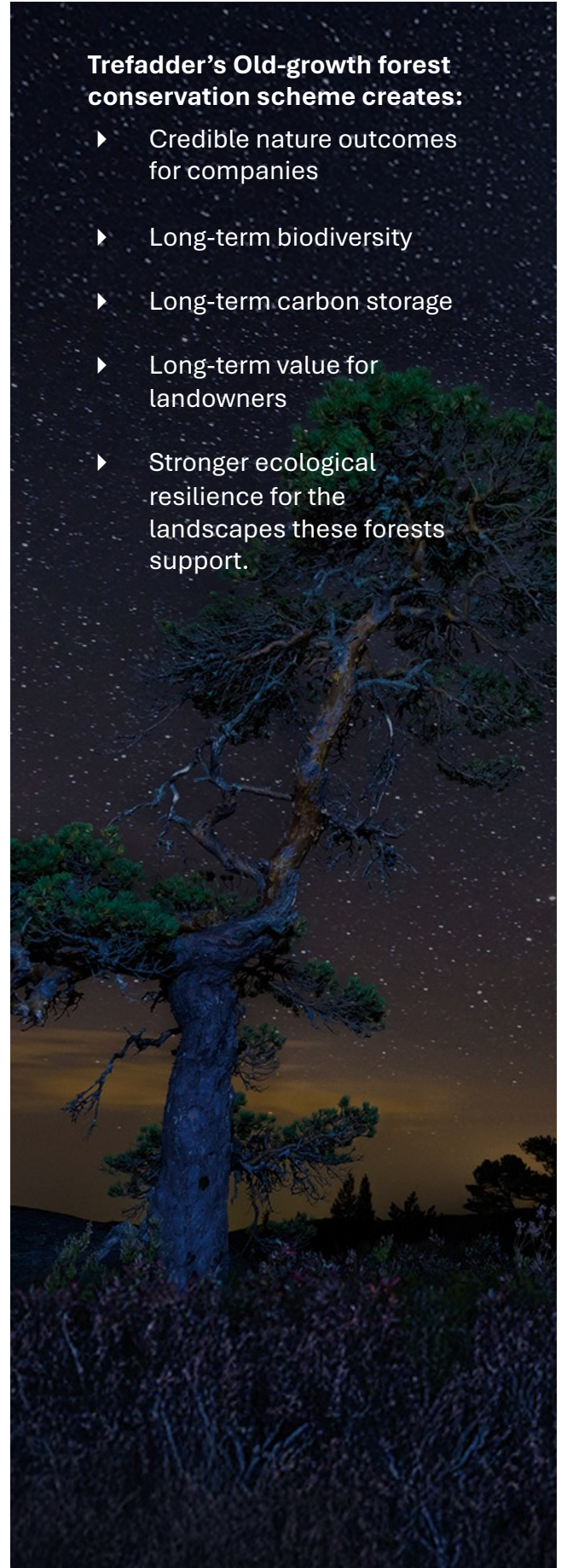
This is the gap Trefadder's old-growth protection programme is built to address.

In partnership with landowners, valuable old-growth forests on private Norwegian land are identified, biodiversity and conservational value is independently assessed, and long-term legal protection is secured and documented.

The result is a credible, trackable **conservation outcome built on permanence and transparency**.

Trefadder's Old-growth forest conservation scheme creates:

- ▶ Credible nature outcomes for companies
- ▶ Long-term biodiversity
- ▶ Long-term carbon storage
- ▶ Long-term value for landowners
- ▶ Stronger ecological resilience for the landscapes these forests support.



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