

Executive Summary



Global environmental trends are creating new risks and new opportunities for businesses in every industry. Indeed the transition to a green economy, now in its early stages, will open up great opportunities for companies that understand the implications of these trends and account for them in their planning and business strategy. Conversely, companies that fail to understand the changes, or that act too slowly, will put value at risk.

GEO-5 for Business is written for business leaders who are responsible for ensuring that risks and opportunities are understood, addressed, and turned into long-term competitive advantage for their companies. The report assesses the operational, market, reputational, and policy implications of environmental trends on ten business sectors:

- Building and construction
- Chemicals
- Electric power
- Extractives
- Finance
- Food and beverage
- Healthcare
- Information and communication technology
- Tourism
- Transportation

The report describes business risks and opportunities based on information derived from existing science, business, policy, and other literature. It also includes brief real-world examples that illustrate the nature of some of these risks and opportunities. The report contains extensive citations throughout, allowing readers to easily access source documents that provide further details on specific trends and impacts.

GEO-5 for Business builds on the findings of UNEP's fifth Global Environment Outlook (GEO-5) report, released in June 2012. GEO-5 assessed the current state and trends of the global environment, in which population growth, economic development, urbanization, and globalization are driving degradation across numerous environmental indicators. Out of 90 environmental goals and objectives assessed in GEO-5, significant progress could only be shown for four. Chapter 2 of the report briefly summarizes the drivers and trends described in GEO-5. Both the specific trends in GEO-5 and the broader picture of decline have significant implications for companies around the world, regardless of size or sector, some of which are reflected in the following table.

Environmental Trend from GEO-5	Key Implications for Business
Greenhouse gases – Greenhouse gas emissions are projected to double in the next 50 years. Such growth may lead to global average surface temperature increases of 3°C to 6°C by the end of the century [GEO-5, pp.16, 20, 36, 429]	Market shifts favoring lower-carbon products; operational and supply chain disruptions; higher cost of energy, food, and other commodities; shifting production and transportation patterns to adapt to local conditions
Severe Weather – There was a 230 percent rise in the number of flood disasters and a 38 percent rise in drought disasters occurring between the 1980s and the 2000s [GEO-5, pp.107-108]	Operational and supply chain disruption; increased cost of operations and materials; damage to shared public infrastructure; increased demand for reconstruction services
Land Conversion – There is a projected increase in land requirements for urban uses by 100-200 million hectares over the next 40 years [GEO-5, p.77]	New and growing markets from urban expansion; restricted access to land-based resources; loss of ecosystem services; competition for arable land; increasing pressure to protect critical natural resources
Water Availability – Global water withdrawals have tripled over the last 50 years to meet agricultural, industrial, and domestic demands [GEO-5, pp.102-104, 436]	New markets for water-efficient products; constraints on growth due to water scarcity; operational and supply chain disruptions; conflicts with other stakeholders over limited supply; increasing cost of water
Water Pollution – Persistent toxic chemical pollutants, now found in 90 percent of water bodies, continue to accumulate in aquatic systems [GEO-5, p.112]	Increased demand for pollution control devices and systems; increased cost of water treatment; stricter water quality regulations; increased demand for healthcare services to treat health impacts
Biodiversity – Critical habitat such as forests, wetlands, and drylands continue to decline. 13 million hectares of forest were lost between 2000 and 2010. Species extinction is expected to continue at a high rate through the 21st century [GEO-5, pp.71-72, 140, 158]	Increased market, reputational, and regulatory pressure to reduce biodiversity impacts; increased cost and reduced availability of scarce resources; reduced opportunity for new product breakthroughs; limitations on access to land
Chemical Exposure – More than 248,000 chemical products are commercially available, but there is a lack of data on their individual and synergistic effects on health and the environment [GEO-5, pp.170, 172-173, 185]	Market shifts toward “greener” products; product use restrictions; regulatory, customer, and public pressure for greater transparency
Waste – Materials are increasingly produced in one region, used in another, and managed as waste in a third. The fastest growing waste stream in the world, estimated at 20-50 million tonnes per year, is e-waste, which has hazardous substances as well as strategic metals that can be recovered [GEO-5, pp.175, 184]	Growing market opportunity to recover/re-use e-waste; increasing regulatory and customer pressure to reduce/manage waste; reputational damage resulting from uncontrolled waste

This is the world that business must navigate, today and into the future. Without dramatic and unexpected shifts in the drivers of these trends, we can expect that environmental pressures such as those noted above will increase throughout the foreseeable future, causing major changes not only in physical landscapes, but in social, political, and business landscapes as well.

The specific implications of these environmental trends for business are described in greater detail in Chapter 3. The table below provides a brief summary of some of the major risks and opportunities for each of the sectors assessed in the report. Note that some of the identified business opportunities may have negative impacts on the environment; the sole intent of the report is to identify them, not to assess their desirability.

Environmental pressures will increase throughout the foreseeable future, causing major changes not only in physical landscapes, but in social, political, and business landscapes as well.

Risks	Opportunities
Building and Construction (section 3.1)	
<ul style="list-style-type: none"> • Constrained availability and increased cost of materials • Impacts of changing weather patterns on construction schedules/ costs • Limits on development opportunities in water-scarce and high-biodiversity areas • Shifts in skills and knowledge required to meet the changing market • Stricter limits on waste and pollution 	<ul style="list-style-type: none"> • Increased market demand for sustainable infrastructure and buildings, storm-damage repair/reconstruction, energy efficiency retrofits and technologies, and climate-resilient structures • Increased demand for renewable, recycled, and resource-efficient materials and processes • Increased market value of green buildings • Increased demand for workforce skilled in sustainable design and construction • Reputational benefit associated with green design and construction certifications
Chemicals (section 3.2)	
<ul style="list-style-type: none"> • Increased costs for fossil fuel-based energy and feedstocks • Higher water costs and constrained operations due to increasing water scarcity • Business interruption related to extreme weather or water scarcity • Product use restrictions or phase-outs • Regulatory or market-driven reductions in demand for some chemical products • Stricter regulatory limits on air emissions and water discharges • Reputational damage due to conflicts with communities over resources or pollution • Increased pressure to disclose data on the health and environmental effects of chemicals 	<ul style="list-style-type: none"> • Increased demand for components of energy efficiency or renewable energy technologies, water treatment technologies, and more sustainable agricultural inputs • Increased demand for green chemistry products and chemical leasing business models • New market opportunities for products that can substitute for restricted or phased-out products • Reputational benefit associated with green chemistry
Electric Power (section 3.3)	
<ul style="list-style-type: none"> • Constrained availability and increased cost of fossil fuel-based stocks due to climate change policies • Reduced demand for carbon-intensive electricity • Reduced grid reliability due to increased peak demand • Infrastructure damage due to extreme weather • Limits on some electricity generation due to water scarcity and potential conflicts with competing users for limited water supplies • Stricter regulatory limits on air emissions and water discharges • Threats to the current utility business model from regulatory and legislative actions • Stricter legislation/regulations on greenhouse gas emissions, air quality, wastewater effluent discharges, and siting of power plants 	<ul style="list-style-type: none"> • Increased demand for electricity for building cooling and powering electric vehicles • Increased demand for low-carbon and renewable electricity • Potential new business models opened up by regulatory actions • Increased demand for smart-grid technologies, energy storage, and energy efficiency services
Extractives (section 3.4)	
<ul style="list-style-type: none"> • Increased cost of fossil fuel-based energy for some mining operations • Infrastructure damage and business interruption due to extreme weather • Business interruption due to water scarcity • Limits on access to resources in water-scarce or high-biodiversity areas • Stricter regulatory limits on air emissions and water discharges • Increased liability risks and costs of decommissioning due to changing weather patterns • Stranded assets (e.g., oil and coal reserves) if strong carbon constraints or costs are imposed • Reduced demand for virgin minerals in favor of recycled materials • Reputational damage and potential loss of social license to operate for companies seen as major contributors to climate change or major water users in water-scarce areas 	<ul style="list-style-type: none"> • Increased demand for certain minerals and materials used in renewable energy, energy efficiency, air pollution control, and water purification technologies • Increased market for cleaner fuels • Increased market for recycled and more sustainable minerals • Warmer temperatures opening previously inaccessible or uneconomical areas for exploration and extraction • Reputational advantage for companies seen as part of the solution to climate change • New markets for carbon capture/storage and other technologies to reduce carbon emissions from fossil fuel combustion
Finance (section 3.5)	
<ul style="list-style-type: none"> • Increased uncertainty of underwriting by insurance companies due to changing weather patterns • Increased cost of insurance claims resulting from more severe weather events • Increased pressure on lenders and investors to improve consideration and disclosure of client companies' impacts on and from environmental trends • Potential long-term systemic risks to financial markets from "unburnable carbon" if strong carbon constraints or costs are imposed • Reduced ability of lenders' clients with stranded assets (related to climate change or water scarcity) to re-pay loans • Reputational damage for companies providing lending for environmentally damaging activities 	<ul style="list-style-type: none"> • Increased demand for property insurance coverage • New markets for financial mechanisms that reduce risks or create positive returns/lower capital costs for more sustainable products and services • Increased demand for capital financing for environmental solutions • Increased creation of attractive green economy investment opportunities • New or expanded markets and investment in products that incorporate environmental criteria and/or targeted solutions for issues such as climate change • Expanded markets for insurance products that encourage the spread of more energy-efficient homes and buildings and renewable energy technologies

Risks	Opportunities
Food and Beverage (section 3.6)	
<ul style="list-style-type: none"> • Changes in availability, quality, price, and sources of agricultural products due to climate change and other environmental changes • Increased cost of fossil fuel-based energy • Reduced crop yields due to water scarcity • Conflicts among different users of limited water resources • Increased competition for arable land • Depletion of seafood stocks • Increased consumer and regulatory pressure to reduce environmental impacts of meat production and of chemicals and fertilizers 	<ul style="list-style-type: none"> • New markets for alternative supplies or more climate-resilient food varieties • Opportunities for businesses in new agricultural growing zones • Expanded markets for organic foods and sustainable food production • Reputational benefits from sustainable food product certifications
Healthcare (section 3.7)	
<ul style="list-style-type: none"> • Increased cost of fossil fuel-based energy for healthcare facilities • Increased pressure to improve sustainability, including keeping medicines out of the waste stream, reducing energy use, and reducing use of toxic substances in cleaning products • Increased loss of natural compounds that are traditional remedies and active ingredients in pharmaceuticals 	<ul style="list-style-type: none"> • Increased demand for treatment of illnesses resulting from environmental changes and exposure to pollution (e.g., respiratory and cardiovascular illness, water-borne and vector-borne diseases) • New markets for medicines that do not require clean water or controlled temperature storage
Information and Communication Technology (section 3.8)	
<ul style="list-style-type: none"> • Increased cost of fossil fuel-based energy (e.g., for datacenters) • Production interruption or limitations due to limited water availability • Supply chain disruption due to extreme weather and other environmental factors • Increased costs due to regulatory or customer pressure to reduce e-waste • Regulatory limitations on releases of greenhouse gases during product manufacture, use, and end-of-life • Reputational damage due to uncontrolled e-waste or environmental impacts of suppliers 	<ul style="list-style-type: none"> • New and expanded markets for products that enable environmental improvements in other industries (e.g. smart buildings, integrated transportation, automated manufacturing) • Expanded markets to displace traditional goods and services with virtual ones • Expanded markets for collecting and processing environmental data • Reputational benefit to companies recognized as contributing to solving environmental challenges such as climate change, water quality/availability, and deforestation
Tourism (section 3.9)	
<ul style="list-style-type: none"> • Increased cost of fossil fuel-based energy • Increased operating costs due to warmer average temperatures and declining availability of local resources • Business interruption, property damage, and travel delays due to extreme weather events • Limits on available activities due to water scarcity, ecosystem changes, and concerns for biodiversity • Reduced desirability of some destinations due to environmental changes • Stricter regulations on some practices (e.g., fishing on coral reefs, development in coastal mangroves) • Increasing conflicts with local communities related to scarce resources 	<ul style="list-style-type: none"> • Improved desirability of some destinations due to environmental changes • Increased demand for nature-based tourism, ecotourism, and agro-tourism • Reputational benefits and increased demand for companies/destinations perceived as environmentally responsible
Transportation (section 3.10)	
<ul style="list-style-type: none"> • Increased cost of fuel for operation of vehicles • Infrastructure damage and supply chain disruption due to extreme weather and other environmental factors • Increased cost or limited production due to water scarcity in some manufacturing locations • Increased regulations to limit greenhouse gas emissions and control waste streams 	<ul style="list-style-type: none"> • Increased demand by business customers to reduce logistical footprint and costs • New and expanded markets for low-carbon and cleaner transportation options (e.g., vehicles, fuels) • New freight routes resulting from declining sea ice

In Chapter 4, the report concludes by suggesting a path forward for business leaders seeking to understand and address the risks and opportunities posed by environmental trends. That path includes:

- Conducting a deeper, company-specific analysis, taking a life-cycle approach and using the report as a framework and guide
- Continuing to mitigate the impacts of the business on the environment
- Thinking strategically about how the business must change to reflect changes in the global and local environment
- Reporting to stakeholders (investors, employees, customers, communities, NGOs, and others) on the company's impacts on the environment, the risks and opportunities posed by environmental trends, and the strategies to address them
- Working with policy-makers to craft public policies that encourage sustainable business practices
- Collaborating with others to create powerful solutions to challenges created by changes in the environment.

GEO-5 for Business makes clear that business value is at stake due to changes in the state of the world's environment. The risks are high, but the opportunities are abundant. Assessing the implications of environmental trends across the life cycle and accounting for them in planning and business models will improve companies' competitiveness, reduce environmental degradation, and enhance human well-being.