Framework showing how **artificial light at night (ALAN)** and **light pollution** can be anchored within **each of the 17 Sustainable Development Goals (SDGs)**:

Integrating Light Pollution and ALAN across the SDGs

1. No Poverty
Light pollution deepens environmental inequality and undermines the right to a healthy living environment, disproportionately affecting low-income and vulnerable populations.

Artificial light at night (ALAN) is both a **symptom and a driver of structural poverty**. Poorly planned lighting often concentrates in low-income districts, where excessive glare, continuous exposure and lack of shielding increase health risks and energy waste. Night workers and those living in densely illuminated areas experience higher levels of circadian disruption, fatigue and chronic disease — factors that reinforce socio-economic disadvantage.

Conversely, **access to natural darkness and sky quality** represents an often-overlooked dimension of environmental justice. Protecting the nocturnal environment contributes to equitable well-being, reduces energy costs, and restores a shared natural asset — the night sky — to all communities, regardless of income.

2. Zero Hunger
Artificial light at night (ALAN) disrupts the ecological and physiological processes that underpin global food security — from pollination and pest regulation to plant growth and soil microbiology.

Food systems depend not only on soil and water, but also on the **natural alternation of light and darkness**. Continuous or spectrally inappropriate illumination alters flowering times, nocturnal pollinator activity and insect–plant interactions, reducing both yield and biodiversity. It further interferes with the circadian regulation of livestock and the microbial communities essential for healthy soils.

In coastal and inland fisheries, excessive night lighting disturbs migration and spawning cycles, contributing to declining stocks and ecosystem instability.

Integrating **light-aware management** into agriculture and aquaculture therefore strengthens food resilience, safeguards ecosystem services, and ensures that production systems remain aligned with natural biophysical rhythms.

3. Good Health and Well-Being
Mitigate circadian disruption, sleep disorders and hormonal imbalance through

light-aware urban design and public-health policies. Artificial light at night (ALAN) has emerged as a significant determinant of human health, disrupting circadian regulation, endocrine balance, sleep quality and mental well-being.

Human physiology evolved under predictable cycles of light and darkness. Exposure to artificial light during the night suppresses melatonin, alters metabolic and immune function, and increases risks of obesity, diabetes, cardiovascular disease and certain cancers. Beyond physical effects, the loss of natural darkness contributes to anxiety, insomnia and cognitive fatigue, undermining psychological recovery and overall quality of life.

Communities in high-density or low-income areas are often most exposed to intrusive lighting and least protected by adequate regulation, amplifying health inequalities.

Recognising darkness as a **public-health resource** aligns medical, environmental and urban-planning agendas, ensuring that illumination serves safety without compromising physiological integrity.

4. Quality Education

Quality Education is not limited to schooling. It aims to provide people with the knowledge, skills and values needed to understand the world, think critically and make sustainable choices. It therefore includes **environmental education, scientific literacy and cultural awareness**.

Connection to Light Pollution

1. **Scientific literacy**
   Light pollution offers a concrete, interdisciplinary example linking physics (light and spectra), biology (rhythms and ecology), chemistry (atmospheric reactions) and social studies (energy, policy and ethics).
   → It trains systems thinking – a core component of quality education.
2. **Environmental and sustainability education**
   Understanding that *light can also be a pollutant* expands environmental awareness. Learning to use light responsibly builds competence in resource management, biodiversity protection and health-conscious design.
   → Education about light pollution enables sustainable behaviour and decision-making.

3. **Equity in learning conditions**
   Excessive night-time light impairs sleep, especially among adolescents, reducing attention, learning capacity and emotional stability.
   → A darker, healthier night environment supports better learning outcomes.

4. **Cultural and emotional education**
   Experiencing the starry sky fosters curiosity, wonder and a sense of connection with nature. Within the UNESCO framework, this counts as *education for global citizenship* and cultural heritage awareness.
   → Observing the night sky cultivates respect for natural rhythms – a foundation for responsible citizenship.

5. Gender Equality

Artificial light at night (ALAN) intersects with gender equality through its effects on safety, health, labour conditions and environmental justice.

Women and gender-diverse individuals are disproportionately affected by poorly designed night-time environments. Inadequate lighting can increase perceived and actual risks to personal safety, while over-illumination or glare often fails to improve security and instead undermines comfort, privacy and well-being.

Furthermore, women are over-represented in night-shift sectors such as healthcare, cleaning and hospitality, where continuous exposure to artificial light contributes to circadian disruption, sleep loss and higher rates of reproductive and metabolic disorders.

A gender-responsive lighting policy must therefore balance **safety, inclusiveness and health**, ensuring that illumination is designed not merely for visibility but for equity — enabling everyone to move, work and rest safely within a biologically and socially sustainable night environment.

In essence:

Achieving gender equality requires night-time spaces that protect both security and health — light that empowers without harm.

6. Clean Water and Sanitation

Artificial light at night (ALAN) interferes with the biological and chemical processes that maintain clean water and safe sanitation, undermining the resilience of aquatic and treatment systems.

Along coasts, rivers, lakes and wetlands, excessive illumination disrupts nocturnal species and microbial communities essential for nutrient recycling and natural

purification. Light exposure alters plankton composition, oxygen balance and organic-matter degradation, compromising water quality and biodiversity.

In sanitation infrastructure, continuous lighting of wastewater treatment plants and pumping stations wastes energy and **disturbs photoreactive and microbial processes** critical for effective decomposition and filtration. In some regions, poorly directed lighting near water bodies increases the attraction of vectors such as mosquitoes, adding a **public-health risk** to environmental stress.

Integrating darkness management into water and sanitation planning enhances ecosystem performance, energy efficiency and health protection.

In essence:

Ensuring clean water and safe sanitation requires recognising natural darkness as a condition for both ecological purification and public health.

7. Affordable and Clean Energy

Artificial light at night (ALAN) is one of the most visible forms of energy waste and a growing contributor to atmospheric and ecological imbalance.

Globally, more than 30 per cent of outdoor lighting energy is lost as upward or excessive emissions, generating unnecessary carbon output and skyglow. The problem is not only *how much* energy is used, but *how* it is converted into photons that interact with ecosystems and atmospheric chemistry. Inefficient or spectrally harmful lighting systems undermine the transition to truly clean energy.

A sustainable energy agenda must therefore include **spectral responsibility** and **temporal control**: producing only the light needed, only when and where it is required, and with minimal ecological impact. Integrating ALAN reduction into energy policy lowers emissions, cuts costs, and aligns the energy transition with environmental and health objectives.

In essence:

Clean energy is not achieved merely by changing the power source — it also requires eliminating wasted and harmful light from the energy chain.

8. Decent Work and Economic Growth

Addressing artificial light at night (ALAN) supports fair employment, sustainable innovation and long-term economic resilience by reducing health risks, energy waste and ecological degradation.

Exposure to night-time light affects millions of night-shift workers worldwide — particularly in healthcare, transport, manufacturing and service sectors. Disrupted circadian rhythms lead to fatigue, reduced productivity and increased risk of chronic illness, undermining both well-being and economic efficiency. Integrating chronobiological principles into workplace lighting improves safety, performance and occupational health.

At a macro level, uncontrolled lighting inflates operational costs and contributes to environmental damage that ultimately constrains economic potential. Transitioning to **ecologically intelligent lighting systems** — adaptive, energy-efficient and spectrally responsible — fosters new markets, research and green employment.

The protection of natural darkness thus aligns labour rights, innovation and sustainability within a single framework of responsible growth.

In essence:

Decent work and sustainable growth require lighting that supports human health, reduces waste and drives innovation towards a night-friendly economy.

9. Industry, Innovation and Infrastructure

Integrating night-time environmental quality into industrial and infrastructure planning drives technological innovation and ensures that development remains compatible with ecological and human health.

Industrial zones, ports, logistics hubs and transport corridors are among the largest sources of artificial light at night (ALAN). Excessive or poorly directed illumination not only wastes energy but also contributes to atmospheric photochemistry, biodiversity loss and community disturbance. Incorporating **spectral and temporal design standards** into infrastructure projects therefore represents a crucial step towards sustainable industrial policy.

Innovation in lighting technology — including adaptive controls, low-impact spectra and real-time environmental monitoring — provides significant opportunities for green growth and responsible engineering. Encouraging cross-sector collaboration between environmental science, digital industries and manufacturing accelerates the transition to **night-friendly infrastructure** that respects both productivity and planetary limits.

In essence:

Sustainable industry and infrastructure must innovate not only for efficiency, but for harmony with the natural night.

10. Reduced Inequalities
Light pollution is an emerging dimension of environmental inequality, disproportionately affecting vulnerable populations through unequal exposure, health risks and loss of natural heritage.

Communities with limited political or economic influence often live in areas of excessive or intrusive lighting — near roads, industrial zones or commercial districts — where exposure to artificial light at night (ALAN) is continuous and unregulated. This unequal distribution of environmental quality mirrors other forms of injustice: those who contribute least to the problem often bear the greatest biological and psychological burden.

At the same time, access to dark skies and natural nightscapes increasingly becomes a privilege of rural or affluent regions. Restoring **equitable access to darkness** means recognising the night sky as a shared public good, not a luxury.

Policies addressing ALAN must therefore integrate social equity, ensuring that environmental protection and health benefits extend to all communities, regardless of income or geography.

11. Sustainable Cities and Communities
Sustainable urban development requires protecting the night-time environment as part of urban ecology, public health and cultural heritage.

Cities are among the main sources of artificial light at night (ALAN). Uncontrolled illumination increases energy consumption, disrupts biodiversity, affects residents' health, and erases the cultural and aesthetic value of the night sky. Integrating **darkness management** into urban planning strengthens environmental quality, reduces emissions and enhances citizens' well-being.

Designing night-time environments with **spectral responsibility, spatial precision and temporal control** enables cities to remain vibrant and safe without ecological or physiological harm. Protecting natural darkness also preserves access to the stars as a shared cultural experience — a component of collective identity often lost to urban glare.

Urban sustainability therefore depends not only on clean air and green spaces, but equally on **the restoration of natural nightscapes** as essential urban infrastructure.

In essence:

Truly sustainable cities shine by day — and protect the night.

12. Responsible Consumption and Production
Responsible lighting is a crucial yet often overlooked element of sustainable production and consumption, linking material efficiency, resource use and ecological responsibility.

The manufacture, operation and disposal of lighting systems involve significant material, energy and chemical footprints. Overproduction of luminaires, premature replacements and unnecessary night-time illumination all contribute to waste, emissions and resource depletion. Integrating **circular-economy principles** — durability, repairability, recyclability and spectral optimisation — reduces both environmental impact and lifecycle costs.

On the consumption side, public and private lighting decisions shape not only energy demand but also ecological and health outcomes. Encouraging citizens, businesses and municipalities to adopt **light-conscious behaviour** fosters accountability and awareness of environmental limits.

Embedding light-pollution prevention into production standards and procurement frameworks ensures that efficiency gains do not come at the expense of natural darkness or biodiversity.

In essence:

Responsible production and consumption include producing only the light we truly need — and respecting the darkness we all depend on.

13. Climate Action
Artificial light at night (ALAN) contributes to climate imbalance both directly, through energy waste, and indirectly, by altering atmospheric photochemistry and surface radiative dynamics.

Every unnecessary photon represents wasted energy, often generated from carbon-intensive sources. Yet the climatic relevance of light pollution extends beyond emissions: spectral radiation interacts with atmospheric constituents such as NO_2, HONO and NO_3, accelerating photochemical reactions that influence **ozone formation and secondary aerosols**. This process modifies local radiative forcing and air quality, particularly in urban and coastal regions.

Moreover, the loss of nocturnal cooling caused by over-illumination contributes to urban heat islands and thermal stress, increasing energy demand for air conditioning and creating feedback loops that amplify warming.

Integrating ALAN into climate strategies therefore strengthens mitigation and adaptation alike — reducing emissions, improving air chemistry, and restoring the planet's natural thermal equilibrium.

In essence:

Climate action must also reclaim the night — curbing wasted light to restore the atmosphere's balance and the Earth's natural cooling cycle.

14. Life Below Water

Artificial light at night (ALAN) disrupts marine and freshwater ecosystems by altering the natural light regime that governs biological rhythms, behaviour and trophic dynamics.

Aquatic species evolved under predictable cycles of daylight, moonlight and darkness. Coastal, harbour and offshore illumination penetrates surface waters, affecting the orientation, migration and reproduction of fish, crustaceans, molluscs and plankton. These disruptions cascade through food webs, disturbing spawning grounds, predation rates and nutrient cycling.

Spectral emissions in the blue and green range penetrate particularly deeply into clear waters, extending ecological disturbance far beyond the illuminated area. In shallow zones, artificial lighting suppresses coral spawning synchrony and interferes with the diel vertical migration of plankton — processes essential to ocean productivity and carbon sequestration.

Managing marine and freshwater lighting, from ports to aquaculture facilities, is therefore essential for maintaining ecological integrity, fisheries sustainability and the resilience of aquatic biodiversity.

In essence:

Protecting life below water means restoring natural darkness as a core condition for aquatic balance, productivity and renewal.

15. Life on Land

Natural darkness is an essential ecological condition for terrestrial life. Artificial light at night (ALAN) disrupts biological rhythms, ecological interactions and evolutionary processes that have shaped biodiversity for millions of years.

More than half of all terrestrial species are nocturnal or crepuscular. Their orientation, communication, reproduction and foraging depend on the integrity of natural light–dark cycles. Exposure to artificial illumination alters predator–prey

dynamics, pollination networks, seasonal timing and migration behaviour, fragmenting habitats even where physical barriers are absent.

In plants and soil organisms, light at night interferes with photoperiodic signalling, root–shoot balance and microbial activity, affecting productivity and nutrient turnover. These changes cascade across ecosystems, weakening resilience and threatening long-term biodiversity.

Recognising darkness as a **habitat factor** — as vital as air, water or temperature — redefines conservation practice for a 24-hour planet. Protecting natural nightscapes supports the continuity of evolution and the stability of life on Earth.

In essence:

Safeguarding life on land requires conserving darkness itself — the unseen half of every ecosystem.

16. Peace, Justice and Strong Institutions

Effective governance of artificial light at night (ALAN) requires transparent institutions, evidence-based regulation and citizen participation — ensuring that the protection of the nocturnal environment becomes a matter of justice and accountability.

Light pollution is not merely a technical issue; it reflects how societies make collective decisions about shared resources. The absence of clear legal frameworks, public oversight and data transparency has allowed uncontrolled illumination to spread globally, affecting ecosystems, health and cultural heritage without consent or compensation.

Strong institutions can correct this governance deficit by embedding **scientific criteria**, **spectral standards** and **public reporting** into lighting policies. Participatory processes ensure that communities have a voice in defining when, where and how light is used, balancing safety, ecology and social needs.

Integrating night-time governance into environmental law strengthens democracy and environmental justice alike, affirming that sustainable development depends on informed and transparent decision-making — even after sunset.

In essence:

Peaceful and just societies need strong institutions that govern not only the day, but also the night.

But there is more: (just one example)

1. Regulating lighting requires solid legal frameworks, transparency in public lighting contracts, and active citizen participation.

This goal may seem far from the topic of artificial light, but it is actually essential.
Regulating outdoor lighting requires **clear laws**, **transparent public contracts**, and **institutions that understand the science behind light**.
Artificial light is also a form of pollution. Controlling it fairly means having **solid governance** and **decisions based on evidence**, not just aesthetics or cost.
For example:

- If a local authority replaces streetlights without knowing that certain wavelengths can **disrupt atmospheric chemistry**, **harm ecosystems**, or **affect human health**, it is making uninformed decisions.
- If lighting contracts are not transparent or lack citizen participation, technologies may be installed that **worsen light pollution** or even **increase air pollution**.

That is why this topic fits within SDG 16:

- it calls for **strong institutions** that regulate lighting with scientific understanding,
- **environmental justice** so that decisions do not harm people or nature,
- and **transparency**, ensuring that public lighting management is open and participatory.

In short:
Without fair rules and institutions capable of understanding the science behind light, we cannot protect the atmosphere, biodiversity, or human health.

Specific Regulatory Components (what to regulate and how)
1) Spectral limits (which photons are permitted)
Clause A ("short-blue cut"):
For outdoor lighting after civil twilight, suppress or minimise integrated radiance in the 350–420 nm range (for example, require luminaires whose spectral power distribution – SPD – shows negligible emission within that band; verification by manufacturer's spectral report and on-site measurement).
Justification: reduces nocturnal and pre-dawn $j(NO_2)$ and $j(HONO)$.
Clause B ("yellow-red management"):
Control effective radiance in the 580–680 nm range during deep-night hours, in order to avoid NO_3 photolysis in chemically sensitive areas (ports, high-NOx road corridors, valleys with stagnation).
Justification: NO_3 absorption peaks near 662 nm; limiting this band prevents nocturnal "de-reservoirisation" of reactive NOx.

Important note: there is no single "safe" correlated colour temperature (CCT) for atmospheric chemistry; the required criterion is the **spectral power distribution (SPD)** with conditioned bands. CCT values are indicative only, not sufficient.

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2) Temporal windows (when each spectrum is allowed)

Window V1 (1 h after dusk → 2 h before dawn): prohibit significant emission in 350–420 nm for non-critical uses.

Window V2 (−2 h → +1 h relative to sunrise): strengthen the 350–420 nm cut and restrict 580–680 nm in NOx corridors (to avoid enhancing HONO → OH initiation or NO_3 photolysis in the pre-morning phase).

Justification: this period is most sensitive for photo-chemical initiation (HONO) and NOx "release" via NO_3 photolysis.

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3) Chemical zoning (where to apply each level of stringency)

Define **QC zones (chemically critical zones)** overlapping maps of NOx/VOC concentrations and nocturnal stagnation (valleys, urban canyons, ports, industrial areas).

Within QC zones: apply dual spectral restriction (Bands A and B) and enforce Windows V1/V2.

(methodological framework: nocturnal chemistry of NO_3/N_2O_5/HONO)

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4) Metrics and verification (how to audit compliance)

Require the full SPD of the system (luminaire + optics + mounting height + shielding) and on-site spectroradiometric measurement to obtain *j*-values: nocturnal $j(NO_2)$, j(HONO), $j(NO_3)$.

Regulatory criterion: no statistically significant increase of *j*-values relative to the local natural background (limits to be set by each authority following baseline campaign).

(method and relevance of $j(NO_2)$ in urban environments; recommendation for local measurement)

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5) Geometry and shielding (how to reduce photons relevant to chemistry)

ULOR = 0 (zero upward light output ratio) and full shielding to minimise skyglow that generates chemically active photons in the atmospheric volume.

Height and photometry: limit lateral glare to reduce horizontal irradiance on façades and surfaces that act as heterogeneous reactors for HONO.

(standards on intrusive light; illuminated heterogeneous chemistry of HONO)

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6) Governance and transparency (SDG 16)

Traceability: each public-lighting specification must include a spectral report and *j*-value calculations, with all data and scripts fully auditable.

17. Partnerships for the Goals
Build international cooperation for light-pollution research, policy harmonisation and public engagement.

Addressing artificial light at night (ALAN) requires global cooperation across science, governance, technology and culture — building alliances that unite knowledge, innovation and shared responsibility for the planet's nocturnal environment.

Light pollution transcends borders, disciplines and sectors. Its mitigation depends on partnerships between governments, research institutions, municipalities, civil society and the private sector. Coordinated international frameworks can harmonise **spectral standards, monitoring methods and policy indicators**, enabling coherent progress and mutual accountability.

Cross-disciplinary collaboration — linking astrophysics, ecology, public health, engineering and education — accelerates innovation and strengthens evidence-based policy. Partnerships with the lighting industry and energy sector can promote technologies that respect both human needs and ecological boundaries.

Embedding darkness protection within global environmental diplomacy affirms that the night sky is a shared heritage of humankind, requiring cooperation equal to that devoted to air, water and climate.

In essence:

Achieving the SDGs demands partnerships that also protect the night — cooperation that restores darkness as a universal common good.

Why Light Pollution and the Right to Sky Quality and Access to Starlight Require a Dedicated Sustainable Development Goal : SDG18

Attempts to address artificial light at night (ALAN) within the framework of existing Sustainable Development Goals have proven inadequate. When distributed across health, energy, climate, or biodiversity targets, the issue becomes fragmented, diluted, and ultimately invisible in policy practice. Its omission as an explicit goal leads to a profound governance gap: what is not named is rarely acted upon.

Politicians and public institutions struggle to perceive the cross-cutting nature of light pollution. Because it is not explicitly listed in any SDG, it is **often dismissed as a technical or aesthetic matter rather than a form of environmental degradation** with measurable health, ecological and atmospheric consequences.

Without legal recognition or dedicated indicators, institutions feel neither mandated nor equipped to intervene. The result is inertia — a form of silent environmental neglect that expands every night.

Light pollution is unique among anthropogenic pressures. It is the **only form of pollution that is continuously produced to create visibility** and, paradoxically, obscures the very universe it illuminates. Unlike chemical, acoustic or thermal pollution, its impacts are at once **biological, psychological, social and cultural**. It alters endocrine rhythms, disrupts ecosystems, erases astronomical visibility, and dissolves the shared human heritage of the starry sky. The loss of darkness is therefore not merely an ecological crisis but a civilisational one — affecting how societies perceive nature, time, and themselves.

Leaving light pollution scattered among other goals ensures it will continue to fall between institutional and conceptual cracks. A dedicated **SDG 18: Sky Quality and Access to Starlight** would create the political visibility, scientific accountability and moral legitimacy necessary for global action. It would unite environmental protection, public health, climate stability and cultural identity under a single, coherent mandate.

Protecting natural darkness is no longer optional. It is an urgent frontier of sustainability — the defence of the planet's nocturnal half, and with it, the preservation of life's equilibrium and humanity's view of the cosmos.

1. Darkness as a Foundational Pillar of Life

Natural darkness is not merely the absence of light; it is a **biophysical framework that regulates life itself**. Every species on Earth has evolved under the alternation of day and night, guided by photoperiodic rhythms that govern metabolism, reproduction, migration and growth. The night provides recovery for organisms, resets atmospheric chemistry, and anchors the planet's energy balance. Disrupting darkness is therefore not a cosmetic or aesthetic concern but an interference with **one of the core operating systems of the biosphere**.

2. A Missing Dimension in Planetary Governance

Artificial light at night (ALAN) is among the **fastest-growing environmental pressures, yet remains outside global regulation**. The SDGs protect air, water and soil, but neglect the nocturnal environment, despite its equal ecological weight. Humanity governs the day but leaves the night unprotected — an omission that weakens all other sustainability targets.

3. Fragmentation Undermines Effective Action

Integrating light pollution piecemeal across existing SDGs dilutes accountability. A stand-alone goal would allow unified indicators, baseline monitoring and coherent policy coordination for a domain that transcends health, energy and biodiversity boundaries.

4. A Distinct Scientific and Environmental Domain

The impacts of ALAN—circadian disruption, ecological desynchronisation, altered photochemistry—constitute a **unique planetary process**. These cannot be subsumed under energy efficiency or climate mitigation frameworks, as their causal mechanisms and ecological feedbacks are distinct.

5. Biodiversity and Human Health as Interlinked Frontiers

Over half of all species are nocturnal. Light pollution interferes with ecosystem functions as essential as pollination, seed dispersal and predator–prey dynamics. In humans it destabilises endocrine balance, sleep and immune response. The night is a shared habitat; its degradation erodes both **ecological integrity and physiological resilience**.

6. Equity, Culture and the Human Right to Darkness

Access to natural darkness and starlight is a universal human experience—cultural, scientific, spiritual. Its disappearance constitutes a new form of environmental inequity, denying future generations the sensory and cognitive bond with the cosmos that shaped civilisation. Recognising darkness as a **commons and a right** restores balance to the anthropocentric narrative of progress.

7. Governance and Accountability Gap

No global institution currently safeguards the night. Without explicit mandates, policy remains fragmented and ineffective. A dedicated SDG would institutionalise night-time governance, integrating spectral standards, emission thresholds and transparency mechanisms.

8. A Unifying Symbol for Planetary Ethics

Protecting the night represents more than conservation: it re-defines humanity's relationship with the biosphere. Establishing a **"Right to Sky Quality and Access to Starlight"** as a distinct Sustainable Development Goal would affirm that **darkness is a fundamental pillar of life**, indispensable to climate stability, biodiversity, and human well-being.

The night is not merely the absence of daylight; it is a distinct ecological state upon which the stability of biological systems, atmospheric processes and human physiology fundamentally depends. Yet, the natural night is rapidly and unintentionally being erased.

Artificial light at night, radio emissions and the reflective signatures of satellite constellations have transformed darkness into an increasingly scarce environmental condition.

Despite the centrality of nocturnal processes to planetary equilibrium, the protection of the natural night is currently absent from the global sustainability framework. Existing Sustainable Development Goals address energy, biodiversity, climate and health, but none recognises darkness itself as an environmental resource that requires active safeguarding. The result is a policy vacuum in which the world is losing a vital environmental dimension by default rather than by decision.

The scientific evidence is unequivocal: disruptions to natural night conditions deregulate ecosystems, distort trophic networks, and interfere with circadian biology across species, including humans. Artificial light at night measurably contributes to biodiversity decline by altering reproductive cycles, migration pathways and predator–prey dynamics. It affects human endocrine regulation, sleep and metabolic health, demonstrating that light pollution is both an ecological and a public health concern.

In parallel, the scientific foundations of environmental knowledge are being undermined. Ground-based observations of the universe and the Earth's atmosphere are increasingly contaminated by optical and electromagnetic interference. As we lose the night, we also lose the integrity of the observational infrastructure upon which climate monitoring, atmospheric research and astronomy depend. There is also a profound cultural consequence.

The visible night sky has, for millennia, shaped the human capacity for curiosity, navigation and scientific thought. The right to experience the stars is not a luxury; it is part of the intellectual commons of civilisation. For all these reasons, a new Sustainable Development Goal — SDG 18: Right to Natural Night and Access to Starlight — is urgently required.

Only a dedicated goal can provide:

• normative clarity that natural darkness is a protected environmental state,

• political visibility for a domain currently overlooked by global governance,

• coherent indicators and obligations to reduce the drivers of nocturnal degradation,

• and a mandate for scientific continuity, ensuring we can continue to observe and understand the Earth and the cosmos from our own surface. To protect the natural night is to protect the integrity of life, of science and of what it means to be human.