



Overview

Energy:

Priority actions towards a
nature-positive future

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Introduction

Energy exists in different forms, such as electricity, heat, and solid, liquid or gaseous fuels. The energy system (encompassing ‘oil and gas’ and ‘utilities’) is defined as everything involved in the production, conversion, storage, delivery and use of energy. Through its large-scale use of land¹ and water and its high contribution to greenhouse gas (GHG) emissions,² the system has broad and significant impacts and dependencies on nature which present risks to business continuity and company value. It equally has great potential to drive nature-positive change within its value chain and beyond, because energy is used by almost all production activities of businesses and by domestic households.

To peak fossil fuel emissions by 2025, and to reduce global emissions by at least 45% by 2030,³ energy companies need to work towards phasing out all fossil fuels and scaling renewables. While the production of renewable energy still carries impacts on nature (such as the conversion of land and extraction of metals for infrastructure), these have a lower contribution to climate change compared to fossil fuels (one of the five key drivers of biodiversity loss). Companies that sustainably manage natural resources have a competitive advantage compared to peers that do not. This creates an important opportunity to strengthen

business performance in the eyes of many investors and other stakeholders. These advantages will increase given the long time horizons that characterize the system: plants built today will generate and distribute energy for many years and during this time, current and future nature-related risks will increase. This highlights the urgency to embed nature assessments into corporate strategies and investment decisions.

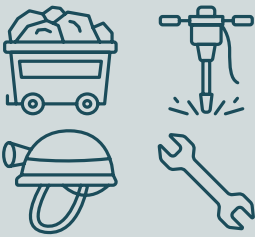
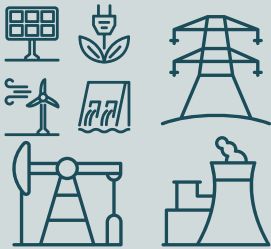
To complement ongoing sustainability initiatives, all businesses need to **Assess, Commit, Transform and Disclose** ([ACT-D high-level business actions on nature](#)). They should acknowledge the value of nature to their business; assess and measure their impacts and dependencies on nature; set transparent, time-bound, science-based targets; take actions to address their key impacts and dependencies; and publicly disclose performance and other relevant nature-related information.

This overview provides a system-level summary of potential key impacts and dependencies on nature. Importantly, it also sets out the priority actions that all businesses should take now to **transform** and ensure the energy system plays its role in halting and reversing nature loss by 2030 - the mission at the heart of the [Kunming-Montreal Global Biodiversity Framework](#).

Scope of this overview

The energy system supply chain and the entire energy supply side are clustered in “oil and gas” and “utilities”, as classified by ENCORE and SBTN frameworks. For more details on the scope of this classification, see WBCSD’s [Roadmap to Nature Positive: Foundations for the energy system](#).

Energy value chain (as covered in this overview)

VALUE CHAIN STAGES			
	UPSTREAM	DIRECT OPERATIONS	DOWNSTREAM
			<p>NOT COVERED IN THIS PAPER</p>
OIL & GAS	Mining Supply chain & sourcing Equipment & services	Exploration Production Refining Storage & transportation Gas distribution & retail	Marketing & sales End users
UTILITIES	Mining Supply chain & sourcing	Renewable energy generation Nuclear & thermal energy generation Electricity transmission & distribution	Marketing & sales End users

Nature-related impacts

To protect and enhance the ecosystems on which they depend, companies in the energy system should direct their efforts towards addressing the most significant impacts on nature in their operations and value chains, namely:

- **Water use** – The energy value chain directly impacts aquifers and/or water basins by depleting them or reducing water flow and increasing drought severity, aggravated in drought-prone areas. For example, water is used to cool power plants, in hydro power production, to irrigate crops for biofuel production (such as ethanol and biodiesel) and to construct and maintain energy infrastructure (such as pipelines, power lines and dams).
- **Air pollution and greenhouse gas (GHG) emissions** – Emissions of GHGs and air pollutants are common impacts for the energy system supply chain and some direct operations, especially for coal, oil and gas. These emissions reduce air quality and contribute to climate change, with well-known adverse effects on natural ecosystems and human health.

- **Pollution** – The energy system is a major source of pollution, including air pollution (see previous point), water pollution, soil pollution and noise pollution. Water and soil pollution from oil spills, mining, and other activities can harm terrestrial and marine wildlife and vegetation and have long term ecological impacts. Noise pollution from power plants and other facilities can disrupt wildlife and human activities.

- **Land/sea use change** – The construction of power plants, pipelines, and other energy infrastructure requires large areas of land, leading to habitat loss and the displacement of people. Marine ecosystems can be disturbed by offshore energy infrastructure, such as wind farms and oil rigs.

Nature-related dependencies

Like many systems, the energy system is dependent on a number of ecosystem assets, flows and services to function and grow. In particular, energy companies rely heavily on:

- **Water resources** – Many value chain stages of both oil and gas and utilities depend on functioning water flows and water reserves. Freshwater resources collected from precipitation and water flow from natural sources are often critical and irreplaceable in production processes (for example, cooling processes in thermal/nuclear plants and continuity for hydropower operations).
- **Climate regulation** – Both oil and gas and utilities depend on climate regulation ecosystems such as forests and grasslands that sequester carbon and mitigate the impact of extreme weather events. A stable climate also supports continuity and renewable operations relying on natural inputs (for example,

solar and wind power). Such services exist at the local, regional and global scales and alterations in these can affect companies' infrastructure and operations.

- **Flood and storm protection, erosion control** – Similarly to climate regulating services, the energy system depends on water regulating services that protect from flooding and storm events and control land erosion. Infrastructure can be damaged, and activities interrupted by such natural hazards.

These dependencies strengthen the business case to invest in the protection and restoration of nature.



Priority actions and opportunities

Through its impacts and dependencies on some of the world's most valuable ecosystems, the energy system has a key role to play in the transition to a nature-positive economy. As a business in the energy system, you can reduce your company's negative impacts on nature, mitigate risks to your operations and unlock commercial opportunities by prioritizing five key actions:

1. Embrace decarbonization to mitigate climate impacts –

Design and implement an ambitious decarbonization strategy - including through investments in renewables and energy-efficiency technologies - to reduce GHG emissions. For the energy system, among others, it is key to reach net-zero emissions across Scope 1, 2 and 3 and, in this way, contribute to the achievement of the Paris Agreement and societal efforts to mitigate climate change. Reducing emissions globally will help stop the increase in frequency, severity, unpredictability and magnitude of extreme weather events such as storms, floods, heat waves and droughts – which cause damage to infrastructure, interrupt activities and energy supply, and reduce the productivity of renewable assets such as solar, wind and hydropower.

2. Manage water resources sustainably – Design and implement a sustainable water management strategy, in compliance with local, national or international regulatory water requirements. This should aim to promote water efficiency and reuse or to increase the use of alternative water resources (seawater, desalinated seawater, wastewater, etc.). Implement water replenishment programs and projects to conserve and restore water species affected by water withdrawals.

3. Avoid conversion of, and help restore, habitats and ecosystems – Consider nature at the design stage of projects and ensure you site new projects responsibly by locating them away from key biodiversity areas, and where possible, on previously degraded land to avoid further conversion of natural developments. Where modifying habitats for new

developments is deemed unavoidable and legally permissible, avoid locations in protected areas and internationally recognized areas, ensure no critical habitats or migratory routes are impacted, and commit to biodiversity net gain strategies with measurable, like-for-like improvements in the state of nature after completion. For current operating sites or those that have been cleared or decommissioned, avoid negatively impacting and instead restore and regenerate nature, for example by introducing innovative Nature-based Solutions (NbS), such as restoring wetlands or native species and habitats.

4. Commit to circular models – As mining and materials value chains have relevant impacts on nature, reduce supply chain impacts by increasing the circularity and sustainability of components and assets in design and construction phases, in collaboration with your suppliers. Use innovative and sustainable materials and solutions to replace the ones that harm nature. For raw materials used in high volumes during production, commit to integrating recycled materials wherever possible, for example, by recycling water, used polymers or end-of-life products, investing in innovation and circularity.

5. Partner and advocate beyond your value chain – To drive system-level transformation, advocate for governments to raise policy ambitions for nature and climate and stretch beyond your company's business boundaries through collaboration across value chains and inclusion of multiple stakeholder groups such as suppliers, customers, landowners, partners and local communities.

Importantly, efforts to deliver these priority actions and transform the system must be delivered in alignment with a just and equitable transition, including meaningful dialogue with affected groups, such as employees, local communities, Indigenous Peoples and marginalized communities.

Adopting the priority actions can help businesses contribute to societal and environmental objectives, including the Global Biodiversity Framework (GBF) and the Sustainable Development Goals (SDGs). [Read the GBF-SDG mapping to see how the priority actions can contribute to these objectives.](#)



Resources

This summary was derived from the WBCSD report '[Roadmap to nature positive: Foundations for the energy system](#)'.

The following **sector-specific guidance and tools** are currently available to companies in the energy system:

- [Additional Sector Guidance, Oil and Gas](#) (TNFD Nature-related Risk and Opportunity Management and Disclosure Framework)
- [Additional Sector Guidance, Power and Utilities Sectors](#) (TNFD Nature-related Risk and Opportunity Management and Disclosure Framework)

- [Beyond Carbon-Free](#) (nature.org)
- [US Site Renewables Right](#) (The Nature Conservancy)
- [India SiteRight](#) (The Nature Conservancy India)
- [Nature-safe Energy](#) (CLEANaction)
- [Mitigating biodiversity impacts associated with solar and wind energy development](#) (IUCN Library System)

For additional **sector-agnostic resources**, please refer to Business for Nature's [High-level Business Actions on Nature](#).

Contributors and credits

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References

¹ [Impacts of Green New Delhi Energy Plans on Grid Stability, Costs, Jobs, Health and Climate in 143 Countries](#) (ScienceDirect, 2019)

² [Net Zero by 2050 - A Roadmap for the Global Energy Sector](#) (International Energy Agency, 2021)

³ [Climate Change 2022: Mitigation of Climate Change](#) (IPCC, 2022)

