[Draft] European Sustainability Reporting Standard SEC1 Sector classification standard

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[Draft] European Sustainability Reporting Standard SEC1
Sector classification standard

Objective

1 [Draft] ESRS SEC1 is the sector classification standard which the undertaking shall apply to identify the sector(s) it operates in and the related sector specific disclosure requirements. The additional sector specific information to be disclosed by the undertaking for each sector is determined in the sector specific [draft] ESRS (i.e. from [draft] ESRS SEC 2 to ESRS SEC 41).

2 The objective of this standard is also to provide the information relating to its business activities as required by [draft] ESRS 1 and assessing the material impact in accordance to [draft] ESRS 4, taking into consideration its sector specific impacts, risks and opportunities.

3 The sector classification is based on the following considerations:

i. The business activities determine the sector group the undertaking is operating in and determine business relationships and value chains.

ii. The business relationships and value chains determine the specific impacts, risks and opportunities of the sector the undertaking is operating in.

iii. The impacts, risks and opportunities determine the undertaking's sustainability matters.

iv. The undertaking's sustainability matters determine the undertaking's disclosure requirements.

Interactions with other [draft] ESRS

4 The undertaking's reporting in accordance to the [draft] ESRS needs to comply with the requirements related to strategy, governance, impacts, risks and opportunities as described in the [draft] ESRS 1 to 4 and the sector agnostic topical [draft] ESRS.

5 Whereas the sector specific standards outline the additional sector specific disclosure requirements considered to be relevant for the information of the different stakeholders, this [draft] standard of sector classification defines the sector(s) the undertaking operates in.

6 This [draft] standard particularly interacts with [draft] ESRS 1 regarding the determination of sectors of activities and [draft] ESRS 4 regarding the determination of impacts, risks and opportunities related to sustainability matters.

Sector classification

7 The classification of sectors adopted in this [draft] standard is based on the NACE classification system together with reference to additional economic activities as described in the EU-Taxonomy.

8 Although undertakings have similar business models and characteristics which allow to classify them under 14 sector groups, the different sectors within a sector group may determine different impacts, risks and opportunities.

9 The undertaking shall therefore determine in which of the following 40 sector(s) and 14 sector group(s) they operate:

[draft] ESRS sector group	[draft] ESRS sector	Code
Agriculture	Agriculture & Farming	AAF
	Forestry	AFO
Construction	Construction & Engineering	CCE
Energy	Energy Production & Utilities	EEU
	Water & Waste Services	EWW
Entertainment	Casinos & Gaming	ECG
	Leisure Facilities	ELF
Financial Institutions	Capital Markets	FCM
	Banking	FBM
	Insurance	FIN
Health Care & Services	Health Care	HHC
Hospitality	Food & Beverage Services	HFS
	Hotels & Lodging	HHL
Manufacturing	Aerospace & Defence	MAD
	Automobiles & Other Transport Vehicles	MAO
	Biotechnology & Pharmaceuticals	MBP
	Building Products & Furnishings	MBF
	Chemicals & Biofuels	MCB
	Construction Materials	MCM
	Electronics	MEL
	Food & Beverages	MFB
	Machinery & Equipment	MME
	Medical Equipment & Services	MMS
	Metal Processing	MMP
	Oil & Gas - Midstream & Downstream	MOM
	Pulp, Paper & Wood products	MPW
	Textiles, Apparels, Footwear & Accessories	MTA
	Tobacco	MTO
	Toys, Sporting Goods & Musical instruments	MTM
Mining	Coal Operations	MCO
	Mining	MMI
	Oil & Gas - Upstream & Services	MOU
Real Estate	Real Estate & Services	RRS
Services	Advertising & Marketing	SAM
	Education	SED
	Professional & Commercial Services	SPC

Technology	Media & Communication	TMC
	Software & IT Services	TSI
Transportation	Transportation	TTR
Wholesale & Retail	Wholesale & Retail trade	WWR

10 Appendix B provides the details of the classification of business activities to sectors and sector groups to be followed as well as the related NACE codes, sector profiles that contain information in relation to production activities and services provided, a description of the value and supply chains, relevant business relationships, customer groups and distribution channels.

11 The undertaking may operate in several sector groups and sectors. Depending on the scope of its business activities, the undertaking shall consider the disclosure requirements of several sector specific standards.

Sustainability matters

12 To facilitate the undertaking's assessment of its sector specific impacts, risks and opportunities in relation with the disclosure requirements set under [draft] ESRS 4, Appendix C provides descriptions of likely sustainability matters for each sector.

Appendix A: Defined terms

This appendix is integral part of the [draft] ESRS SEC1 Sector classification standard.

Economic activity	As defined in the supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives as of 4 June 2021, referred to as "EU-Taxonomy".
Impact	Effect the undertaking has or could have on the economy, environment, and people, including on their human rights, which in turn can indicate its contribution (negative or positive) to sustainable development. Impacts can be actual or potential, negative or positive, short-term or long-term, intended or unintended, and reversible or irreversible.
Supply chain	Range of activities carried out by entities upstream from the undertaking, which provide products or services that are used in the development of the undertaking's own products or services
Undertaking's activity	Activities depicting the undertaking's operating and/ or economic activity/(ies)
Value chain	Entire sequence of activities or parties that create or receive value through the provision of a product or service.

Appendix B: Sector classification

Agriculture sector group

The Agriculture sector group includes the exploitation of vegetal and animal natural resources, comprising the activities of growing of crops, raising and breeding of animals, harvesting of timber and other plants, animals or animal products from a farm or their natural habitats.

Agriculture & Farming sector

The Agriculture & Farming sector includes the production of crop products and production of animal products, covering also the forms of organic agriculture, the growing of genetically modified crops and the raising of genetically modified animals. The sector includes growing of crops in open fields as well in greenhouses. It also includes service activities incidental to agriculture, as well as hunting, trapping and related activities. The sector also includes capture fishery and aquaculture, covering the use of fishery resources from marine, brackish or freshwater environments, with the goal of capturing or gathering fish, crustaceans, molluscs and other marine organisms and products (e.g. aquatic plants, pearls, sponges etc). Also included are activities that are normally integrated in the process of production for own account (e.g. seeding oysters for pearl production). Service activities incidental to marine or freshwater fishery or aquaculture are included in the related fishing or aquaculture activities.

Agricultural and farming products are sold directly to consumers, retail and wholesale distributors and to businesses for use in consumer and industrial products. Undertakings in the sector may source a substantial portion of commodities from third-party growers in various countries. Therefore, managing sustainability risks within the supply chain is critical to securing a reliable supply of raw materials and reducing the risk of price increases and volatility over the long term. In addition, undertakings in the sector produce raw and processed animal products, including meats, eggs, and dairy products, for human and animal consumption. Key activities include animal raising, slaughtering, processing, and packaging.The sector's largest undertakings have international operations, and undertakings are vertically integrated to varying degrees. Large operators typically rely on contract or independent farmers and may have varying degrees of control over their operations.

Included are these activities in accordance to the following NACE code classification:

A.01.11 Growing of cereals (except rice), leguminous crops and oil seeds

A.01.12 Growing of rice

A.01.13 Growing of vegetables and melons, roots and tubers

A.01.14 Growing of sugar cane

A.01.16 Growing of fibre crops

A.01.19 Growing of other non-perennial crops

A.01.21 Growing of grapes

A.01.22 Growing of tropical and subtropical fruits

A.01.23 Growing of citrus fruits

A.01.24 Growing of pome fruits and stone fruits

A.01.25 Growing of other tree and bush fruits and nuts

A.01.26 Growing of oleaginous fruits

A.01.27 Growing of beverage crops

A.01.28 Growing of spices, aromatic, drug and pharmaceutical crops

A.01.29 Growing of other perennial crops

A.01.30 Plant propagation

A.01.41 Raising of dairy cattle

A.01.42 Raising of other cattle and buffaloes

A.01.43 Raising of horses and other equines

A.01.44 Raising of camels and camelids

A.01.45 Raising of sheep and goats

A.01.46 Raising of swine/pigs

A.01.47 Raising of poultry

A.01.49 Raising of other animals

A.01.50 Mixed farming

A.01.61 Support activities for crop production

A.01.62 Support activities for animal production

A.01.63 Post-harvest crop activities

A.01.64 Seed processing for propagation

A.01.70 Hunting, trapping and related service activities

A.03.11 Marine fishing

A.03.12 Freshwater fishing

A.03.21 Marine aquaculture

A.03.22 Freshwater aquaculture

Forestry sector

The Forestry sector includes the production of roundwood as well as the extraction and gathering of wild growing non-wood forest products. Besides the production of timber, forestry activities result in products that undergo little processing, such as firewood, charcoal and roundwood used in an unprocessed form (e.g. pit-props, pulpwood etc.). These activities can be carried out in natural or planted forests. Excluded is further processing of wood beginning with sawmilling and planing of wood.

The Forestry sector consists of undertakings that own and/ or manage natural and planted forestry lands and timber tracts, or operate non-retail tree nurseries and rubber plantations. The sector conducts its operations on lands that can be company-owned or leased from public or private landowners. Undertakings typically sell timber to wood products manufacturers, pulp and paper producers, energy producers, and a variety of other customers. Undertakings might operate globally or locally. While some integrated undertakings may also operate sawmills, wood products facilities, or pulp and paper facilities, sustainability issues arising from these activities are addressed in ESRS Building Products & Furnishings and ESRS Pulp, Paper and Wood products standards.

Included are these activities in accordance to the following NACE code classification:

A.02 Afforestation*

A.02 Conservation forest*

A.02 Existing forest management*

A.02 Reforestation*

A.02 Rehabilitation, Reforestation*

A.02.10 Silviculture and other forestry activities

A.02.20 Logging

A.02.30 Gathering of wild growing non-wood products

A.02.40 Support services to forestry

Construction sector group

Construction & Engineering sector

The Construction & Engineering sector group includes general construction and specialised construction activities for buildings and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site and also construction of a temporary nature. General construction is the construction of entire dwellings, office buildings, stores and other public and utility buildings, farm buildings etc., or the construction of civil engineering works such as motorways, streets, bridges, tunnels, railways, airfields, harbours and other water projects, irrigation systems, sewerage systems, industrial facilities, pipelines and electric lines, sports facilities etc. This work can be carried out on own account or on a fee or contract basis. Portions of the work and sometimes even the whole practical work can be subcontracted out. A unit that carries the overall responsibility for a construction project is classified here. Also included is the repair of buildings and engineering works. This sector includes the complete construction of buildings, the complete construction of civil engineering works, as well as specialised construction activities, if carried out only as a part of the construction process. This sector group also includes the development of building projects for buildings or civil engineering works by bringing together financial, technical and physical means to realise the construction projects for later sale. The Construction & Engineering sector group also includes activities related to the management (including collection, treatment and disposal) of various forms of waste, such as solid or non-solid industrial or household waste, as well as contaminated sites. The output of the waste or sewage treatment process can either be disposed of or become an input into other production processes. Activities of water supply are also grouped in this sector, since they are often carried out in connection with, or by units also engaged in, the treatment of sewage.

The Construction & Engineering sector includes general construction of buildings of all kinds. The sector includes new work, repair, additions and alterations, the erection of pre-fabricated buildings or structures on the site and also construction of temporary nature. Included is the construction of entire dwellings, office buildings, stores and other public and utility buildings, farm buildings, etc.. The sector also includes specialised construction activities (special trades), i.e. the construction of parts of buildings and civil engineering works or preparation therefore. These activities are usually specialised in one aspect common to different structures, requiring specialised skills or equipment, such as pile-driving, foundation work, carcass work, concrete work, brick laying, stone setting, scaffolding, roof covering, etc. The erection of steel structures is included, provided that the parts are not produced by the same unit. Specialised construction activities are mostly carried out under subcontract, but especially in repair construction it is done directly for the owner of the property. Included is the installation of all kind of utilities that make the construction function as such. These activities are usually performed at the site of the construction, although parts of the job may be carried out in a special shop. Included are activities such as plumbing, installation of heating and air-conditioning systems, antennas, alarm systems and other electrical work, sprinkler systems, elevators and escalators, etc. Also included are insulation work (water, heat, sound), sheet metal work, commercial refrigerating work, the installation of illumination and signalling systems for roads, railways, airports, harbours, etc. Also repair of the same type as the above mentioned activities is included. Building completion activities encompass activities that contribute to the completion or finishing of a construction such as glazing, plastering, painting, floor and wall tiling or covering with other materials like parquet, carpets, wallpaper, etc., floor sanding, finish carpentry, acoustical work, cleaning of the exterior, etc. Also repair of the same type as the above mentioned activities is included.

The rental of equipment with operator is classified with the associated construction activity. Also included are building finishing and building completion activities. The sector also includes the collection, treatment, and disposal of waste materials. This also includes local hauling of waste materials and the operation of materials recovery facilities (i.e. those that sort recoverable materials from a waste stream).

The Construction & Engineering sector is comprised of undertakings that provides construction, design, contracting, and other related services that support various building and infrastructure projects. The segment is primarily made up of four major segments: Development, residential building construction and non-residential building construction, infrastructure construction, and building sub-contractors and construction-related professional services. The development segment includes the acquisition of land, site preparation, demolition, test drilling and boring and home sales. The residential building construction and non-residential building construction segment includes undertakings that develop, design and/ or build residential, industrial and commercial facilities. The infrastructure construction segment includes undertakings that design and/ or build infrastructure projects such as power plants, dams, oil and gas pipelines, refineries, highways, bridges, tunnels, railways, ports, airports, waste treatment plants, water networks, and stadiums. Finally, the building sub-contractors and other construction-related professional services segment includes smaller undertakings that provide ancillary services such as carpentry, electrical, plumbing, painting, waterproofing, landscaping, interior design, and building inspection. The segment's customers include infrastructure owners and developers in the public and private sectors. Large undertakings in this segment operate and generate revenue globally and typically specialize in multiple segments.

Included are these activities in accordance to the following NACE code classification:

E.38.31 Dismantling of wrecks

F.41.10 Development of building projects

F.41.20 Construction of residential and non-residential buildings

F.42.11 Construction of roads and motorways

F.42.12 Construction of railways and underground railways

F.42.13 Construction of bridges and tunnels

F.42.21 Construction of utility projects for fluids

F.42.22 Construction of utility projects for electricity and telecommunications

F.42.91 Construction of water projects

F.42.99 Construction of other civil engineering projects n.e.c.

F.43.11 Demolition

F.43.12 Site preparation

F.43.13 Test drilling and boring

F.43.21 Electrical installation

F.43.22 Plumbing, heat and air-conditioning installation

F.43.29 Other construction installation

F.43.31 Plastering

F.43.32 Joinery installation

F.43.33 Floor and wall covering

F.43.34 Painting and glazing

F.43.39 Other building completion and finishing

F.43.91 Roofing activities

F.43.99 Other specialised construction activities n.e.c.

Energy sector group

The Energy Production & Utilities sector group includes the activity of providing electric power, natural gas, steam, hot water and the like through a permanent infrastructure (network) of lines, mains and pipes. The dimension of the network is not decisive; also included are the distribution of electricity, gas, steam, hot water and the like in industrial parks or residential buildings. This sector therefore includes the operation of electric and gas utilities, which generate, control and distribute electric power or gas. Also included is the provision of steam and air-conditioning supply as well as water and waste services activities.

Energy Production & Utilities sector

The Energy Production & Utilities sector is comprised of undertakings that provides production, transmission, distribution, storage of electricity, water and gaseous fuels services. The sector includes the electric, water and gas utilities & power generators segment which is made up of undertakings that generate electricity, water or gas; build, own, and operate transmission and distribution lines, and sell electricity, water or gas. Utilities generate from a number of different sources. The sector comprises undertakings operating in both regulated and unregulated business structures. Regulated utilities maintain a business model in which they accept comprehensive oversight from regulators on their pricing mechanisms and their allowed return on equity, among other types of regulation, in exchange for their license to operate as a monopoly. Unregulated undertakings, or merchant power undertakings, are often independent power producers (IPPs) that generate electricity, water or gas to sell to the wholesale market, which includes regulated utility buyers and other end-users. Furthermore, the sector is divided across regulated and deregulated power markets - referring to how far up the value chain regulated utility operations span. Regulated markets typically contain vertically integrated utilities that own and operate everything from the generation of power to its retail distribution. Deregulated markets commonly split generation from distribution, designed to encourage competition at the wholesale power level. Overall, undertakings in the sector are challenged with the complex mission of providing reliable, accessible, low-cost power while balancing the protection of human life and the environment. It also includes the biofuels segment which comprises undertakings that produce biofuels and process raw materials for production. Biofuels are manufactured using organic feedstocks and are used primarily as transportation fuels. Undertakings typically source feedstocks, which include food, oil crops, and animal products, from agricultural product distributors. Ethanol and biodiesel are the most widely produced biofuels, while other types include biogas, biohydrogen, and synthetic biofuels, produced from a variety of organic feedstocks. Biofuels undertakings' customers are chiefly fuel-blending and fuel-supply undertakings, including major integrated oil undertakings. Finally it consists of the Solar and Wind Technology & Project Developers segment which is comprised of undertakings that manufacture solar energy equipment, including solar photovoltaic (PV) modules, polysilicon feedstock, solar thermal electricity-generation systems, solar inverters, and other related components or wind turbines, blades, towers, and other components of wind power systems. Undertakings may also develop, build, and manage solar energy projects and offer financing or maintenance services to customers. Two primary technologies are utilised in the segment: PV and concentrated solar power (CSP). Within solar PV, there are two main technologies: crystalline silicon-based solar and thin-film solar, which includes panels made using copper indium gallium selenide and cadmium telluride. The primary markets for solar panels are residential, non-residential (commercial and industrial) , and utility-scale projects. Undertakings in the segment operate globally. They can also develop, build, and manage wind energy projects are also included within the scope of this segment. Manufacturers may also offer post-sale maintenance and support services. Turbines can be installed onshore or offshore, which can cause differences in wind-generating capacity and create challenges in project development for each type of installation. Most major wind technology undertakings operate globally.

Included are these activities in accordance to the following NACE code classification:

D.35 Storage of Electricity*

D.35 Storage of Hydrogen*

D.35 Storage of Thermal Energy*

D.35.11 Production of electricity

D.35.12 Transmission of electricity

D.35.13 Distribution of electricity

D.35.14 Trade of electricity

D.35.21 Manufacture of gas

* Economic activity as defined in the supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives, 4 June 2021

D.35.22 Distribution of gaseous fuels through mains

D.35.23 Trade of gas through mains

Water & Waste Services sector

The Water & Waste Services sector group includes activities related to the management (including collection, treatment and disposal) of various forms of waste, such as solid or non-solid industrial or household waste, as well as contaminated sites. The output of the waste or sewage treatment process can either be disposed of or become an input into other production processes. Activities of water supply are also grouped in this sector, since they are often carried out in connection with, or by units also engaged in, the treatment of sewage.

The Water & Waste Services sector includes undertakings that collect, store, dispose of, recycle, or treat various forms of waste from residential, commercial, and industrial clients and the collection, treatment, supply and waste of water from residential, commercial and industrial clients. Types of waste services include municipal solid waste, hazardous waste, recyclable materials, and compostable or organic materials. Major undertakings are commonly vertically integrated, providing a range of services from waste collection to landfilling and recycling, while others provide specialized services such as treating medical and industrial wastes. Waste-to-energy operations are a distinct segment segment. Certain sector players also provide environmental engineering and consulting services, mostly to large industrial clients. Types of water supply services include the sourcing, treatment, and distribution of water to residences, businesses, and other undertakings such as governments. Wastewater systems collect and treat wastewater, including sewage, graywater, industrial waste fluids, and stormwater runoff, before discharging the resulting effluent back into the environment.

Included are these activities in accordance to the following NACE code classification:

D.35.30 Steam and air conditioning supply

E.36.00 Water collection, treatment and supply

E.37.00 Sewerage

E.38.11 Collection of non-hazardous waste

E.38.12 Collection of hazardous waste

E.38.21 Treatment and disposal of non-hazardous waste

E.38.22 Treatment and disposal of hazardous waste

E.38.32 Recovery of sorted materials

E.39.00 Remediation activities and other waste management services

Entertainment sector group

The Entertainment sector group includes a wide range of activities to meet varied cultural, entertainment and recreational interests of the general public, including live performances, operation of museum sites, gambling, sports and recreation activities.

Casinos & Gaming sector

The Casinos & Gaming sector is comprised of undertakings which operate gambling facilities and/or platforms, including brick-and-mortar casinos, riverboat casinos, online gambling websites, and racetracks. Select undertakings in the Casinos & Gaming sector are also engaged in activities of the Hotels & Lodging and/or Restaurants segments. For such activities are outlined in the Hotels & Lodging and Food & Beverage Services standards. For the purposes of this sector, it is assumed that casinos and gaming undertakings are engaged solely in operating gambling facilities and providing online gaming services, and therefore issues such as water management and food safety, which may be material for undertakings that have significant hotel and restaurant operations, are not covered by this sector.

Included are these activities in accordance to the following NACE code classification:

R.92.00 Gambling and betting activities

Leisure Facilities sector

The Leisure Facilities sector is comprised of undertakings that perform arts and operate entertainment, travel, botanical and zoological gardens, historical sites as well as recreation facilities and services. Undertakings in this sector operate museums, libraries, nature reserve activities, amusement parks, movie theaters, ski resorts, sports stadiums, and fitness facilities and other venues. Leisure facilities undertakings mainly generate revenue by providing live, digital, and/ or interactive entertainment to millions of guests and customers annually across various locations.

Included are these activities in accordance to the following NACE code classification:

R.90.01 Performing arts

R.90.02 Support activities to performing arts

R.90.03 Artistic creation

R.90.04 Operation of arts facilities

R.91.01 Library and archives activities

R.91.02 Museums activities

R.91.03 Operation of historical sites and buildings and similar visitor attractions

R.91.04 Botanical and zoological gardens and nature reserves activities

R.93.11 Operation of sports facilities

R.93.12 Activities of sports clubs

R.93.13 Fitness facilities

R.93.19 Other sports activities

R.93.21 Activities of amusement parks and theme parks

R.93.29 Other amusement and recreation activities

Financial Institutions sector group

The Banking sector group includes financial service activities, including insurance, reinsurance and pension funding activities and activities to support financial services. This sector also includes the activities of holding assets, such as activities of holding undertakings and the activities of trusts, funds and similar financial entities.

Banking sector

Commercial banks accept deposits and make loans to individuals and corporations as well as engage in lending for infrastructure, mortgages, real estate, and other projects. By providing these services, the sector serves an essential role in the functioning of global economies and in facilitating the transfer of financial resources to their most productive capacity. The Banking sector is driven by the volume of deposits, quality of loans made, the economic environment, and interest rates. It is further characterised by risk from mismatched assets and liabilities. The regulatory environment that governs the commercial banking sector saw significant changes in the wake of the financial crisis of 2008 and continues to evolve today. These and other regulatory trends have the potential to impact shareholder value and sustainability performance. Commercial banks with global operations must manage new regulations in multiple jurisdictions that are creating regulatory uncertainty, particularly around consistent application of new rules.

Included are these activities in accordance to the following NACE code classification:

K.64.11 Central banking

K.64.19 Other monetary intermediation

K.64.91 Financial leasing

K.64.92 Other credit granting

Capital Markets sector

Capital Markets activities comprise three main groups of activities as well as their respective related supporting activities:

a. Investment and custody activities related to asset management and asset ownership. These activities include managing investment portfolios on a commission or fee basis for institutional, retail, and high net-worth investors. In addition, undertakings in this segment provide wealth management, private banking, financial planning, and investment advisory services. Investment portfolios and strategies may be diversified across multiple asset classes, which include, but are not limited to, equities, fixed income, and hedge fund investments. Some undertakings are engaged in venture capital and private equity investments. These activities provide an essential service in assisting a range of customers from individual retail investors to large, institutional asset owners to meet specified investment goals. Undertakings range from large multinational asset managers with a wide range of investable products, strategies, and asset classes to small boutique undertakings providing services to a very specific market niche. While large undertakings generally compete on the basis of management fees charged for their services as well as their potential to generate superior investment performance, the smaller undertakings generally compete on their ability to provide products and services geared towards individual clients to satisfy their diversification needs. The undertakings have an important social impact in the society in terms of providing fair advice to customers and managing risks at the undertaking, portfolio, and economy-wide levels. In addition, the collective impact of these undertakings on the allocation of capital creates a responsibility to integrate sustainability factors in investment decisions and management.
b. Investment banking and brokerage. These undertakings perform a wide range of functions in the capital markets, including assisting with the capital-raising and allocation process, and providing market-making and advisory services for undertakings, financial institutions, governments, and high net-worth individuals. Specific activities include financial advisory and securities underwriting services conducted on a fee basis; securities and commodities brokerage activities, which involves buying and selling securities or commodities contracts and options on a commission or fee basis for investors; and trading and principal investment activities, which involves the buying and selling of equities, fixed income, currencies, commodities, and other securities for client-driven and proprietary trading. Investment banks also originate and securitize loans for infrastructure and other projects. Undertakings generate their revenues from global markets and are exposed to systemic risks. The undertakings have an important social impact in the society in terms of integrating sustainability considerations in providing advice to customers and managing risks.
c. Security and commodity exchanges. These undertakings operate marketplaces in the form of physical trading floors or electronic platforms for trading financial securities, commodities, or other financial instruments. Security and commodity exchanges primarily generate revenue from fees on trades and for clearing transactions as well as listing fees. Competition for fees continues to increase with the advent of alternative trading platforms that offer less expensive trades and provide listing services. Important issues these undertakings need to focus on are transparency, risk management, and market stability.

Included are these activities in accordance to the following NACE code classification:

K.64.20 Activities of holding undertakings

K.64.30 Trusts, funds and similar financial entities

K.64.99 Other financial service activities, except insurance and pension funding n.e.c.

K.66.11 Administration of financial markets

K.66.12 Security and commodity contracts brokerage

K.66.19 Other activities auxiliary to financial services, except insurance and pension funding

K.66.30 Fund management activities

Insurance sector

The Insurance sector provides both traditional and nontraditional insurance-related products. Traditional policy lines include property, life, casualty, and reinsurance. Nontraditional products include annuities, alternative risk transfers, and financial guarantees. Undertakings in the insurance sector also engage in proprietary investments. Insurance undertakings generally operate within a single segment in the segment, e.g., property and casualty, although there are some large insurance undertakings with diversified operations. Similarly, undertakings may vary based on the level of their geographic segmentation. While large undertakings may underwrite insurance premiums in multiple countries, smaller undertakings generally operate at a national or even local level. Insurance premiums, underwriting revenue, and investment income drive segment growth, while insurance claim payments present the most significant cost and source of uncertainty for profits. Insurance undertakings provide products and services that enable the transfer, pooling, and sharing of risk necessary for a well-functioning economy. Insurance undertakings, through their products, can also create a form of moral hazard, lowering incentives to improve underlying behavior and performance, and thus contributing to sustainability impacts. Similar to other financial institutions, insurance undertakings face risks associated with credit and financial markets. Within the segment, undertakings that engage in non-traditional or non-insurance activities, including credit default swaps (CDS) protection and debt securities insurance, have been identified by regulators as being more vulnerable to financial market developments, and subsequently, more likely to amplify or contribute to systemic risk. As a result, insurance undertakings face the potential of being designated as Systemically Important Financial Institutions, thus exposing them to enhanced regulation and oversight.

Included are these activities in accordance to the following NACE code classification:

K.65.11 Life insurance

K.65.12 Non-life insurance

K.65.20 Reinsurance

K.65.30 Pension funding

K.66.21 Risk and damage evaluation

K.66.22 Activities of insurance agents and brokers

K.66.29 Other activities auxiliary to insurance and pension funding

Health Care sector group

Health Care & Services sector

The Health Care & Services sector includes the provision of health and social work activities. Activities include a wide range of activities, starting from health care provided by trained medical professionals in hospitals and other facilities, over residential care activities that still involve a degree of health care activities to social work activities without any involvement of health care professionals. The sector also includes specialised professional, scientific and technical activities. These activities require a high degree of training, and make specialised knowledge and skills available to users. The Health Care & Services sector includes activities of short- or long-term hospitals, general or specialty medical, surgical, psychiatric and substance abuse hospitals, sanatoria, preventoria, medical nursing homes, asylums, mental hospital institutions, rehabilitation centres, leprosaria and other human health institutions which have accommodation facilities and which engage in providing diagnostic and medical treatment to inpatients with any of a wide variety of medical conditions. It also includes medical consultation and treatment in the field of general and specialised medicine by general practitioners and medical specialists and surgeons. The sector includes dental practice activities of a general or specialised nature and orthodontic activities. Additionally, this division includes activities for human health not performed by hospitals or by practicing medical doctors but by paramedical practitioners legally recognised to treat patients. The sector also includes the provision of residential care combined with either nursing, supervisory or other types of care as required by the residents. Facilities are a significant part of the production process and the care provided is a mix of health and social services with the health services being largely some level of nursing services. Furthermore, the sector includes the provision of a variety of social assistance services directly to clients. The activities in this division do not include accommodation services, except on a temporary basis. In addition, the sector includes the provision of animal health care and control activities for farm animals or pet animals. These activities are carried out by qualified veterinarians in veterinary hospitals as well as when visiting farms, kennels or homes, in own consulting and surgery rooms or elsewhere. It also includes animal ambulance activities.

Undertakings in the sector own and/or manage hospitals, clinics, and other health care-related facilities. Demand for health care delivery services is driven largely by rates of insurance coverage, demographics, illness, and injury rates. The sector is characterised by high fixed labor and facilities costs, and an increased regulatory emphasis on reduced costs of care and improved outcomes. Health care delivery undertakings also face significant competition for patients and resources from private, nonprofit, and religious health care systems.

Included are these activities in accordance to the following NACE code classification:

M.75.00 Veterinary activities

Q.86.10 Hospital activities

Q.86.21 General medical practice activities

Q.86.22 Specialist medical practice activities

Q.86.23 Dental practice activities

Q.86.90 Other human health activities

Q.87.10 Residential nursing care activities

Q.87.20 Residential care activities for mental retardation, mental health and substance abuse

Q.87.30 Residential care activities for the elderly and disabled

Q.87.90 Other residential care activities

Q.88.10 Social work activities without accommodation for the elderly and disabled

Q.88.91 Child day-care activities

Q.88.99 Other social work activities without accommodation n.e.c.

Hospitality sector group

The Food & Beverage Services sector group includes the provision of short-stay accommodation for visitors and other travellers and the provision of complete meals and drinks fit for immediate consumption. The amount and type of supplementary services provided within this sector group can vary widely. This sector group excludes the provision of long-term accommodation as primary residences, which is classified in real estate activities. Also excluded is the preparation of food or drinks that are either not fit for immediate consumption or that are sold through independent distribution channels, i.e. through wholesale or retail trade activities. The preparation of these foods is classified in manufacturing.

Food & Beverage Services sector

The Food & Beverage Services sector includes food and beverage serving activities providing complete meals or drinks fit for immediate consumption, whether in traditional restaurants, self-service or take-away restaurants, whether as permanent or temporary stands with or without seating. Decisive is the fact that meals fit for immediate consumption are offered, not the kind of facility providing them. Excluded is the production of meals not fit for immediate consumption or not planned to be consumed immediately or of prepared food which is not considered to be a meal. Also excluded is the sale of not self-manufactured food that is not considered to be a meal or of meals that are not fit for immediate consumption.

Undertakings in the Food & Beverage Services sector are engaged in restaurants, mobile food service activities, event catering and beverage serving activities. Undertakings in the Restaurants segment prepare meals, snacks, and beverages to customers' orders for immediate on-and off-premises consumption. Broadly divided into three sub-categories, the restaurant segment includes limited-service eating places, casual full-service eating places, and upscale full-service eating places. Limited-service restaurants provide services to customers who order and pay before eating. Fast-food restaurants represent the largest share of the limited-service restaurants segment. Full-service restaurants offer more service, food for consumption primarily on-premise, and typically reflect higher quality food and prices.

Included are these activities in accordance to the following NACE code classification:

I.56.10 Restaurants and mobile food service activities

I.56.21 Event catering activities

I.56.29 Other food service activities

I.56.30 Beverage serving activities

Hotels & Lodging sector

The Hotels & Lodging sector is composed of undertakings that provide overnight accommodation, including hotels, motels, inns, and camping grounds, recreational parks and trailer parks. The amount and type of supplementary services provided within this sector group can vary widely. This sector excludes the provision of long-term accommodation as primary residences, which isclassified in real estate activities. Also excluded is the preparation of food or drinks that are either not fit for immediate consumption or that are sold through independent distribution channels, i.e. through wholesale or retail trade activities. The preparation of these foods is classified in manufacturing. The Hotels & Lodging sector includes the provision of short-stay accommodation for visitors and other travellers. Also included is the provision of longer term accommodation for students, workers and similar individuals. Some units may provide only accommodation while others provide a combination of accommodation, meals and/or recreational facilities. The Hotels & Lodging sector includes the provision of short-stay accommodation for visitors and other travellers. Also included is the provision of longer term accommodation for students, workers and similar individuals. Some units may provide only accommodation while others provide a combination of accommodation, meals and/or recreational facilities.

It is a competitive sector that is primarily comprised of large hotel chains and in which customers base purchase decisions on a wide range of factors including quality and consistency of services, availability of locations, price, and loyalty program offers. Businesses are often structured in one or more of the following ways: direct revenue from hotel services, including room rental and food and beverage sales; management and franchise services with fee revenue from property management; and vacation residential ownership with revenue from sales of residential units. Select undertakings in the Hotels & Lodging sector are also engaged in activities of the Restaurants sector. The disclosure requirements for such activities are outlined in the ESRS Food & Beverage Services standard. Hotels and lodging undertakings do not provide food and beverage services, and therefore issues such as food safety, waste, and sourcing, which may be material for undertakings that offer food and beverages, are not covered by this sector standard.

Included are these activities in accordance to the following NACE code classification:

I.55.10 Hotels and similar accommodation

I.55.20 Holiday and other short-stay accommodation

I.55.30 Camping grounds, recreational vehicle parks and trailer parks

I.55.90 Other accommodation

J.59.14 Motion picture projection activities

Manufacturing sector group

The Manufacturing sector group includes the physical or chemical transformation of materials, substances, or components into new products, although this cannot be used as the single universal criterion for defining manufacturing (see remark on processing of waste below). The materials, substances, or components transformed are raw materials that are products of agriculture, forestry, fishing, mining or quarrying as well as products of other manufacturing activities. Substantial alteration, renovation or reconstruction of goods is generally considered to be manufacturing. The output of a manufacturing process may be finished in the sense that it is ready for utilisation or consumption, or it may be semi-finished in the sense that it is to become an input for further manufacturing.

Aerospace & Defence sector

The Aerospace & Defence sector includes the provision of passenger or freight transport, whether scheduled or not, by rail, pipeline, road, water or air and associated activities such as terminal and parking facilities, cargo handling, storage etc. Included in this sector is the rental of transport equipment with driver or operator. Also included are postal and courier activities. Undertakings in the Aerospace & Defence sector include manufacturers of commercial aircraft, aircraft parts, aerospace and defence products, as well as defence prime contractors. Commercial aircraft manufacturers sell mainly to commercial airlines and governments. Aerospace and defence parts manufacturers sell primarily to governments. Both aerospace and defence manufacturers operate globally and serve a global customer base.
Defence primes manufacture products including military aircraft, space vehicles, missile systems, ammunition, small arms, naval ships, and other commercial and military vehicles. Their customers consist of various government agencies and related businesses with global operations. The defence prime category also includes firearms manufacturers that sell to law enforcement agencies, businesses, distributors, retailers, and consumers. Key sustainability topics within the segment include the energy efficiency and emissions profile of products and management of manufacturing energy and waste.

Included are these activities in accordance to the following NACE code classification:

C.20.51 Manufacture of explosives

C.25.40 Manufacture of weapons and ammunition

C.30.30 Manufacture of air and spacecraft and related machinery

C.30.40 Manufacture of military fighting vehicles

C.33.16 Repair and maintenance of aircraft and spacecraft

H.51.22 Space transport

Automobiles & Other Transport Vehicles sector

The Automobiles & Other Transport Vehicles sector includes the manufacture of motor vehicles for transporting passengers or freight. The manufacture of various parts and accessories, as well as the manufacture of trailers and semi-trailers, is included here. Undertakings in the Automobiles & Other Transport Vehicles sector are typically active in the automobiles, auto parts and industrial machinery & goods segments. Transport Vehicles sector are typically active in the automobiles, auto parts and industrial machinery & goods segments. The sector also includes the manufacture of transportation equipment such as ship building and boat manufacturing, the manufacture of railroad rolling stock and locomotives, air and spacecraft and the manufacture of parts thereof. In addition, the sector covers related repair and maintenance activities.

The automobiles segment includes undertakings that manufacture passenger vehicles, light trucks, and motorcycles. Industry players design, build, and sell vehicles that run using a range of traditional and alternative fuels and powertrains. They sell these vehicles to dealers for consumer retail sales as well as sell directly to fleet customers, including car rental and leasing undertakings, commercial fleets, and governments. Due to the global nature of this segment, nearly all undertakings have manufacturing facilities, assembly plants, and service locations in several countries around the world. The automobiles segment is highly concentrated, with a few large manufacturers and a diversified supply chain. Given the segment's reliance on natural resources and sensitivity to the business cycle, revenues are typically cyclical. Undertakings in the auto parts segment supply motor vehicle parts and accessories to original equipment manufacturers (OEM). These undertakings typically specialise in the manufacturing and assembly of certain parts or accessories, such as engine exhaust systems, alternative drivetrains, hybrid systems, catalytic converters, aluminium wheels (rims), tires, rear-view mirrors, and onboard electrical and electronic equipment. Although the larger automotive segment includes several tiers of suppliers that provide parts and raw materials used to assemble motor vehicles, the scope includes only Tier 1 suppliers that supply parts directly to OEMs. The scope of the segment excludes captive suppliers, such as engine and stamping facilities, that are owned and operated by OEMs. Similarity, it excludes Tier 2 suppliers, which provide inputs for the auto parts segment.

Included are these activities in accordance to the following NACE code classification:

C.22.11 Manufacture of rubber tyres and tubes

C.29.10 Manufacture of motor vehicles

C.29.20 Manufacture of bodies (coachwork) for motor vehicles

C.29.32 Manufacture of other parts and accessories for motor vehicles

C.30.11 Building of ships and floating structures

C.30.12 Building of pleasure and sporting boats

C.30.20 Manufacture of railway locomotives and rolling stock

C.30.91 Manufacture of motorcycles

C.33.15 Repair and maintenance of ships and boats

C.33.17 Repair and maintenance of other transport equipment

G.45.20 Maintenance and repair of motor vehicles

Biotechnology & Pharmaceuticals sector

The Biotechnology & Pharmaceuticals sector includes the manufacture of basic pharmaceutical products and pharmaceutical preparations. This also includes the manufacture of medicinal chemical and botanical products. The sector also covers the research and development of biotechnology.

Undertakings in the Biotechnology & Pharmaceuticals sector develop, manufacture, and market a range of brand-name and generic medications. A significant portion of the sector is driven by research and development, a high risk of product failure during clinical trials, and the need to obtain regulatory approval. Concerns over pricing practices and consolidation within the sector have created downward pricing pressures. Demand for the sector's products is largely driving by population demographics, rates of insurance coverage, disease profiles, and economic conditions. The Biotechnology & Pharmaceuticals sector group includes specialised professional, scientific and technical activities. These activities require a high degree of training, and make specialised knowledge and skills available to users. Undertakings in the Biotechnology & Pharmaceuticals sector develop, manufacture, and market a range of brand-name and generic medications. A significant portion of the sector is driven by research and development, a high risk of product failure during clinical trials, and the need to obtain regulatory approval. Concerns over pricing practices and consolidation within the sector have created downward pricing pressures. Demand for the sector's products is largely driving by population demographics, rates of insurance coverage, disease profiles, and economic conditions.

Included are these activities in accordance to the following NACE code classification:

C.21.10 Manufacture of basic pharmaceutical products

C.21.20 Manufacture of pharmaceutical preparations

G.46.46 Wholesale of pharmaceutical goods

M.72.11 Research and experimental development on biotechnology

Building Products & Furnishings sector

The Building Products & Furnishings sector includes the manufacture of wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, and prefabricated wood buildings. The production processes include sawing, planing, shaping, laminating, and assembling of wood products starting from logs that are cut into bolts, or lumber that may then be cut further, or shaped by lathes or other shaping tools. The lumber or other transformed wood shapes may also be subsequently planed or smoothed, and assembled into finished products, such as wood containers.

The sector also includes the manufacture of furniture and related products of any material except stone, concrete and ceramic. The processes used in the manufacture of furniture are standard methods of forming materials and assembling components, including cutting, moulding and laminating. The design of the article, for both aesthetic and functional qualities, is an important aspect of the production process. Some of the processes used in furniture manufacturing are similar to processes that are used in other segments of manufacturing. However, the multiple processes distinguish wood furniture manufacturing from wood product manufacturing.

The Building Products & Furnishings sector comprises undertakings involved in the design and manufacturing of home improvement products, home and office furnishings, and structural wood building materials. The sector's products include flooring, ceiling tiles, home and office furniture and fixtures, wood trusses, plywood, paneling, and

lumber. Undertakings typically sell their products through distribution channels to retail stores or through independent or undertaking-owned dealerships.

Included are these activities in accordance to the following NACE code classification:

C.22.23 Manufacture of builders' ware of plastic

C.23.41 Manufacture of ceramic household and ornamental articles

C.23.42 Manufacture of ceramic sanitary fixtures

C.23.43 Manufacture of ceramic insulators and insulating fittings

C.23.44 Manufacture of other technical ceramic products

C.23.49 Manufacture of other ceramic products

C.31.01 Manufacture of office and shop furniture

C.31.02 Manufacture of kitchen furniture

C.31.03 Manufacture of mattresses

C.31.09 Manufacture of other furniture

Chemicals & Biofuels sector

The sector includes the transformation of organic and inorganic raw materials by a chemical process and the formation of products. It distinguishes the production of basic chemicals that constitute the first industry group from the production of intermediate and end products produced by further processing of basic chemicals that make up the remaining industry activities.

Undertakings in the Chemicals & Biofuels sector are typically active in the chemicals, containers & packaging and household & personal products segments. Undertakings transform organic and inorganic feedstocks into diverse products with a range of industrial, pharmaceutical, agricultural, housing, automotive, and consumer applications. The sector is commonly segmented into basic (commodity) chemicals, agricultural chemicals, and specialty chemicals. Basic chemicals, the largest segment by volume produced, include bulk polymers, petrochemicals, inorganic chemicals, and other industrial chemicals. Agricultural chemicals include fertilizers, crop chemicals, and agricultural biotechnology. Specialty chemicals include paints and coatings, agrochemicals, sealants, adhesives, dyes, industrial gases, resins, and catalysts. Larger undertakings may produce basic, agricultural, and specialty chemicals, while most undertakings are specialised. Chemicals undertakings typically manufacture and sell products globally.

Included are these activities in accordance to the following NACE code classification:

C.18.20 Reproduction of recorded media

C.20.11 Manufacture of industrial gases

C.20.12 Manufacture of dyes and pigments

C.20.13 Manufacture of other inorganic basic chemicals

C.20.14 Manufacture of other organic basic chemicals

C.20.15 Manufacture of fertilisers and nitrogen compounds

C.20.16 Manufacture of plastics in primary forms

C.20.17 Manufacture of synthetic rubber in primary forms

C.20.20 Manufacture of pesticides and other agrochemical products

C.20.30 Manufacture of paints, varnishes and similar coatings, printing ink and mastics

C.20.41 Manufacture of soap and detergents, cleaning and polishing preparations

C.20.42 Manufacture of perfumes and toilet preparations

C.20.52 Manufacture of glues

C.20.53 Manufacture of essential oils

C.20.59 Manufacture of other chemical products n.e.c.

C.20.60 Manufacture of man-made fibres

C.22.19 Manufacture of other rubber products

C.22.21 Manufacture of plastic plates, sheets, tubes and profiles

C.22.22 Manufacture of plastic packing goods

C.22.29 Manufacture of other plastic products

C.32.91 Manufacture of brooms and brushes

Construction Materials sector

The Construction Materials sector includes manufacturing activities related to a single substance of mineral origin.

The sector comprises of undertakings which manufacture, produce and cut materials for construction purposes. The manufacturing segment include non-metallic, (ready-mixed) concrete, plaster, mortars, (fibre) cement, lime, bricks and tiles, flat glass, hollow glass, glass fibres and refractory products undertakings. Undertakings in the production segment include abrasive products production. Undertakings in the cutting segment include stone cutting undertakings. Undertakings typically sell their products through distribution channels to retail stores, construction firms or wholesale distributors or through independent or company-owned dealerships. Demand in the sector is closely tied to industrial production, while government emissions standards and customer demand are driving innovations to improve energy efficiency and limit air emissions during product manufacture and use.

Included are these activities in accordance to the following NACE code classification:

C.23.11 Manufacture of flat glass

C.23.12 Shaping and processing of flat glass

C.23.13 Manufacture of hollow glass

C.23.14 Manufacture of glass fibres

C.23.19 Manufacture and processing of other glass, including technical glassware

C.23.20 Manufacture of refractory products

C.23.31 Manufacture of ceramic tiles and flags

C.23.32 Manufacture of bricks, tiles and construction products, in baked clay

C.23.51 Manufacture of cement

C.23.52 Manufacture of lime and plaster

C.23.61 Manufacture of concrete products for construction purposes

C.23.62 Manufacture of plaster products for construction purposes

C.23.63 Manufacture of ready-mixed concrete

C.23.64 Manufacture of mortars

C.23.65 Manufacture of fibre cement

C.23.69 Manufacture of other articles of concrete, plaster and cement

C.23.70 Cutting, shaping and finishing of stone

C.23.91 Production of abrasive products

C.23.99 Manufacture of other non-metallic mineral products n.e.c.

Electronics sector

The sector includes the manufacture of computers, computer peripherals, communications equipment, and similar electronic products, as well as the manufacture of components for such products. Production processes of this sector are characterised by the design and use of integrated circuits and the application of highly specialised miniaturisation technologies. The sector also contains the manufacture of consumer electronics, measuring, testing and navigating equipment, irradiation, electromedical and electrotherapeutic equipment, optical instruments and equipment, and the manufacture of magnetic and optical media. In addition, the sector includes the manufacture of products that generate, distribute and use electrical power. Also included is the manufacture of electrical lighting, signalling equipment and electric household appliances as well as repair activities.

Undertakings in the Electronics sector are typically active in the appliance manufacturing, electrical and electronic equipment, electronic manufacturing services and original design manufacturing, hardware and semiconductor segments. The appliance manufacturing segment includes undertakings involved in the design and manufacturing of household appliances and hand tools. The sector sells and manufactures products around the world, primarily selling products to consumers through retail locations. The electrical & electronic equipment segment consists of undertakings that develop and manufacture a broad range of electric components, including power generation equipment, energy transformers, electric motors, switchboards, automation equipment, heating and cooling equipment, lighting, and transmission cables. Undertakings in this mature and competitive sector operate globally and typically generate a significant portion of their revenue from outside the country of their domicile. The electronic manufacturing services (EMS) & original design manufacturing (ODM) segment consists of two main segments. EMS undertakings provide assembly, logistics, and after-market services for original equipment manufacturers. The ODM segment of the sector provides engineering and design services for original equipment manufacturers and may own significant intellectual property. Although EMS & ODM undertakings produce equipment for a variety of sectors, the sector is closely associated with the Hardware sector, which consists of undertakings that design technology hardware products such as personal computers, consumer electronics, and storage devices for both personal consumers and businesses. The Hardware sector consists of undertakings that design and sell technology hardware products, including computers, consumer electronics, communications equipment, storage devices, components, and peripherals. Many undertakings in the sector rely heavily on the EMS &ODM sector for manufacturing services. The sector is expected to continue to grow as the use of technology rapidly grows, especially from consumers in emerging markets. The Semiconductors segment includes undertakings that design or manufacture semiconductor devices, integrated circuits, their raw materials and components, or capital equipment. Some undertakings in the sector provide outsourced manufacturing, assembly, or other services for designers of semiconductor devices.

Included are these activities in accordance to the following NACE code classification:

C.26.11 Manufacture of electronic components

C.26.12 Manufacture of loaded electronic boards

C.26.20 Manufacture of computers and peripheral equipment

C.26.30 Manufacture of communication equipment

C.26.40 Manufacture of consumer electronics

C.26.51 Manufacture of instruments and appliances for measuring, testing and navigation

C.26.52 Manufacture of watches and clocks

C.26.70 Manufacture of optical instruments and photographic equipment

C.26.80 Manufacture of magnetic and optical media

C.27.11 Manufacture of electric motors, generators and transformers

C.27.12 Manufacture of electricity distribution and control apparatus

C.27.20 Manufacture of batteries and accumulators

C.27.31 Manufacture of fibre optic cables

C.27.32 Manufacture of other electronic and electric wires and cables

C.27.33 Manufacture of wiring devices

C.27.40 Manufacture of electric lighting equipment

C.27.51 Manufacture of electric domestic appliances

C.27.52 Manufacture of non-electric domestic appliances

C.27.90 Manufacture of other electrical equipment

C.29.31 Manufacture of electrical and electronic equipment for motor vehicles

C.33.13 Repair of electronic and optical equipment

C.33.14 Repair of electrical equipment

S.95.11 Repair of computers and peripheral equipment

S.95.12 Repair of communication equipment

S.95.21 Repair of consumer electronics

S.95.22 Repair of household appliances and home and garden equipment

Food & Beverages sector

The Food & Beverage sector includes the processing of the products of agriculture, forestry and fishing into food for humans or animals, and includes the production of various intermediate products that are not directly food products. Undertakings often generate associated products of greater or lesser value (for example, hides from slaughtering, or oilcake from oil production). The sector is organised by activities dealing with different kinds of products: meat, fish, fruit and vegetables, fats and oils, milk products, grain mill products, animal feeds and other food products. Production can be carried out for own account, as well as for third parties, as in custom slaughtering. It does not include the preparation of meals for immediate consumption, such as in restaurants. The sector also includes the manufacture of beverages.

Undertakings in the Food & Beverages sector operate in the manufacturing, processing and distributing of agriculture products, meat and beverages. The sector includes undertakings that process and package foods such as bread, frozen foods, snack foods, pet foods, and condiments for retail consumer consumption. Typically, these products are made ready to consume, are marketed for retail consumers, and can be found on food retailers' shelves. The sector is characterised by large and complex ingredient supply chains, as many undertakings source ingredients from around the world. Large undertakings operate globally, and international opportunities are driving growth. Undertakings may also produce non-alcoholic beverages, including various carbonated soft drinks, syrup concentrates, juices, energy and sport drinks, teas, coffee, and water products, dominated by large, international undertakings. Undertakings partake in syrup manufacturing, marketing, bottling operations, and distribution, with larger undertakings typically being more vertically integrated into operations that bottle, sell, and distribute the finished products. In addition, undertakings may also produce alcoholic beverages and brew, distill, manufacture and distribute various alcoholic beverages, including beer, wine, and liquor. Undertakings in this sector transform agricultural products, including sugar, barley, and corn, into finished alcoholic beverages. The largest undertakings have global operations, with portfolios of numerous branded products. Levels of vertical integration vary due to regulation in different markets. Breweries generally have multiple manufacturing facilities to provide access to different markets, while vintners and distillers are typically located where they have a history of production. Undertakings in this sector are engaged in wholesale and retail sales. Store formats include retail supermarkets, convenience stores, warehouse supermarkets, liquor stores, bakeries, natural food stores, specialty food stores, seafood stores, and distribution centers. Undertakings may specialise in one type of store format or have facilities that contain multiple formats.

Included are these activities in accordance to the following NACE code classification:

C.10.11 Processing and preserving of meat

C.10.12 Processing and preserving of poultry meat

C.10.13 Production of meat and poultry meat products

C.10.20 Processing and preserving of fish, crustaceans and molluscs

C.10.31 Processing and preserving of potatoes

C.10.32 Manufacture of fruit and vegetable juice

C.10.39 Other processing and preserving of fruit and vegetables

C.10.41 Manufacture of oils and fats

C.10.42 Manufacture of margarine and similar edible fats

C.10.51 Operation of dairies and cheese making

C.10.52 Manufacture of ice cream

C.10.61 Manufacture of grain mill products

C.10.62 Manufacture of starches and starch products

C.10.71 Manufacture of bread

C.10.72 Manufacture of rusks and biscuits

C.10.73 Manufacture of macaroni, noodles, couscous and similar farinaceous products

C.10.81 Manufacture of sugar

C.10.82 Manufacture of cocoa, chocolate and sugar confectionery

C.10.83 Processing of tea and coffee

C.10.84 Manufacture of condiments and seasonings

C.10.85 Manufacture of prepared meals and dishes

C.10.86 Manufacture of homogenised food preparations and dietetic food

C.10.89 Manufacture of other food products n.e.c.

C.10.91 Manufacture of prepared feeds for farm animals

C.10.92 Manufacture of prepared pet foods

C.11.01 Distilling, rectifying and blending of spirits

C.11.02 Manufacture of wine from grape

C.11.03 Manufacture of cider and other fruit wines

C.11.04 Manufacture of other non-distilled fermented beverages

C.11.05 Manufacture of beer

C.11.06 Manufacture of malt

C.11.07 Manufacture of soft drinks

Machinery & Equipment sector

The Machinery & Equipment sector includes the manufacture of machinery and equipment that act independently on materials either mechanically or thermally or perform operations on materials (such as handling, spraying, weighing or packing), including their mechanical components that produce and apply force, and any specially manufactured primary parts as well as repair activities. This includes the manufacture of fixed and mobile or hand-held devices, regardless of whether they are designed for industrial, building and civil engineering, agricultural or home use. The manufacture of special equipment for passenger or freight transport within demarcated premises also belongs within this sector. It distinguishes between the manufacture of special-purpose machinery and general-purpose. It also includes the manufacture of other special-purpose machinery, not covered elsewhere, whether or not used in a manufacturing process, such as fairground amusement equipment, automatic bowling alley equipment, etc..

Undertakings in the Machinery & Equipment sector are typically active in the industrial machinery & goods segment as well as fuel cells & industrial batteries segment. The industrial machinery & goods segment manufactures equipment for a variety of segments including construction, agriculture, energy, utility, mining, manufacturing, automotive, and transportation. Products to be considered include engines, earth-moving equipment, industrial pumps, and turbines. Machinery manufacturers utilise large amounts of raw materials for production, including steel, plastics, rubber, paints, and glass. Manufacturers may also perform the machining and casting of parts before final assembly. Demand in the sector is closely tied to industrial production, while government emissions standards and customer demand are driving innovations to improve energy efficiency and limit air emissions during product use. The fuel cells & industrial batteries segment consists of undertakings that manufacture fuel cells for energy production and energy storage equipment such as batteries. Manufacturers mainly sell products to undertakings for varied energy-generation and energy-storage applications and intensities, from commercial business applications to large-scale energy projects for utilities. Undertakings in the sector typically have global operations and sell products to a global marketplace.

Included are these activities in accordance to the following NACE code classification:

C.28 Manufacture of low carbon technologies

C.28.11 Manufacture of engines and turbines, except aircraft, vehicle and cycle engines

C.28.12 Manufacture of fluid power equipment

C.28.13 Manufacture of other pumps and compressors

C.28.14 Manufacture of other taps and valves

C.28.15 Manufacture of bearings, gears, gearing and driving elements

C.28.21 Manufacture of ovens, furnaces and furnace burners

C.28.22 Manufacture of lifting and handling equipment

C.28.23 Manufacture of office machinery and equipment (except computers and peripheral equipment)

C.28.24 Manufacture of power-driven hand tools

C.28.29 Manufacture of other general-purpose machinery n.e.c.

C.28.30 Manufacture of agricultural and forestry machinery

C.28.41 Manufacture of metal forming machinery

C.28.49 Manufacture of other machine tools

C.28.91 Manufacture of machinery for metallurgy

C.28.92 Manufacture of machinery for mining, quarrying and construction

C.28.93 Manufacture of machinery for food, beverage and tobacco processing

C.28.94 Manufacture of machinery for textile, apparel and leather production

C.28.95 Manufacture of machinery for paper and paperboard production

C.28.96 Manufacture of plastics and rubber machinery

C.28.99 Manufacture of other special-purpose machinery n.e.c.

C.33.12 Repair of machinery

C.33.19 Repair of other equipment

C.33.20 Installation of industrial machinery and equipment

Medical Equipment & Services sector

Undertakings in the Medical Equipment & Services sector are engaged in the manufacture of irradiation, electromedical and electrotherapeutic equipment and the manufacture of medical and dental instruments and supplies. Undertakings are typically active in the drug retailing and medical equipment & supplies segments. The Drug Retailers sector comprises undertakings that operate retail pharmacies and distribution centers that supply retail stores. Stores may be company-owned or franchised. The majority of the sector's revenues are derived from consumer sales of prescription and over-the-counter pharmaceutical products; other goods sold include household goods, personal care products, and a limited selection of groceries. Additionally, the pharmacy retailer segment is expanding its health-focused services by offering clinics at various retail locations, which adds to the sector's shifting sustainability landscape. The Medical Equipment & Supplies sector researches, develops, and produces medical, surgical, dental, ophthalmic, and veterinary instruments and devices. Products are used in settings, including hospitals, clinics, and laboratories, and range from disposable items to highly specialised equipment. The increased prevalence of diseases associated with unhealthy lifestyles and an aging population are important factors that may impact growth in this sector. Emerging markets and the expansion of health insurance will contribute to further growth. However, the extension of government insurance programs, provider and payer consolidation, and regulatory emphasis on reduced costs in all markets may result in downward pricing pressure.

Included are these activities in accordance to the following NACE code classification:

C.26.60 Manufacture of irradiation, electromedical and electrotherapeutic equipment

C.32.50 Manufacture of medical and dental instruments and supplies

G.47.74 Retail sale of medical and orthopaedic goods in specialised stores

Metal Processing sector

The Metal Processing sector includes the activities of smelting and/or refining ferrous and non-ferrous metals from ore, pig or scrap, using electrometallurgic and other process metallurgic techniques. It also includes the manufacture of metal alloys and super-alloys by introducing other chemical elements to pure metals. The output of smelting and refining, usually in ingot form, is used in rolling, drawing and extruding operations to make products such as plate, sheet, strip, bars, rods, wire or tubes, pipes and hollow profiles, and in molten form to make castings and other basic metal products.

Undertakings in the Metal Processing sector are typically active in the iron & steel production and metals & mining segments.
The iron & steel production segment consists of steel producers with iron and steel mills and undertakings with iron and steel foundries. The steel producers segment consists of undertakings that produce iron and steel products from their own mills. These products include flat-rolled sheets, tin plates, pipes, tubes, and products made of stainless steel, titanium, and high alloy steels. Iron and steel foundries, which cast various products, typically purchase iron and steel from other firms. The sector also includes metal service centers and other metal merchant wholesalers, which distribute, import, or export ferrous products. Steel production occurs via two primary methods: the Basic Oxygen Furnace (BOF) , which uses iron ore as an input, and the Electric Arc Furnace (EAF) , which uses scrap steel. Many undertakings in the sector operate on an international scale. The metals & mining segment produces iron ores, rare earth metals, and precious metals and stones. Larger undertakings in this sector are vertically integrated.

Included are these activities in accordance to the following NACE code classification:

C.24.10 Manufacture of basic iron and steel and of ferro-alloys

C.24.20 Manufacture of tubes, pipes, hollow profiles and related fittings, of steel

C.24.31 Cold drawing of bars

C.24.32 Cold rolling of narrow strip

C.24.33 Cold forming or folding

C.24.34 Cold drawing of wire

C.24.41 Precious metals production

C.24.42 Aluminium production

C.24.43 Lead, zinc and tin production

C.24.44 Copper production

C.24.45 Other non-ferrous metal production

C.24.46 Processing of nuclear fuel

C.24.51 Casting of iron

C.24.52 Casting of steel

C.24.53 Casting of light metals

C.24.54 Casting of other non-ferrous metals

C.25.11 Manufacture of metal structures and parts of structures

C.25.12 Manufacture of doors and windows of metal

C.25.21 Manufacture of central heating radiators and boilers

C.25.29 Manufacture of other tanks, reservoirs and containers of metal

C.25.30 Manufacture of steam generators, except central heating hot water boilers

C.25.50 Forging, pressing, stamping and roll-forming of metal

C.25.61 Treatment and coating of metals

C.25.62 Machining

C.25.71 Manufacture of cutlery

C.25.73 Manufacture of tools

C.25.91 Manufacture of steel drums and similar containers

C.25.92 Manufacture of light metal packaging

C.25.93 Manufacture of wire products, chain and springs

C.25.94 Manufacture of fasteners and screw machine products

C.25.99 Manufacture of other fabricated metal products n.e.c.

C.32.11 Striking of coins

C.33.11 Repair of fabricated metal products

Oil & Gas - Midstream & Downstream sector

Undertakings in the Oil & Gas - Midstream & Downstream sector refine petroleum products, market oil and gas products, and/or operate gas stations and convenience stores, all of which comprise the downstream operations of the oil and gas value chain. The types of refinery products and crude oil inputs influence the complexity of the refining process used, with different expenditure needs and intensity of environmental and social impacts. Note: The standards discussed below are for “pure-play ”Oil & Gas - Midstream & Downstream activities, or independent Oil & Gas - Midstream & Downstream undertakings. Integrated oil and gas undertakings conduct upstream operations and are also involved in the distribution and/or refining or marketing of products. Those activities are covered by the ESRS Oil & Gas - Upstream & Services. As such, integrated undertakings should also consider the disclosure topics and metrics from these standards.

Included are these activities in accordance to the following NACE code classification:

C.19.20 Manufacture of refined petroleum products

G.46.71 Wholesale of solid, liquid and gaseous fuels and related products

G.47.30 Retail sale of automotive fuel in specialised stores

H.49.50 Transport via pipeline

Pulp, Paper & Wood products sector

The Pulp, Paper and Wood Products sector includes the manufacture of wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, and prefabricated wood buildings. The production processes include sawing, planing, shaping, laminating, and assembling of wood products starting from logs that are cut into bolts, or lumber that may then be cut further, or shaped by lathes or other shaping tools. The lumber or other transformed wood shapes may also be subsequently planed or smoothed, and assembled into finished products, such as wood containers. The sector also includes the manufacture of pulp, paper and converted paper products. The manufacture of these products is grouped together because they constitute a series of vertically connected processes. More than one activity is often carried out in a single unit. There are essentially three activities: The manufacture of pulp involves separating the cellulose fibres from other matter in wood, or dissolving and de-inking of used paper, and mixing in small amounts of reagents to reinforce the binding of the fibres. The manufacture of paper involves releasing pulp onto a moving wire mesh so as to form a continuous sheet. Converted paper products are made from paper and other materials by various techniques. The paper articles may be printed (e.g. wallpaper, gift wrap etc.), as long as the printing of information is not the main purpose.

The Pulp, Paper and Wood Products sector consists of undertakings that manufacture a range of wood pulp and paper products, including pulp fiber, paper packaging and sanitary paper, office paper, newsprint, and paper for industrial applications. Undertakings in the sector typically function as business-to-business entities and may have operations in multiple countries. While some integrated undertakings own or manage timber tracts and are engaged in forest management, sustainability issues arising from these activities are addressed in ESRS Forestry standard.

Included are these activities in accordance to the following NACE code classification:

C.16.10 Sawmilling and planing of wood

C.16.21 Manufacture of veneer sheets and wood-based panels

C.16.22 Manufacture of assembled parquet floors

C.16.23 Manufacture of other builders' carpentry and joinery

C.16.24 Manufacture of wooden containers

C.16.29 Manufacture of other products of wood

C.17.11 Manufacture of pulp

C.17.12 Manufacture of paper and paperboard

C.17.21 Manufacture of corrugated paper and paperboard and of containers of paper and paperboard

C.17.22 Manufacture of household and sanitary goods and of toilet requisites

C.17.23 Manufacture of paper stationery

C.17.24 Manufacture of wallpaper

C.17.29 Manufacture of other articles of paper and paperboard

Textiles, Apparels, Footwear & Accessories sector

The Apparel, Accessories & Footwear includes preparation and spinning of textile fibres as well as textile weaving, finishing of textiles and wearing apparel, manufacture of made-up textile articles, except apparel (e.g. household linen, blankets, rugs, cordage etc.). The sector alos includes all tailoring (ready-to-wear or made-to-measure), in all materials (e.g. leather, fabric, knitted and crocheted fabrics etc.), of all items of clothing (e.g. outerwear, underwear for men, women or children as well as the fur industry (fur skins and wearing apparel). In addition, the sector includes dressing and dyeing of fur and the transformation of hides into leather by tanning or curing and fabricating the leather into products for final consumption. It also includes the manufacture of similar products from other materials (imitation leathers or leather substitutes), such as rubber footwear, textile luggage etc. The products made from leather substitutes are included here, since they are made in ways similar to those in which leather products are made (e.g. luggage) and are often produced in the same unit.

The sector includes undertakings involved in the design, manufacturing, wholesaling, and retailing of various products, including men's, women's, and children's clothing, handbags, jewelry, watches, and footwear. Products are largely manufactured by vendors in emerging markets, thereby allowing undertakings in the sector to primarily focus on design, wholesaling, marketing, supply chain management, and retail activities.

Included are these activities in accordance to the following NACE code classification:

C.13.10 Preparation and spinning of textile fibres

C.13.20 Weaving of textiles

C.13.30 Finishing of textiles

C.13.91 Manufacture of knitted and crocheted fabrics

C.13.92 Manufacture of made-up textile articles, except apparel

C.13.93 Manufacture of carpets and rugs

C.13.94 Manufacture of cordage, rope, twine and netting

C.13.95 Manufacture of non-wovens and articles made from non-wovens, except apparel

C.13.96 Manufacture of other technical and industrial textiles

C.13.99 Manufacture of other textiles n.e.c.

C.14.11 Manufacture of leather clothes

C.14.12 Manufacture of workwear

C.14.13 Manufacture of other outerwear

C.14.14 Manufacture of underwear

C.14.19 Manufacture of other wearing apparel and accessories

C.14.20 Manufacture of articles of fur

C.14.31 Manufacture of knitted and crocheted hosiery

C.14.39 Manufacture of other knitted and crocheted apparel

C.15.10 Tanning and dressing of leather

C.15.12 Manufacture of luggage, handbags and the like, saddlery and harness

C.15.20 Manufacture of footwear

C.32.12 Manufacture of jewellery and related articles

C.32.13 Manufacture of imitation jewellery and related articles

C.32.99 Other manufacturing n.e.c.

Tobacco sector

The Tobacco sector is comprised of undertakings that grow and manufacture tobacco products including cigarettes, electronical cigarettes, cigars, waterpipes and smokeless tobacco products. Many large tobacco undertakings operate globally. Undertakings may obtain or sell exclusive rights to sell certain brands of cigarettes in diverse markets. Most tobacco is grown by independent tobacco farmers, who typically sell their crops to tobacco merchants or to manufacturers under contract.

Included are these activities in accordance to the following NACE code classification:

A.01.15 Growing of tobacco

C.12.00 Manufacture of tobacco products

Toys, Sporting Goods & Musical instruments sector

The Toys, Sporting goods & Musical instrument sector comprises undertakings that manufacture toys and games, sporting and athletic goods, such as bicycles, golf clubs, fitness equipment, musical instruments and other similar products. Undertakings in this sector primarily sell their products to consumers through retail stores. The level of manufacturing integration varies among and within segments of the sector; manufacturing is based primarily in Asia, with China accounting for a majority of production.

Included are these activities in accordance to the following NACE code classification:

C.30.92 Manufacture of bicycles and invalid carriages

C.30.99 Manufacture of other transport equipment n.e.c.

C.32.20 Manufacture of musical instruments

C.32.30 Manufacture of sports goods

C.32.40 Manufacture of games and toys

Mining sector group

The Mining sector group includes the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by different methods such as underground or surface mining, well operation, seabed mining etc. This sector group also includes supplementary activities aimed at preparing the crude materials for marketing, for example, crushing, grinding, cleaning, drying, sorting, concentrating ores, liquefaction of natural gas and agglomeration of solid fuels. These operations are often accomplished by the units that extracted the resource and/or others located nearby.

Coal Operations sector

The Coal Operations sector includes the extraction of solid mineral fuels through underground or open-cast mining and includes operations (e.g. grading, cleaning, compressing and other steps necessary for transportation etc.) leading to a marketable product.

The Coal Operations sector includes undertakings that mine coal and other similar materials and those that manufacture coal products. Mining activity covers both underground and surface mining, and thermal and metallurgical coal.

Included are these activities in accordance to the following NACE code classification:

B.05.10 Mining of hard coal

B.05.20 Mining of lignite

C.19.10 Manufacture of coke oven products

Mining sector

The Mining sector includes mining for metallic minerals (ores), performed through underground or open-cast extraction, seabed mining etc. It also includes ore dressing and beneficiating operations, such as crushing, grinding, washing, drying, sintering, calcining or leaching ore, gravity separation or flotation operations. The sector also includes extraction from a mine or quarry, but also dredging of alluvial deposits, rock crushing and the use of salt marshes. The products are used most notably in construction (e.g. sands, stones etc.), manufacture of materials (e.g. clay, gypsum, calcium etc.), manufacture of chemicals etc. It does not include processing (except crushing, grinding, cutting, cleaning, drying, sorting and mixing) of the minerals extracted. In addition, support activities are included.

The sector is involved in extracting metals, peats and minerals, producing ores, quarrying stones and clay, smelting and manufacturing metals, refining metals, and providing mining support activities. It also produces iron ores, rare earth metals, precious metals and stones. Larger undertakings in this sector are vertically integrated – from mining across global operations to wholesaling metals to customers.

Included are these activities in accordance to the following NACE code classification:

B.07.10 Mining of iron ores

B.07.21 Mining of uranium and thorium ores

B.07.29 Mining of other non-ferrous metal ores

B.08.11 Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate

B.08.12 Operation of gravel and sand pits

B.08.91 Mining of chemical and fertiliser minerals

B.08.92 Extraction of peat

B.08.93 Extraction of salt

B.08.99 Other mining and quarrying n.e.c.

B.09.90 Support activities for other mining and quarrying

Oil & Gas - Upstream & Services sector

The Oil & Gas - Upstream & Services sector includes the production of crude petroleum, the mining and extraction of oil from oil shale and oil sands and the production of natural gas and recovery of hydrocarbon liquids. The sector includes the activities of operating and/or developing oil and gas field properties. Such activities may include drilling, completing and equipping wells. The sector includes the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by different methods such as underground or surface mining, well operation, seabed mining etc. This sector includes supplementary activities aimed at preparing the crude materials for marketing, for example, crushing, grinding, cleaning, drying, sorting,

concentrating ores, liquefaction of natural gas and agglomeration of solid fuels. These operations are often accomplished by the units that extracted the resource and/or others located nearby.

Undertakings in the Oil & Gas - Upstream & Services sector explore for, extract, or produce energy products such as crude oil and natural gas, which comprise the upstream operations of the oil and gas value chain. Undertakings in the sector develop conventional and unconventional oil and gas reserves; these include, but are not limited to, shale oil and/or gas reserves, oil sands, and gas hydrates. Activities covered by this standard include the development of both on-shore and off-shore reserves. The sector creates contracts with the Oil & Gas - Midstream & Downstream sector to conduct several activities and to obtain equipment and oilfield services. Undertakings in the sector provide support services, manufacture equipment, or are contract drillers for oil and natural gas exploration and production undertakings. The drilling and drilling-support segment comprises undertakings that drill for oil and natural gas on-shore and off-shore on a contract basis. Undertakings in this segment may also manufacture jack-up rigs, semisubmersible rigs, and drill ships. Undertakings in the oilfield services segment manufacture equipment that is used in the extraction, storage, and transportation of oil and natural gas. They also provide support services such as seismic surveying, equipment rental, well cementing, and well monitoring. These services are commonly provided on a contractual basis, and the customer will purchase or lease the materials and equipment from the service provider. Service undertakings may also provide personnel or subject matter expertise as part of their scope of service. The contractual relationship between oil and gas services undertakings and their customers plays a significant role in determining the material impacts of their sustainability performance. Besides the rates charged, undertakings compete on the basis of their operational and safety performance, technology and process offerings, and reputation.

Included are these activities in accordance to the following NACE code classification:

B.06.10 Extraction of crude petroleum

B.06.20 Extraction of natural gas

B.09.10 Support activities for petroleum and natural gas extraction

Real Estate sector group

Real Estate & Services sector

The Real Estate & Services sector group includes acting as lessors, agents and/or brokers in one or more of the following: selling or buying real estate, rental real estate, providing other real estate services such as appraising real estate or acting as real estate escrow agents. Activities in this sector may be carried out on own or leased property and may be done on a fee or contract basis. This sector group includes real estate property managers. Also included is the building of structures, combined with maintaining ownership or leasing of such structures. In addition, the sector includes the provision of a number of general support services, such as the provision of a combination of support services within a client's facilities, the interior and exterior cleaning of buildings of all types, cleaning of industrial machinery, cleaning of trains, buses, planes, etc., cleaning of the inside of road and sea tankers, disinfecting and exterminating activities for buildings, ships, trains, etc., bottle cleaning, street sweeping, snow and ice removal, provision of landscape care and maintenance services and provision of these services along with the design of landscape plans and/or the construction (i.e. installation) of walkways, retaining walls, decks, fences, ponds, and similar structures.

The Real Estate & Services is composed of undertakings that provide services including property management, brokerage, appraisal and information services for Real Estate owners or own, develop, and generally operate income-producing real estate assets. Undertakings in this sector are commonly structured as real estate investment trusts (REITs) or play important roles in the Real Estate value chain and operate in a wide range of segments within the real estate sector, including residential, retail, office, health care, industrial, and hotel properties. REITs typically focus on the direct ownership of real estate assets, thereby providing investors with the opportunity to obtain real estate exposure without direct asset ownership and management.

Included are these activities in accordance to the following NACE code classification:

L.68.10 Buying and selling of own real estate

L.68.20 Rental and operating of own or leased real estate

L.68.31 Real estate agencies

L.68.32 Management of real estate on a fee or contract basis

N.81.10 Combined facilities support activities

N.81.21 General cleaning of buildings

N.81.22 Other building and Industrial cleaning activities

N.81.29 Other cleaning activities

N.81.30 Landscape service activities

Services sector group

The Services sector group includes specialised professional, scientific and technical activities. These activities require a high degree of training, and make specialised knowledge and skills available to users. This includes a variety of activities that support general business operations, with the primary purpose not the transfer of specialised knowledge.

Advertising & Marketing sector

The Advertising & Marketing sector includes the creation of advertising campaigns and placement of such advertising in periodicals, newspapers, radio and television, or other media as well as the design of display structures and sites.

The Advertising & Marketing sector is comprised of undertakings that create advertising campaigns for use in media, display, or direct mail advertising and related services including market research and public opinion polling. Advertising and marketing undertakings are engaged primarily by businesses selling consumer products, entertainment, financial services, technology products, telecommunication services and sale and re-sale of time and space for various media soliciting advertising. Larger advertising undertakings are structured as holding undertakings, owning multiple agencies across the globe that provide a wide range of services such as custom publishing, brand consultancy, mobile and online marketing, and public relations. For any advertising campaign, the same undertaking may be engaged in all aspects, from graphic arts and content creation to data analytics, marketing research, and media planning and buying, or the undertaking may only be in charge of certain aspects.

Included are these activities in accordance to the following NACE code classification:

M.73.11 Advertising agencies

M.73.12 Media representation

M.73.20 Market research and public opinion polling

Education sector

The Education sector includes the activities of three types of research and development: 1) basic research: experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without particular application or use in view, 2) applied research: original investigation undertaken in order to acquire new knowledge, directed primarily towards a specific practical aim or objective and 3) experimental development: systematic work, drawing on existing knowledge gained from research and/or practical experience, directed to producing new materials, products and devices, to installing new processes, systems and services, and to improving substantially those already produced or installed. Research and experimental development activities in this division are subdivided into two categories: natural sciences and engineering. It excludes market research. The Education sector includes education at any level or for any profession. The instructions may be oral or written and may be provided by radio, television, Internet or via correspondence. It includes education by the different institutions in the regular school system at its different levels as well as adult education, literacy programmes etc. Also included are military schools and academies, prison schools etc. at their respective levels. The sector includes public as well as private education.

The Education sector includes education institutions that are profit-seeking and generate revenue from student fees. At the primary and secondary levels this includes mostly alternative educational schools, specialty schools within sports, the arts or similar occupations, as well as some businesses. At the tertiary (or higher) level, services are delivered on a full-time, part-time, distance-learning, and occasional basis across establishments such as junior colleges, business and secretarial schools, colleges, universities, and professional schools including medical, pharmaceutical, and veterinary programs. An increasing number of students in for-profit universities take courses online. The Education sector also includes other educational activities such as tutoring undertakings and specialty schools that fall in between the secondary level and tertiary level. This includes, but is not limited to, folk high schools.

Included are these activities in accordance to the following NACE code classification:

M.72.19 Other research and experimental development on natural sciences and engineering

M.72.20 Research and experimental development on social sciences and humanities

P.85.10 Pre-primary education

P.85.20 Primary education

P.85.31 General secondary education

P.85.32 Technical and vocational secondary education

P.85.41 Post-secondary non-tertiary education

P.85.42 Tertiary education

P.85.51 Sports and recreation education

P.85.52 Cultural education

P.85.53 Driving school activities

P.85.59 Other education n.e.c.

P.85.60 Educational support activities

Professional & Commercial Services sector

The Professional & Commercial Services sector includes undertakings that rely on the unique skills and knowledge of their employees to serve a range of clients. Services are often provided on an assignment basis, where an individual or team is responsible for the delivery of services to clients. Offerings include, but are not limited to, management and administration consulting services, such as staffing and executive search services; legal, accounting, and tax preparation services; political, religious, and organisational services; travel, beauty and well-being services; architectural services, engineering services, drafting services, building inspection services and surveying and mapping services; and financial and non-financial information services. Non-financial information service providers may specialise in an array of topics such as energy, healthcare, real estate, technology, and science. Financial information service undertakings include credit and rating agencies as well as data and portfolio analytics providers. Customers of professional and commercial service providers include private and public for-profit institutions and non-profit organisations.

This can include activities of a governmental nature, normally carried out by the public administration. This includes the enactment and judicial interpretation of laws and their pursuant regulation, as well as the administration of programmes based on them, legislative activities, taxation, national defence, public order and safety, immigration services, foreign affairs and the administration of government programmes. The legal or institutional status is not, in itself, the determining factor for an activity to belong in this sector, rather than the activity being of a nature specified in the previous paragraph. This means that activities classified elsewhere in NACE do not fall under this sector, even if carried out by public entities. This sector also includes compulsory social security activities.

The Professional & Commercial Services sector group also includes the activities of membership organisations, the repair of computers and personal and household goods and a variety of personal service activities not covered elsewhere in the classification. It also includes activities of organisations representing interests of special groups or promoting ideas to the general public. These organisations usually have a constituency of members, but their activities may involve and benefit non-members as well. The primary breakdown of this division is determined by the purpose that these organisations serve, namely interests of employers, self-employed individuals and the scientific community, interests of employees or promotion of religious, political, cultural, educational or recreational ideas and activities.

The Professional and Commercial Services sector also includes the rental and leasing of tangible and non-financial intangible assets, including a wide array of tangible goods, such as automobiles, computers, consumer goods, and industrial machinery and equipment, to customers in return for a periodic rental or lease payment.

The Professional & Commercial Services sector includes all service activities not mentioned elsewhere in the activity classification. Notably it includes types of services such as washing and (dry-)cleaning of textiles and fur products, hairdressing and other beauty treatment, funeral and related activities. Also the activities of households as employers of domestic personnel such as maids, cooks, waiters, valets, butlers, laundresses, gardeners, gatekeepers, stable-lads, chauffeurs, caretakers, governesses, babysitters, tutors, secretaries etc. It allows the domestic personnel employed to state the activity of their employer in censuses or studies, even though the employer is an individual.

Included are these activities in accordance to the following NACE code classification:

O.84.11 General public administration activities

O.84.12 Regulation of the activities of providing health care, education, cultural services and other social services, excluding social security

O.84.13 Regulation of and contribution to more efficient operation of businesses

O.84.21 Foreign affairs

O.84.22 Defence activities

O.84.23 Justice and judicial activities

O.84.24 Public order and safety activities

O.84.25 Fire service activities

O.84.30 Compulsory social security activities

T.97.00 Activities of households as employers of domestic personnel

M.69.10 Legal activities

M.69.20 Accounting, bookkeeping and auditing activities

M.70.10 Activities of head offices

M.70.21 Public relations and communication activities

M.70.22 Business and other management consultancy activities

M.71.11 Architectural activities

M.71.12 Engineering activities and related technical consultancy

M.71.20 Technical testing and analysis

M.74.10 Specialised design activities

M.74.20 Photographic activities

M.74.30 Translation and interpretation activities

M.74.90 Other professional, scientific and technical activities n.e.c.

N.77.40 Leasing of intellectual property and similar products, except copyrighted works

N.78.10 Activities of employment placement agencies

N.78.20 Temporary employment agency activities

N.78.30 Other human resources provision

N.79.11 Travel agency activities

N.79.12 Tour operator activities

N.79.90 Other reservation service and related activities

N.80.10 Private security activities

N.80.20 Security systems service activities

N.80.30 Investigation activities

N.82.11 Combined office administrative service activities

N.82.19 Photocopying, document preparation and other specialised office support activities

N.82.20 Activities of call centres

N.82.30 Organisation of conventions and trade shows

N.82.91 Activities of collection agencies and credit bureaus

N.82.92 Packaging activities

N.82.99 Other business support service activities n.e.c.

S.94.11 Activities of business, employers and professional membership organisations

S.94.20 Activities of trade unions

S.94.92 Activities of political organisations

S.94.99 Activities of other membership organisations n.e.c.

S.96.01 Washing and (dry-)cleaning of textile and fur products

S.96.02 Hairdressing and other beauty treatment

S.96.03 Funeral and related activities

S.96.04 Physical well-being activities

S.96.09 Other personal service activities n.e.c.

Technology sector group

The Technology sector group includes the production and distribution of information and cultural products, the provision of the means to transmit or distribute these products, as well as data or communications, information technology activities and the processing of data and other information service activities.

Media & Communication sector

Undertakings in the Media & Communication sector are typically active in the media & entertainment, internet media & services and telecommunications segments. The main components of the are publishing activities, including software publishing, motion picture and sound recording activities, radio and TV broadcasting and programming activities, telecommunications activities, information technology activities and other information service activities. Publishing includes the acquisition of copyrights for content (information products) and making this content available to the general public by engaging in (or arranging for) the reproduction and distribution of this content in various forms. All the feasible forms of publishing (in print, electronic or audio form, on the Internet, as multimedia products such as CD-ROM reference books etc.) are included in this sector as well as activities related to production and distribution of TV programming at different stages in this process.

The Media and communications sector includes printing of products, such as newspapers, books, periodicals, business forms, greeting cards, and other materials, and associated support activities, such as bookbinding, plate-making services, and data imaging. The support activities included here are an integral part of the printing industry, and a product (a printing plate, a bound book, or a computer disk or file) that is an integral part of the printing industry is almost always provided by these operations. Processes used in printing include a variety of methods for transferring an image from a plate, screen or computer file to a medium, such as paper, plastics, metal, textile articles, or wood. The most prominent of these methods entails the transfer of the image from a plate or screen to the medium through lithographic, gravure, screen or flexographic printing. Often a computer file is used to directly "drive" the printing mechanism to create the image or electrostatic and other types of equipment (digital or non-impact printing). Though printing and publishing can be carried out by the same unit (a newspaper, for example), it is less and less the case that these distinct activities are carried out in the same physical location. It also includes the reproduction of recorded media, such as compact discs, video recordings, software on discs or tapes, records etc.. This also includes the publishing of books, brochures, leaflets, dictionaries, encyclopaedias, atlases, maps and charts.

Undertakings in the media & entertainment segment create content and/or acquire rights to distribute content over cable or broadcast media, including entertainment programs, news, dataprograms of entertainment, music, and children's programming. Undertakings in this sector also publish books, newspapers, and periodicals, and broadcast radio and local television programming. Note: Undertakings in the Media & Communication sector are increasingly engaged in distributing content via the Internet. Issues such as data processing, hosting and related activities are covered by ESRS Software & IT Services. This includes production of theatrical and non-theatrical motion pictures whether on film, video tape or disc for direct projection in theatres or for broadcasting on television. It also includes the sound recording activities, i.e. production of original sound master recordings, releasing, promoting and distributing them, publishing of music as well as sound recording service activities in a studio or elsewhere.

The internet media & services segment consists of two main segments. The internet media segment includes undertakings providing search engines and internet advertising channels, online gaming, and online communities such as social networks, as well as content, usually easily searchable, such as educational, medical, health, sports, or news content. The internet-based services segment includes undertakings selling services mainly through the Internet. As well as activities of web search portals, data processing and hosting activities, as well as other activities that primarily supply information. The segment generates revenues primarily from online advertising, on usually free content, with other sources of revenue being subscription fees, content sales, or sale of user information to interested third parties.

The telecommunication services segment consists of wireless and wireline telecommunications undertakings, as well as undertakings that provide cable and satellite services. The broadcasting can be performed using different technologies, over-the-air, via satellite, via a cable network or via Internet. It also includes the production of programs that are typically narrowcast in nature a subscription or fee basis, to a third party, for subsequent broadcasting to the public. The wireless services segment provides direct communication through radio-based cellular networks and operates and maintains the associated switching and transmission facilities. The wireline segment provides local and long distance voice communication via the Public Switched Telephone Network. Wireline carriers also offer voice over internet protocol (VoIP) telephone, television, and broadband internet services over an expanding network of fiber optic cables. Cable providers distribute television programming from cable networks to subscribers. They typically also provide consumers with video services, high-speed internet service, and VoIP. These services are traditionally bundled into packages that provide subscribers with easier payment options than paying for each service separately. Satellite undertakings distribute TV programming through broadcasting satellites orbiting the Earth or through ground stations. The commonality of activities classified in this

division is the transmission of content, without being involved in its creation. The breakdown in this division is based on the type of infrastructure operated. In the case of transmission of television signals this may include the bundling of complete programming channels in to programme packages for distribution. The sector also includes the activities of web search portals, data processing and hosting activities, as well as other activities that primarily supply information. Undertakings serve customers primarily in their domestic markets, although some undertakings operate in several countries.

Included are these activities in accordance to the following NACE code classification:

C.18.11 Printing of newspapers

C.18.12 Other printing

C.18.13 Pre-press and pre-media services

C.18.14 Binding and related services

J.58.11 Book publishing

J.58.12 Publishing of directories and mailing lists

J.58.13 Publishing of newspapers

J.58.14 Publishing of journals and periodicals

J.58.19 Other publishing activities

J.58.21 Publishing of computer games

J.59.11 Motion picture, video and television programme production activities

J.59.12 Motion picture, video and television programme post-production activities

J.59.13 Motion picture, video and television programme distribution activities

J.59.20 Sound recording and music publishing activities

J.60.10 Radio broadcasting

J.60.20 Television programming and broadcasting activities

J.61.10 Wired telecommunications activities

J.61.20 Wireless telecommunications activities

J.61.30 Satellite telecommunications activities

J.61.90 Other telecommunications activities

J.63.12 Web portals

J.63.91 News agency activities

J.63.99 Other information service activities n.e.c.

Software & IT Services sector

The Software & IT Services sector includes the activities of web search portals, data processing and hosting activities, as well as other activities that primarily supply information. As well as providing expertise in the field of information technologies: writing, modifying, testing and supporting software.

Undertakings in the Software & IT Services sector offer products and services globally to retail, business, and government customers, and includes undertakings involved in the development and sales of applications software, infrastructure software, and middleware. The sector is generally competitive, but with dominant players in some segments. While relatively immature, the sector is characterised by high-growth undertakings that place a heavy emphasis on innovation and depend on human and intellectual capital. The sector also includes IT services undertakings delivering specialised IT functions, such as consulting and outsourced services. New sector business models include cloud computing, software as a service, virtualisation, machine-to-machine communication, big data analysis, and machine learning. Additionally, brand value is key for undertakings in the sector to scale and achieve network effects, whereby wide adoption of a particular software product leads to self-perpetuating growth in sales.

Included are these activities in accordance to the following NACE code classification:

J.58.29 Other software publishing

J.62.01 Computer programming activities

J.62.02 Computer consultancy activities

J.62.03 Computer facilities management activities

J.62.09 Other information technology and computer service activities

J.63.11 Data processing, hosting and related activities

Transportation sector group

The Transportation sector group includes the provision of passenger or freight transport, whether scheduled or not, by rail, pipeline, road, water or air and associated activities such as terminal and parking facilities, cargo handling, storage etc. Included in this sector is the rental of transport equipment with driver or operator. Also included are postal and courier activities.

Transportation sector

Undertakings in the Transportation sector are typically active in the air freight and logistics, airlines, cruise lines, marine transportation, rail transportation and road transportation segments.

Air freight and logistics undertakings provide freight services and transportation logistics to both businesses and individuals. There are three main sector segments: air freight transportation, post and courier services, and transportation logistics services. Undertakings in the sector earn revenue from one or more of the segments and range from non-asset-based to asset-heavy. Transportation logistics services include contracting with road, rail, marine, and air freight undertakings to select and hire appropriate transportation. Services can also include customs brokerage, distribution management, vendor consolidation, cargo insurance, purchase-order management, and customized logistics information. The sector is key to global trade, granting it a degree of demand stability.
The sector includes postal and courier activities, such as pickup, transport and delivery of letters and parcels under various arrangements. Local delivery and messenger services are also included.

The airlines segment is comprised of undertakings that provide air transportation globally to passengers for both leisure and business purposes. This includes commercial full-service, low-cost, and regional airlines. Full-service carriers typically use a hub-and-spoke model to design their routes within countries and internationally. Low-cost carriers usually offer a smaller number of routes as well as no-frills service to their customers. Regional carriers typically operate under contract to full-service carriers, expanding the network of the larger carriers. Many airline undertakings also have a cargo segment in their operations from which they generate additional revenue. It is common within the segment for undertakings undertaking to form partnerships or join alliances in order to increase network size. Operating as an alliance allows airlines to offer customers access to international or otherwise underserved itineraries on multiple airlines under one ticket. At the same time, airlines share some overhead costs and increase their competitive position in the global market without having to operate outside their home country. The sector includes the transport of passengers or freight by air or via space.

The cruise lines segment comprises undertakings that provide passenger transportation and leisure entertainment, including deep sea cruises and river cruises. The segment is dominated by a few large undertakings. Cruises aim to provide a luxury resort experience for thousands of passengers at a time. The cruise lines segment has often been the fastest-growing segment of the travel sector, but is very cyclical.

The marine transportation segment consists of undertakings that provide deep-sea, coastal, and/or river-way freight shipping services. It is of strategic importance to international trade and its revenues are tied to macroeconomic cycles. Key activities include transportation of containerised and bulk freight, including consumer goods and a wide range of commodities, and transportation of chemicals and petroleum products in tankers. Due to the global scope of the segment, undertakings operate in many countries and under diverse legal and regulatory frameworks. This also includes the transport of passengers or freight over water, whether scheduled or not. Also included are the operation of towing or pushing boats, excursion, cruise or sightseeing boats, ferries, water taxis etc. Although the location is an indicator for the separation between sea and inland water transport, the deciding factor is the type of vessel used.

The rail transportation segment consists of undertakings that provide rail freight shipping and support services. Key activities include shipping containerised and bulk freight, including consumer goods and commodities. Rail undertakings typically own, maintain, and operate their rail networks, which may require significant capital expenditures. The segment exhibits economies of density due to its network effects, lending itself to natural monopoly conditions. Together with the large sunk costs of rail infrastructure, this provides a competitive advantage to incumbent firms undertaking in the segment and creates barriers to entry for new undertakings.

The road transportation segment consists of undertakings that provide long-and short-haul freight trucking services. Key activities include the shipment of containerised and bulk freight, including consumer goods and a wide variety of commodities. The segment is commonly broken down into two categories: truckload (vehicles carrying the goods of only one customer) and less-than-truckload (vehicles carrying the goods of multiple customers). Owner-operators comprise the vast majority of the sector due to the relative ease of entry, while a few large operators maintain market share through contracts with major shippers. Large undertakings often subcontract with owner-operators to supplement their owned fleet.

The Transportation sector includes warehousing and support activities for transportation, such as operating of transport infrastructure (e.g. airports, harbours, tunnels, bridges, etc.), the activities of transport agencies and cargo handling.

Included are these activities in accordance to the following NACE code classification:

H.49.10 Passenger rail transport, interurban

H.49.20 Freight rail transport

H.49.31 Urban and suburban passenger land transport

H.49.32 Taxi operation

H.49.39 Other passenger land transport n.e.c.

H.49.41 Freight transport by road

H.49.42 Removal services

H.50.10 Sea and coastal passenger water transport

H.50.20 Sea and coastal freight water transport

H.50.30 Inland passenger water transport

H.50.40 Inland freight water transport

H.51.10 Passenger air transport

H.51.21 Freight air transport

H.52.10 Warehousing and storage

H.52.21 Service activities incidental to land transportation

H.52.22 Service activities incidental to water transportation

H.52.23 Service activities incidental to air transportation

H.52.24 Cargo handling

H.52.29 Other transportation support activities

H.53.10 Postal activities under universal service obligation

H.53.20 Other postal and courier activities

Wholesale & Retail sector group

The Wholesale & Retail trade sector group includes wholesale and retail sale (i.e. sale without transformation) of any type of goods, and rendering services incidental to the sale of merchandise. As well as a variety of activities that support general business operations, with the primary purpose not the transfer of specialised knowledge. It also includes (as a residual category) the activities of membership organisations, the repair of computers and personal and household goods and a variety of personal service activities not covered elsewhere in the classification.

Wholesale & Retail trade sector

Wholesaling and retailing are the final steps in the distribution of merchandise. Sale without transformation is considered to include the usual operations (or manipulations) associated with trade, for example sorting, grading and assembling of goods, mixing (blending) of goods (for example sand), bottling (with or without preceding bottle cleaning), packing, breaking bulk and repacking for distribution in smaller lots, storage (whether or not frozen or chilled). Wholesale is the resale (sale without transformation) of new and used goods to retailers, business-to-business trade, such as to industrial, commercial, institutional or professional users, or resale to other wholesalers, or involves acting as an agent or broker in buying merchandise for, or selling merchandise to, such persons or undertakings. The principal types of businesses included are merchant wholesalers, i.e. wholesalers who take title to the goods they sell, such as wholesale merchants or jobbers, industrial distributors, exporters, importers, and cooperative buying associations, sales branches and sales offices (but not retail stores) that are maintained by manufacturing or mining units apart from their plants or mines for the purpose of marketing their products and that do not merely take orders to be filled by direct shipments from the plants or mines. Wholesalers frequently physically assemble, sort and grade goods in large lots, break bulk, repack and redistribute in smaller lots. Retailing is the resale of new and used goods mainly to the general public for personal or household consumption or utilisation, in shops, department stores, stalls, mail-order houses, door-to-door sales persons, hawkers, consumer cooperatives, auction houses etc. Most retailers take title to the goods they sell, but some act as agents for a principal and sell either on consignment or on a commission basis.

The Wholesale & Retail trade sector encompasses a variety of retailing categories such as department stores, mass merchants, home products stores, and warehouse clubs, as well as distributors like electronics wholesalers and automotive wholesalers. Common to these undertakings is that they manage global supply chains to anticipate consumer demands, keep costs low, and keep products stocked in their brick-and-mortar storefronts. This is a highly competitive segment, in which each undertaking category generally has a small number of key players, characterised by generally low margins. The relatively substitutable nature of retail makes undertakings in this segment especially susceptible to reputational risks. Most undertakings operate an e-commerce platform for marketing, selling and distributing of their products. In addition undertakings also provide online marketplaces for other firms or individuals to sell their goods and services, as well as retailers and wholesalers that provide an exclusively web-based platform for consumers to buy goods and services. Undertakings in this segment sell to consumers as well as to other businesses. Because of the accessibility of e-commerce sites, the segment is a global marketplace for buyers and sellers. This sector also covers undertakings that rent or lease passenger vehicles to customers. Car rentals are typically for periods of less than a month, while leases are for a year or more. The segment includes car-sharing business models where rentals are measured hourly and typically include subscription fees. Car rental undertakings operate out of airport locations, which serve business and leisure travellers, and out of neighbourhood locations, which mostly provide repair-shop and weekend rentals. The segment is concentrated, with several dominant market players, who operate globally using a franchise model. The growth of public transit and ride-sharing services in major metropolitan areas may represent a threat to the long-term profitability of the car rental & leasing segment if customers chose to hail rides or take public transit rather than rent vehicles.

The Wholesale and Retail Trade sector includes the repair and maintenance of computers peripheral equipment such as desktops, laptops, computer terminals, storage devices and printers. It also includes the repair of communications equipment such as fax machines, two-way radios and consumer electronics such as radios and TVs, home and garden equipment such as lawn-mowers and blowers, footwear and leather goods, furniture and home furnishings, clothing and clothing accessories, sporting goods, musical instruments, hobby articles and other personal and household goods.

The Wholesale and Retail Trade sector also includes the rental and leasing of tangible and non-financial intangible assets, including a wide array of tangible goods, such as automobiles, computers, consumer goods, and industrial machinery and equipment, to customers in return for a periodic rental or lease payment. It is subdivided into: (1) the rental of motor vehicles, (2) the rental of recreational and sports equipment and personal and household equipment, (3) the leasing of other machinery and equipment of the kind often used for business operations, including other transport equipment and (4) the leasing of intellectual property products and similar products. Only the provision of operating leases is included in this division. It excludes:

- financial leasing, see 64.91

- rental of real estate, see sector L

- rental of equipment with operator, see corresponding activityes according to activities carried out with this equipment, e.g. construction (sector F), transportation (sector H)

The wholesale and retail trade sector includes all activities (except manufacture and rental) related to motor vehicles and motorcycles, including lorries and trucks, such as the wholesale and retail sale of new and second-hand vehicles, the repair and maintenance of vehicles and the wholesale and retail sale of parts and accessories for motor vehicles and motorcycles. Also included are activities of commission agents involved in wholesale or retail sale of vehicles. It also includes activities such as washing, polishing of vehicles etc.

The sector also includes the resale (sale without transformation) of new and used goods mainly to the general public for personal or household consumption or utilisation, by shops, department stores, stalls, mail-order houses, door-to-door sales persons, hawkers, consumer cooperatives etc. Retail trade is classified first by type of sale outlet (retail trade in stores: groups 47.1 to 47.7. It also includes units engaged primarily in selling to the general public, from displayed merchandise, products such as personal computers, stationery, paint or timber, although these products may not be for personal or household use. Handling that is customary in trade does not affect the basic character of the merchandise and may include, for example, sorting, separating, mixing and packaging.It also includes the retail sale by commission agents and activities of retail auctioning houses.

Finally, the wholesale and retail trade sector includes wholesale trade on own account or on a fee or contract basis (commission trade) related to domestic wholesale trade as well as international wholesale trade (import/export). It excludes:
- wholesale of motor vehicles, caravans and motorcycles, see 45.1, 45.4
- wholesale of motor vehicle accessories, see 45.31, 45.40
- rental and leasing of goods, see division 77
- packing of solid goods and bottling of liquid or gaseous goods, including blending and filtering for third parties, see 82.92

Included are these activities in accordance to the following NACE code classification:

G.45.11 Sale of cars and light motor vehicles

G.45.19 Sale of other motor vehicles

G.45.31 Wholesale trade of motor vehicle parts and accessories

G.45.32 Retail trade of motor vehicle parts and accessories

G.45.40 Sale, maintenance and repair of motorcycles and related parts and accessories

G.46.11 Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods

G.46.12 Agents involved in the sale of fuels, ores, metals and industrial chemicals

G.46.13 Agents involved in the sale of timber and building materials

G.46.14 Agents involved in the sale of machinery, industrial equipment, ships and aircraft

G.46.15 Agents involved in the sale of furniture, household goods, hardware and ironmongery

G.46.16 Agents involved in the sale of textiles, clothing, fur, footwear and leather goods

G.46.17 Agents involved in the sale of food, beverages and tobacco

G.46.18 Agents specialised in the sale of other particular products

G.46.19 Agents involved in the sale of a variety of goods

G.46.21 Wholesale of grain, unmanufactured tobacco, seeds and animal feeds

G.46.22 Wholesale of flowers and plants

G.46.23 Wholesale of live animals

G.46.24 Wholesale of hides, skins and leather

G.46.31 Wholesale of fruit and vegetables

G.46.32 Wholesale of meat and meat products

G.46.33 Wholesale of dairy products, eggs and edible oils and fats

G.46.34 Wholesale of beverages

G.46.35 Wholesale of tobacco products

G.46.36 Wholesale of sugar and chocolate and sugar confectionery

G.46.37 Wholesale of coffee, tea, cocoa and spices

G.46.38 Wholesale of other food, including fish, crustaceans and molluscs

G.46.39 Non-specialised wholesale of food, beverages and tobacco

G.46.41 Wholesale of textiles

G.46.42 Wholesale of clothing and footwear

G.46.43 Wholesale of electrical household appliances

G.46.44 Wholesale of china and glassware and cleaning materials

G.46.45 Wholesale of perfume and cosmetics

G.46.47 Wholesale of furniture, carpets and lighting equipment

G.46.48 Wholesale of watches and jewellery

G.46.49 Wholesale of other household goods

G.46.51 Wholesale of computers, computer peripheral equipment and software

G.46.52 Wholesale of electronic and telecommunications equipment and parts

G.46.61 Wholesale of agricultural machinery, equipment and supplies

G.46.62 Wholesale of machine tools

G.46.63 Wholesale of mining, construction and civil engineering machinery

G.46.64 Wholesale of machinery for the textile industry and of sewing and knitting machines

G.46.65 Wholesale of office furniture

G.46.66 Wholesale of other office machinery and equipment

G.46.69 Wholesale of other machinery and equipment

G.46.72 Wholesale of metals and metal ores

G.46.73 Wholesale of wood, construction materials and sanitary equipment

G.46.74 Wholesale of hardware, plumbing and heating equipment and supplies

G.46.75 Wholesale of chemical products

G.46.76 Wholesale of other intermediate products

G.46.77 Wholesale of waste and scrap

G.46.90 Non-specialised wholesale trade

G.47.11 Retail sale in non-specialised stores with food, beverages or tobacco predominating

G.47.19 Other retail sale in non-specialised stores

G.47.21 Retail sale of fruit and vegetables in specialised stores

G.47.22 Retail sale of meat and meat products in specialised stores

G.47.23 Retail sale of fish, crustaceans and molluscs in specialised stores

G.47.24 Retail sale of bread, cakes, flour confectionery and sugar confectionery in specialised stores

G.47.25 Retail sale of beverages in specialised stores

G.47.26 Retail sale of tobacco products in specialised stores

G.47.29 Other retail sale of food in specialised stores

G.47.41 Retail sale of computers, peripheral units and software in specialised stores

G.47.42 Retail sale of telecommunications equipment in specialised stores

G.47.43 Retail sale of audio and video equipment in specialised stores

G.47.51 Retail sale of textiles in specialised stores

G.47.52 Retail sale of hardware, paints and glass in specialised stores

G.47.53 Retail sale of carpets, rugs, wall and floor coverings in specialised stores

G.47.54 Retail sale of electrical household appliances in specialised stores

G.47.59 Retail sale of furniture, lighting equipment and other household articles in specialised stores

G.47.61 Retail sale of books in specialised stores

G.47.62 Retail sale of newspapers and stationery in specialised stores

G.47.63 Retail sale of music and video recordings in specialised stores

G.47.64 Retail sale of sporting equipment in specialised stores

G.47.65 Retail sale of games and toys in specialised stores

G.47.71 Retail sale of clothing in specialised stores

G.47.72 Retail sale of footwear and leather goods in specialised stores

G.47.73 Dispensing chemist in specialised stores

G.47.75 Retail sale of cosmetic and toilet articles in specialised stores

G.47.76 Retail sale of flowers, plants, seeds, fertilisers, pet animals and pet food in specialised stores

G.47.77 Retail sale of watches and jewellery in specialised stores

G.47.78 Other retail sale of new goods in specialised stores

G.47.79 Retail sale of second-hand goods in stores

G.47.81 Retail sale via stalls and markets of food, beverages and tobacco products

G.47.82 Retail sale via stalls and markets of textiles, clothing and footwear

G.47.89 Retail sale via stalls and markets of other goods

G.47.91 Retail sale via mail order houses or via Internet

G.47.99 Other retail sale not in stores, stalls or markets

N.77.11 Rental and leasing of cars and light motor vehicles

N.77.12 Rental and leasing of trucks

N.77.21 Rental and leasing of recreational and sports goods

N.77.22 Rental of video tapes and disks

N.77.29 Rental and leasing of other personal and household goods

N.77.31 Rental and leasing of agricultural machinery and equipment

N.77.32 Rental and leasing of construction and civil engineering machinery and equipment

N.77.33 Rental and leasing of office machinery and equipment (including computers)

N.77.34 Rental and leasing of water transport equipment

N.77.35 Rental and leasing of air transport equipment

S.95.23 Repair of footwear and leather goods

S.95.24 Repair of furniture and home furnishings

S.95.25 Repair of watches, clocks and jewellery

S.95.29 Repair of other personal and household goods

Appendix C: Sustainability matters

This Appendix provides a non-limitative indication of sustainability matters to be considered by the undertaking when performing its assessment of material impacts, risks and opportunities.

Agriculture sector group

Agriculture & Farming sector

Energy consumption & mix

Processing and milling agricultural products requires substantial energy input. While some agricultural products undertakings generate energy on-site through the direct combustion of fossil fuels and/ or biomass, most energy is procured from the electrical grid. Energy consumption contributes to environmental impacts, including climate change and pollution. Energy management affects current and future costs of operation. Climate regulation and other sustainability factors could result in higher and/ or more volatile electricity and fuel prices, increasing operating costs for agricultural products undertakings. Therefore, energy efficiency gained through process improvements can lower operating costs. The tradeoff between on-site versus grid-sourced electricity as well as the use of alternative energy can play important roles in influencing both the long-term cost and reliability of an undertaking's energy supply and the extent of regulatory impact from direct versus indirect emissions.

Scopes 1 & 2 GHG emissions

Undertakings in the Agriculture & Farming sector generate direct greenhouse gas (GHG) emissions from the processing and transportation of goods via land and sea freight operations. Emissions regulations may increase the cost of capital, operational costs, and affect the operational efficiency of undertakings that do not have strategies in place to manage GHG emissions. Employing innovative technologies that use alternative fuels and energy inputs - including biomass waste generated from internal processes -and improving fuel efficiency are ways undertakings can limit exposure to volatile fuel pricing, supply disruptions, future regulatory costs, and other potential consequences of GHG emissions.

Within farming activities, the majority of the sector's emissions stem directly from the animals themselves through the release of methane during enteric fermentation, and from manure storage and processing. The direct emissions from raising and producing livestock represent a significant portion of total GHG emissions released among all sources. These emissions sources are currently not widely regulated, which presents uncertainties as to the future of GHG regulations for the sector. undertakings in this sector also use large quantities of fossil fuels to meet energy needs, generating additional direct GHG emissions and increasing exposure to regulatory risks. Future emission regulations could result in additional operating and/ or compliance costs. By implementing new technologies to capture animal emissions and focusing on energy efficiency, undertakings can mitigate regulatory risk and volatile energy costs while also limiting their GHG emissions.

Financial exposure to physical and transition risks, opportunities

Undertakings of agricultural products source a wide variety of commodities and ingredients from farmers and/ or intermediary distributors. The sector's ability to reliably source ingredients at desired price points fluctuates with crop yield, which may be affected by climate change, water scarcity, land management, and other resource scarcity considerations. undertakings that source more productive and less resource-intensive crops, or those that work closely with suppliers to increase their adaptability to climate change and other resource scarcity risks, will be better protected from volatility in crop prices and from disruptions in crop supplies. Additionally, undertakings may improve their brand reputation and develop new market opportunities. Failure to effectively manage sourcing risks can lead to higher costs of capital, reduced margins, and constrained revenue growth.

Water-related Performance Measurement

Agricultural products undertakings source a wide variety of commodities and ingredients from farmers and/ or intermediary distributors. The sector's ability to reliably source ingredients at desired price points fluctuates with crop yield, which may be affected by climate change, water scarcity, land management, and other resource scarcity considerations. undertakings that source more productive and less resource-intensive crops, or those that work closely with suppliers to increase their adaptability to climate change and other resource scarcity risks, will be better protected from volatility in crop prices and from disruptions in crop supplies. Additionally, undertakings may improve their brand reputation and develop new market opportunities. Failure to effectively manage sourcing risks can lead to higher costs of capital, reduced margins, and constrained revenue growth.

Farming undertakings source animal and animal feed from a range of suppliers depending on animal species. The sector's ability to reliably source animals and animal feed at desired price points may be affected by climate change, water scarcity, land management, and other resource scarcity considerations. undertakings that select and work with suppliers who are less resource-intensive and who actively manage adaptation to climate change and other resource scarcity risks, will be better protected from potential price volatility and supply disruptions. Additionally, such undertakings may improve their brand reputation and develop new market opportunities. Failure to effectively manage sourcing risks can lead to higher costs of capital, reduced margins, and constrained revenue growth.

Resources inflow

Animal farming undertakings source animal and animal feed from a range of suppliers depending on animal species. The undertaking sector's ability to reliably source animals and animal feed at desired price points may be affected by climate change, water scarcity, land management, and other resource scarcity considerations. undertakings that select and work with suppliers who are less resource-intensive and who actively manage adaptation to climate change and other resource scarcity risks, will be better protected from potential price volatility and supply disruptions. Additionally, such undertakings may improve their brand reputation and develop new market opportunities. Failure to effectively manage sourcing risks can lead to higher costs of capital, reduced margins, and constrained revenue growth.

Pollution of water

The Agricultural & Farming sector is water-intensive both in growing agricultural products and raising livestock and relies on water for processing activities. Additionally, undertakings in the -sector typically generate wastewater, or effluent, from both animal production and processing activities. The availability of water, due to physical availability and/ or regulatory access, directly impacts the sector's ability to efficiently operate processing facilities. As water scarcity becomes an issue of growing importance due to population growth, increasing consumption per capita, poor water management, and climate change, undertakings in the sector may face higher operational costs, remediation costs, and/ or potential fines or lost revenues due to water shortages and/ or regulations resulting in production reduction. undertakings can manage water-related risks and opportunities and mitigate long-term costs through capital investments and assessment of facility locations relative to water scarcity risks, improvements to operational efficiency, and work with regulators and communities on issues related to water access and effluent.

Pollution of soil

Undertakings operating animal farming have diverse ecological impacts, primarily because of significant land-use needs to raise livestock and the contamination of the air, land, and groundwater by animal waste. While the impacts are different, most methods lead to significant ecological impacts. The primary concern animal-product processing facilities is the generation of large and concentrated amounts of waste and pollutants into the environment. Treating effluent and waste from facilities involves significant costs. Animal farming which requires large tracts of pastureland, can lead to physical degradation of land resources. Land use and ecological impacts pose legal and regulatory risks in the form of fines, litigation, and difficulties obtaining permits for facility expansions or waste discharges.

Working conditions

Industrial processes used in the Agricultural & Farming sector present significant occupational hazards. The Agriculture & Farming sector has relatively high injury rates compared with other sectors given the prevalence of industrial machinery and chemicals. Common acute and chronic hazards include musculoskeletal disorders, exposure to chemicals and pathogens, and traumatic injuries from machines and tools. Employees are engaged in many labour-intensive activities. Common hazards include falls, transportation accidents, equipment-related accidents, and heat-related illness or injury, among others. Worker injuries or fatalities can lead to reputational risks, high turnover, low worker morale and productivity, injury liability risks, and associated health care and workers' compensation costs. Additionally, regulators may levy fines against undertakings for noncompliance with worker health and safety standards or require employee training to address preventable accidents. High injury rates, particularly fatality rates, may indicate a weak governance structure and a weak workplace safety culture, as well as lead to significant reputational harm. Strong performance on managing workforce health and safety can help build brand image while promoting worker morale, which may lead to increased productivity, reduced worker turnover, and enhanced community relations. By developing a strong safety culture and reducing employees' exposure to potentially harmful situations, an undertaking can proactively guard against accidents and improve workforce health and safety.

Personal safety

Agricultural and farming products are either sold directly to consumers in raw form or are further processed before reaching consumers. Maintaining product quality and safety is critical, as contamination by pathogens, chemicals, or spoilage presents serious human and animal health risks. Contamination may result from poor farming, transport, storage, or handling practices. Food safety practices and procedures in the sector have recently been subject to more intense scrutiny and oversight, and future outbreaks of diseases among livestock could lead to further governmental regulation. Food quality and safety issues can lead to consumer-driven demand changes and regulatory action. Product recalls can harm brand reputation, reduce revenues, and lead to costly fines. Obtaining food safety certifications or ensuring suppliers meet food safety guidelines may help undertakings in the sector safeguard against product safety risks and communicate the quality of their products to buyers.

The use of antibiotics in livestock production is of increasing concern due to the potential impacts on public health. Prevalent use of antibiotics in livestock production that are also administered to humans may promote the development of antibiotic-resistant strains of bacteria. While the use of antibiotics in animal feed or water supplies can improve the output of animal production and enhance animal welfare in industrial farm settings, undertakings in the sector must balance these benefits with the potential for negative public health risks. The use of antibiotics in animal production presents reputational and regulatory risks, both of which can affect long-term profitability through impacts on demand and market share for meat, poultry, and dairy producers. Depending on the animal species, undertakings in the sector have differing levels of control over and management approaches to this issue, from having direct control over the feed and medicine administered by contract suppliers to more broadly setting requirements for suppliers.

Agricultural and farming products undertakings source agricultural inputs from a large number of suppliers. How undertakings in the sector screen, monitor, and engage with suppliers on environmental and social topics may impact consumer demand, reputational risks, and the ability of undertakings to effectively manage their crop supply and respond to price fluctuations. Supply chain management issues related to labour, environmental practices, ethics, or corruption may result in regulatory fines and/ or increased long-term operational costs for undertakings. Similarly, agricultural products undertakings may face reputational damage if their suppliers perform poorly on environmental or social issues. undertakings can mitigate these risks and potentially increase consumer demand or capture new market opportunities by engaging with key suppliers to implement sustainable agricultural practices or source from certified suppliers.

Farming undertakings rely on a variety of contract farmers and suppliers. Environmental and social impacts within the supply chain include those related to deforestation, land use and waste management, water withdrawals, animal welfare, antibiotic usage, and food safety. Management of environmental and social risks within an undertaking's animal supply chain is critical to maintain the cost of capital, secure a steady source of animals at desired price points, and to prevent reputational damage, which may decrease revenue and market share.

Products and services

Agricultural products developed using genetically modified organism (GMO) technology have gained increasing consumer interest. While GMO technology has, in many cases, enabled improvements in crop yield through development of disease or drought resistant traits in plants, there is increasing consumer concern on the perceived health, environmental, and/ or social impacts related to the cultivation and consumption of GMOs. Certain countries and geographic regions have also enacted regulations that ban the usage or cultivation of GMOs. Food and beverage undertakings along the food supply chain, including undertakings in this sector, are seeking effective means to assess GMO-related risks and opportunities, and communicate with consumers on the topic. Agricultural products undertakings that are able to meet changing consumer trends and regulatory changes through their product mix or effective communications may reduce potential reputational risks and revenue loss as well as capture new market share opportunities.

Forestry sector

Financial exposure to physical and transition risks, opportunities

Global climate change may create long-term business uncertainty for some forestry management undertakings. Variations in precipitation patterns and temperatures, more frequent extreme weather events and forest fires, and an increased prevalence of tree diseases and pests could adversely impact timberlands through increased mortality or diminished productivity. Conversely, climate change could also facilitate forest productivity through increased atmospheric carbon dioxide, a longer growing season, moderating temperatures in high latitudes, greater precipitation, and expanded geographic ranges for some species, positively impacting forest productivity. In light of such variability, undertakings could benefit from identifying and understanding potential long-term impacts of climate change on the productivity of forestlands, and adjusting forestry management strategies to optimize the productivity of their forestland assets.

Pollution of soil

Along with their timber output, forests provide valuable ecosystem services including carbon sequestration, wildlife habitat, water purification and storage, soil formation, and recreational opportunities. Meanwhile, in many regions, regulations related to water quality and endangered species protection, as well as harvesting rights that are contingent upon environmental preservation, can create operational risks for undertakings. As such, protecting or enhancing ecosystem services within managed forestlands could mitigate reputational, demand, and operational risks related to the potential adverse environmental impacts of forestry. Undertakings increasingly utilise third-party certification to demonstrate sustainable forestry management practices that serve to enhance the value and productivity of their forest assets, as well as to meet rising customer demand for sustainably produced forest products.

Particular rights of indigenous peoples

Forests contribute directly to the livelihoods of millions of people worldwide. Effective relations and engagement with local communities and indigenous populations can be important to forestry undertakings. Communities may be affected by forestry management operations because of environmental degradation or competition for natural resources such as land and water. Conflict with communities, including or indigenous populations, could affect a undertaking's ability to operate in some regions, result in regulatory action, and could cause brand impacts. Conversely, undertakings can provide benefits to community stakeholders through employment opportunities, revenue sharing, and increased commerce. Undertakings can adopt various community engagement strategies to manage the risks and opportunities associated with community rights and interests, such as maintaining positive relations with local stakeholders and accommodating communities' needs.

Construction sector group

Construction & Engineering sector

Energy consumption & mix

The production of construction materials requires a significant quantity of energy, sourced primarily from direct combustion of fossil fuels as well as from purchased electricity. Energy-intense production has implications for climate change, and electricity purchases from the grid can create indirect Scope 2 emissions. Construction & Engineering undertakings also use alternative fuels for their kilns, such as scrap tires and waste oil-often waste generated by other sectors. If properly managed, these can lower energy costs and greenhouse gas (GHG) emissions. However, there could be potentially negative impacts, such as releases of harmful air pollutants that undertakings need to minimize in order to obtain net benefits from using such fuels. Decisions about use of alternative fuels, renewable energy, and on-site generation of electricity (versus purchases from the grid) can play an important role in influencing both the costs and reliability of energy supply. Affordable, easily accessible, and reliable energy is an important competitive factor in this sector, with purchased fuels and electricity accounting for a significant proportion of total production costs. The way in which a Construction & Engineering undertaking manages its overall energy efficiency, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative sources of energy can influence its profitability. Energy is a critical input in the Construction & Engineering sector. Purchased electricity represents the largest share of energy expenditures in the sector, followed by purchased fuels. The type of energy used, magnitude of consumption, and energy management strategies depends on the type of products manufactured. A undertaking's energy mix, including the use of electricity generated on-site, grid-sourced electricity, and the use of alternative energy, can play an important role in influencing the cost and reliability of energy supply, and ultimately affect the undertaking's cost structure and regulatory risk.

Scopes 1 & 2 GHG emissions

The production of construction materials, particularly cement, generates significant direct greenhouse gas (GHG) emissions from on-site fuel combustion and chemical processes. The sector has achieved gains in efficiency for reducing emissions per ton of materials produced. At the same time, increasing production is associated with an increase in absolute emissions from cement production. The production of construction materials remains carbon-intensive relative to other sectors, exposing the sector to higher operating and capital expenditures from emissions regulations. Strategies to reduce GHG emissions include: energy efficiency, use of alternative and renewable fuels, carbon sequestration, and clinker substitution. Operational efficiencies can be achieved through the cost-effective reduction of GHG emissions. Such efficiencies can mitigate the potential financial impact of increased fuel costs as well as direct emissions from regulations that seek to limit-or put a price on-GHG emissions. | Many of the Industrial Machinery & Goods sector's products are powered by fossil fuels and therefore release greenhouse gases (GHGs) and other air emissions during use. Customer preferences for improved fuel economy combined with regulations addressing emissions are increasing the demand for energy-efficient and lower-emission products in the sector. As such, undertakings that develop products with these characteristics may be well-positioned to capture expanding market share, reduce regulatory risk, and improve brand value. | Many of the Industrial Machinery & Goods sector's products are powered by fossil fuels and therefore release greenhouse gases (GHGs) and other air emissions during use. Customer preferences for improved fuel economy combined with regulations addressing emissions are increasing the demand for energy-efficient and lower-emission products in the sector. As such, undertakings that develop products with these characteristics may be well-positioned to capture expanding market share, reduce regulatory risk, and improve brand value.

Financial exposure to physical and transition risks, opportunities

The Construction & Engineering sector works with clients that are exposed to potentially disruptive climate regulation as well as those that play a role in addressing climate change. Certain types of construction projects are significant contributors toward climate change due to the greenhouse gases (GHGs) emitted during their use phase. Projects that are likely to contribute to global GHG emissions include those in the oil and gas space and other extractives sectors, as well as large buildings. While some infrastructure projects, such as renewable energy projects, are designed to reduce GHG emissions, many types of projects present trade-offs. Mass transit systems, for example, may be direct contributors of GHG emissions while lowering net emissions once the benefits offered by the system are factored in. Several undertakings in the sector generate a substantial share of revenues and profits from clients in carbon-intensive sectors and whose future capital expenditures may be at risk due to evolving climate regulations. Downside risks may manifest through project delays, cancellations, and diminished long-term revenue growth opportunities. On the other hand, undertakings that specialize in infrastructure projects that contribute to GHG mitigation could develop competitive advantages as they continue to focus on these growing markets. As the sector and its customers continue to operate within an uncertain business environment and face increasing environmental and regulatory requirements, assessing and communicating the risks and opportunities stemming from climate change that are embedded in a undertakings backlog and future business prospects can be helpful for investors in assessing the overall impact of climate change on the business.

Water-related Performance Measurement

Home builders face challenges directly related to the ecological impacts of development activities. Developments often take place on previously undeveloped land, and undertakings must manage the ecosystem disruption of construction activities as well as the regulations and permitting processes that accompany “greenfield” land development. Regardless of the siting decisions undertakings make, sector development activities generally carry risks related to land and water contamination, mismanagement of waste, and excessive strain on water resources during the construction and use phases. Violation of environmental regulations can result in costly fines and delays that decrease financial returns while potentially harming reputations. undertakings with repeated violations or track records of prior activities with excessive ecological impacts may find it difficult to receive approval from local communities for new developments, thereby decreasing future revenue and market share. undertakings that concentrate development efforts in water-stressed regions may see further challenges to permitting approvals, and also face risks related to land or home depreciation due to water shortage concerns. Environmental quality control procedures, “smart growth” strategies (including a focus on redevelopment sites), and conservation strategies may help ensure compliance with environmental laws, and therefore mitigate financial risks, while improving future growth opportunities.

Resources inflow

Community and urban planning gives home builders the opportunity to thoughtfully design new residential developments in a way that benefits their customers as well as the pre-existing surrounding community. New home development can bring economic growth and workforce opportunities while moderating cost-of-living increases, and can provide communities with safe and vibrant neighborhoods. undertakings may strive to improve communities’ environmental and social impacts by providing access to public transportation and/ or not overburdening existing transportation or utilities infrastructure, providing access to green spaces, developing mixed-use spaces, and creating more walkable communities. These strategies can help increase the overall demand for and selling prices of homes as well as reduce the risks related to permitting and community or stakeholder opposition related to current or future developments. When undertakings use development strategies that inadequately integrate their new communities into the pre-existing surrounding communities, they risk insufficient sales prices, excessive costs related to infrastructure needs and assessments, and risk being permitting approvals, delays, and/ or community support for future developments. undertakings are exposed to supply chain risks when critical materials are used in products. undertakings in the sector using critical materials with few or no available substitutes, many of which are sourced from deposits concentrated in only a few countries, which are subject to geopolitical uncertainty. undertakings in this sector also face competition due to increasing global demand for these materials from other sectors, which can result in price increases and supply risks. undertakings that are able to limit the use of critical materials through use of alternatives, as well as secure their supply, can mitigate the potential for financial impacts stemming from supply disruptions and volatile input prices.

Waste and emissions

Recycling rates in the Construction & Engineering sector are high. However, wastes from production processes, pollution control devices, and from hazardous waste management activities present a regulatory risk and can raise operating costs. Cement kiln dust (CKD) - consisting of fine-grained, solid, highly alkaline waste removed from cement kiln exhaust gas by air pollution control devices - is the most significant waste category in the sector. Regulatory risk remains from evolving environmental laws, including those at local and national levels and for other waste streams. undertakings that reduce waste streams - hazardous waste streams in particular - and recycle by-products, can therefore lower regulatory and litigation risks and costs.

Pollution of air

On-site fuel combustion and production processes in the Construction & Engineering sector emit criteria air pollutants and hazardous chemicals, including small quantities of organic compounds and heavy metals. Emissions of particular concern include nitrogen oxides, sulfur dioxides, particulate matter, heavy metals (e. g., mercury), dioxins, and volatile organic compounds, among others. These air emissions can have significant, localized human health and environmental impacts. Financial impacts resulting from air emissions will vary depending on the specific location of operations and the applicable air emissions regulations, but could include higher operating or capital expenditures and regulatory or legal penalties. Active management of the issue-through technological and process improvements - could allow undertakings to limit the impact of regulations and benefit from operational efficiencies that could lead to a lower cost structure over time.

Pollution of water

The Construction & Engineering sector requires substantial volumes of water for the production process. undertakings face operational, regulatory, and reputational risks due to water scarcity, costs of water acquisition, regulations on effluents or amount of water used, and competition with local communities and other sectors for limited water resources. Risks are likely to be higher in regions of water scarcity, due to potential water availability constraints and price volatility. undertakings that are unable to secure a stable water supply could face production disruptions, while rising water prices could directly increase production costs. Consequently, the adoption of technologies and processes that reduce water consumption could lower operating risks and costs for undertakings by minimizing the impact of regulations, water supply shortages, and community-related disruptions on undertaking operations.

Impact metrics

Within the Construction & Engineering sector undertakings often operate their own quarries close to processing facilities. Quarrying requires the removal of vegetation and topsoil. It also requires the blasting and crushing of underlying stone deposits. The process can lead to permanent alterations of the landscape, with associated impacts on biodiversity. The environmental characteristics of the land where quarrying takes place could increase extraction costs, due to increasing awareness and protection of ecosystems. undertakings could also face regulatory or reputational barriers to accessing sites in ecologically sensitive areas. This may include new protection status afforded to areas where reserves are located. Ongoing quarrying operations may also be subject to laws protecting endangered species. undertakings that have an effective environmental management plan for different stages of the project lifecycle-including restoration during site decommissioning-could minimize their compliance costs and legal liabilities. These undertakings could face less community resistance in quarrying at new sites and avoid difficulties in obtaining permits and delays in project completion.

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Working conditions

Construction, maintenance and repair services, and other on-site activities require a substantial amount of manual labor. Fatality and injury rates in the Construction & Engineering sector are high compared with those in other sectors as a result of the workforce’s exposure to powered haulage and heavy machinery accidents, fall accidents, exposure to hazardous chemicals, and other unique and potentially dangerous situations. Additionally, temporary workers may be at a higher risk due to lack of training or sector experience. Failing to protect worker health and safety can result in fines and penalties; serious incidents can lead to acute, one-time extraordinary expenses and contingent liabilities from legal and/ or regulatory actions. In addition, health and safety incidents can result in project delays and downtime that raise project costs and lower profitability. undertakings that seek to properly train both permanent and temporary employees and build a strong safety culture could reduce their risk profile while potentially gaining a competitive advantage in new project bids and proposals as a result of strong workforce health and safety track records. Employees in the Construction & Engineering sector also face health and safety risks from exposure to heavy machinery, moving equipment, and electrical hazards, among others. Creating an effective safety culture is critical to proactively mitigate safety incidents, which could result in higher healthcare costs, litigation, and work disruption. By implementing strong safety protocols, including incident reporting and investigation, and promoting a culture of safety, undertakings can minimize safety-related expenses and potentially improve productivity in the long term.

Employees and contractors of construction materials undertakings face significant health and safety risks. sector hazards include those arising from the use of heavy equipment and from quarrying operations. In addition to acute impacts, workers can develop chronic health conditions from silica dust inhalation, among other factors. Due to these hazards, the sector has relatively high fatality rates, and many undertakings have implemented a strong safety culture and health and safety policies to mitigate associated risks. Worker injuries, illnesses, and fatalities can lead to regulatory penalties, negative publicity, low worker morale and productivity, and increased healthcare and compensation costs.

Personal safety

Whether providing engineering, design, architectural, consulting, inspection, construction, or maintenance services, undertakings in this sector have a professional responsibility to ensure the safety and integrity of their work. Errors or inadequate quality in the project design phase and construction of buildings or infrastructure can cause significant personal injury, loss of property value, and economic harm. undertakings that perform poorly on structural integrity and safety can therefore face potentially high costs due to redesign and/ or repair work and legal liabilities, as well as reputational damage that could hurt growth prospects. Moreover, when designing and constructing buildings or infrastructure, undertakings in the sector must increasingly contemplate potential climate change impacts, which may affect the structural integrity of projects and the safety of the general public. Compliance with minimum applicable codes and standards may not be sufficient for maintaining and growing reputational value (or even mitigating legal liabilities) in certain circumstances, especially if the frequency and severity of climate-change-related events increases as expected. Meeting or exceeding new sector standards for

quality and establishing internal control procedures to address potential design issues, including those resulting from climate risks, are practices that can help undertakings reduce these risks.

Innovation

Innovations in building materials are a key component in the growth of sustainable construction. Consumer and regulatory trends are largely driving adoption of sustainable building materials and processes that are more resource efficient and can reduce health impacts of buildings throughout their lifecycle. This is creating new business drivers for Construction & Engineering undertakings, with an opportunity to increase revenues. Furthermore, some new products require less energy to produce, or use largely recycled inputs, reducing production costs. Sustainable construction materials, therefore, can contribute to a undertaking's long-term growth and competitiveness. Also, the Construction & Engineering sector uses large quantities of steel, iron, aluminum, glass, plastics, and other materials. Remanufacturing of industrial machinery systems (called " cores") is an opportunity for undertakings to limit the amount of raw materials needed to produce new machinery, as well as the time and other resources required to produce finished goods. Remanufactured products can also create value from products otherwise destined for disposal or recycling. undertakings can achieve cost savings by reusing end-of-life parts to build remanufactured machines, which may be resold to customers. Thus, remanufacturing in process and design can reduce demand for raw materials, reduce manufacturing costs, and create new sales channels.

Management and quality of relationsships with business partners

The construction materials market has been subject to instances of anti-competitive behavior, such as maintaining artificially high prices through cartel activity. Most countries have well-established fair business practice laws in place to prevent such behaviors. Business activity leading to price fixing or other manipulation of prices can lead to material legal fines or business disruption. Managing anti-competitive behavior within an organization can effectively mitigate regulatory risks, including those related to investigations of mergers and acquisitions or compliance costs.

Sustainability governance and organisation

Undertakings in the sector face risks associated with bribery, corruption, and anti-competitive practices. This is due to several factors, including the global operations of many undertakings, the need to manage multiple local agents and subcontractors, the complexity of project financing and project permitting, the magnitude of the contracts involved in building large infrastructure projects, and the competitive process necessary to secure contracts with private and public entities. Ethical breaches can result in investigations by authorities, as well as large fines, settlement costs, and damaged reputations. Such breaches may include violations of anti-bribery laws, such as paying government officials in order to gain project contracts. They may also include unethical bidding practices, such as complementary bidding (e. g., submitting an artificially high or otherwise unacceptable bid for a contract that a bidder does not intend to win) and bid-pooling (e. g., coordinating to split contracts and assure each bidder is awarded a certain amount of work). Moreover, undertakings with poor track records can be barred from working on future projects, resulting in lost revenue. Developing an ethical culture through employee training, effective governance structures, and internal controls is critical for undertakings to mitigate risks associated with business ethics.

Energy sector group

Energy Production & Utilities sector

Energy consumption & mix

Undertakings in the Energy Production & Utilities sector require significant energy inputs for the withdrawal, conveyance, treatment, and distribution or discharge of potable water and wastewater. Utility operating costs are directly related to energy use, which is typically a undertaking's largest operating cost after purchased water, chemicals, and labor. Purchased grid electricity is the most common energy input. In more remote locations, on-site generation is used to power equipment. The inefficient use of purchased grid electricity creates environmental externalities, such as Scope 2 greenhouse gas emissions. Regulations that address environmental concerns are likely to affect the future grid energy mix, leading to increases in prices. Additionally, climate change is also expected to impact grid reliability, and affect the availability of water resources. As a result, the energy intensity of water utilities is likely to increase in the future as water sources become more difficult to access. Alternative water treatment, such as recycling and desalination, can also require more energy. Together with decisions about the use of alternative fuels, renewable energy, and on-site electricity generation, energy efficiency can play an important role in influencing both the cost and the reliability of the energy supply. | Solar panel manufacturing typically uses electrical energy purchased from the grid. Energy can account for a considerable share of the total cost of production. In light of rising energy costs and regulatory uncertainty surrounding the future of fossil-based energy, undertakings that diversify their energy sources may be better able to manage the associated risks and maintain a reliable energy supply. undertakings that minimize their energy use through effective energy management can reduce costs and gain a competitive advantage through operational efficiency and competitive pricing of products. This is particularly important given the intense price competition within the solar technology sector.

Scopes 1 & 2 GHG emissions

Electricity generation represents the largest source of greenhouse gas (GHG) emissions in the world. These emissions, mainly carbon dioxide, methane, and nitrous oxide, are mostly by-products of fossil fuels combustion. The transmission and/ or distribution (T&D) segments of the sector are responsible for a negligible amount of its emissions. Electric utility undertakings could face significant operating and capital expenditures for mitigating GHG emissions as environmental regulations become increasingly stringent. While many of these costs can be passed on to a utility's customers, some power generators, especially in deregulated markets, may not be able to recoup these costs. undertakings can reduce GHG emissions from electricity generation mainly through careful planning of their infrastructure investments to ensure an energy mix capable of meeting the emissions requirements set forth by regulations and by implementing sector-leading technologies and processes. Being proactive in cost-effectively reducing GHG emissions can create a competitive advantage for undertakings and mitigate unanticipated regulatory compliance costs. Failure to properly estimate capital-expenditure needs and permitting costs, or other difficulties in reducing GHG emissions, could result in significant negative impacts on returns in the future in the form of asset write-downs, costs of obtaining carbon credits, or unexpected increases in operating and capital expenditures. Regulatory emphasis on this issue will likely increase in the coming decades, as exemplified by the international emissions-reduction agreement made at the 21st session of the United Nations Conference of the Parties that took place in late 2015.

Water-related Performance Measurement

Climate change is likely to create business uncertainty for energy supply systems and utility systems due to potential impacts on infrastructure and operations. Climate change can lead to increased water stress, more frequent severe weather events, reduced water quality, and rising sea levels that could impair utility assets or the ability to operate. Water supply and wastewater disposal are basic services for which maintaining continuity is of utmost importance. The increasing frequency and severity of storms challenge water and wastewater treatment facilities, and can affect continuity of service. Intense precipitation may lead to sewage volumes that exceed the capacity of treatment facilities, resulting in the release of untreated effluent. Minimizing current and future risks of service disruptions and inadequate service quality can require additional capital expenditures and operational expenses. As climate change leads to a greater likelihood of extreme weather events, undertakings that address these risks through redundancies and strategic planning will be better able to serve customers and protect shareholder value. Reliable access to clean water is commonly viewed as a basic human right. Reasonable and affordable pricing is a component of this right. Thus, structuring water rates in a way that the community perceives to be fair is critical to the value of water utility undertakings. undertakings that are able to work with regulators to implement rate structures that increase levels of community acceptance are likely to create greater financial stability and potentially realize growth opportunities-especially in light of the underfunded nature of water infrastructure in many regions around the world. Water utilities that use rate mechanisms that inhibit access to water, or that are prohibitively expensive to low-income populations, may see community opposition. undertakings must ensure fair pricing and access, as well as rates that can adequately fund infrastructure in the long term, provide safe drinking water and adequate wastewater treatment, and collect an adequate return on capital. Utility efficiency and conservation at the consumer level, whether a product of government mandates, environmental consciousness, or demographic trends, is increasingly important for long-term resource availability and the financial performance of the water supply segment of the sector. The end-use efficiency topic addresses how utilities work with regulators to mitigate revenue declines in the context of the increasing need for resource efficiency. Water efficiency mechanisms, including rate decoupling, can ensure that a utility's revenue can adequately cover its fixed costs and provide the desired levels of returns regardless of sales volume, while simultaneously incentivizing customers to conserve water. Efficiency mechanisms can better align utilities' economic incentives with environmental and social interests, including resource efficiency, lower rates, and increased capital investments in infrastructure. Water utilities are able to manage their exposure to the impact of rate mechanisms through positive regulatory relations, forward-looking rate cases that incorporate efficiency, and a strong execution of efficiency strategy. | Water supply systems obtain water from groundwater and surface water sources. Water supplies may either be accessed directly or purchased from a third party, often a government entity. Water scarcity, water source contamination, infrastructure failures, regulatory restrictions, competing users, and overconsumption by customers are all factors that can jeopardize access to sufficient water supplies. These issues, combined with an increasing risk of extreme and frequent drought conditions due to climate change, may lead to inadequate supplies or mandated water restrictions. The related financial impacts may manifest in different ways, depending on rate structure, but are most likely to impact enterprise value through decreased revenue. Water supply challenges may also lead to increases in the price of purchased water, which could result in higher operating costs. Failures of critical infrastructure such as aqueducts and canals, which could result from events such as earthquakes, are capable of presenting catastrophic risks to customers of the water supply system and could inflict untold financial consequences. undertakings are able to mitigate water supply risks (and the resulting financial risks) through diversification of water supplies, sustainable withdrawal levels, technological and infrastructure improvements, contingency planning, positive relations with regulators and other major users, as well as rate structures. | Solar photovoltaic panel manufacturing can be water-intensive, and ultra-pure water is a critical input in some processes. The manufacturing process can also generate wastewater, which must be treated before disposal or reuse, and can therefore result in operating costs and additional capital expenditures. Furthermore, depending on their location, solar equipment manufacturing facilities may be exposed to the risk of reduced water availability (scarcity) and related cost increases or operational disruptions. The use of local water resources is a risk that can generate tension with local water users, potentially disrupting manufacturing operations and adversely impacting brand value. To mitigate water supply and treatment risks, undertakings can adopt various strategies such as recycling process water, improving production techniques to lower water intensity, and improving water treatment systems.

Resources inflow

Undertakings in the Solar Technology & Development sector have faced challenges in establishing solar energy as a cost-competitive means of energy production and GHG reduction, and have thus encountered difficulty in capturing a greater share of global energy generation. In order to promote greater adoption of solar, the sector can benefit by preventing systemic disruptions to the existing energy infrastructure and essential energy services. undertakings are innovating to overcome the technical challenges of increasing solar integration with the grid. They are also engaging with regulatory agencies and policymakers to reduce regulatory barriers to the adoption of solar energy, many of which are emerging due to the concern around increasing overall grid electricity costs and grid disruptions. Solar undertakings are investing in innovative technologies to reduce hardware and installation costs, and are working toward business-model innovation to reduce the cost of capital and facilitate the purchase of solar energy systems. Solar technology undertakings can improve their competitiveness through deploying one or more of these strategies successfully to ensure their ability to scale over the long term. Solar Technology & Development undertakings also typically source numerous materials including polysilicon, metals, glass, and electrical components. undertakings additionally utilise certain materials that are critical to solar panel and module manufacturing. Limited global resources of these critical materials, as well as their concentration in countries that may have relatively limited governance and regulatory structures or are subject to geopolitical tensions, expose undertakings to the risk of supply-chain disruptions and input-price increases or volatility. undertakings can mitigate associated risks by ensuring transparency in their supply chains, working actively to source materials from reliable suppliers or regions that have minimal environmental or social risks, and supporting research for alternative inputs. For the sector Biofuels the rapid growth in global biofuels production is due in large part to government energy policies that seek to reduce net GHG emissions from transportation fuels and reduce dependence on fossil fuels. Most major renewable-fuel policies worldwide require that biofuels achieve lifecycle GHG emissions reductions relative to a fossil-fuel baseline to qualify for renewable fuel-mandate thresholds. The biofuel lifecycle emission calculation can include indirect and direct emissions from feedstock crop production and land use, fuel refining, fuel and feedstock transport, and vehicle exhaust emissions. Biofuel producers can directly influence net emissions during the refining process through energy management (fuel use), process innovations, and by using feedstocks with lower emissions profiles. Fuel products that achieve a reduction in net emissions can qualify as advanced biofuels, which, based on existing biofuels mandates in Europe, may be subject to increased demand in the future. Biofuel undertakings that cost-effectively reduce the net carbon emissions of their products may gain a competitive product advantage, leading to revenue growth and increased market share. Wind Technology & Development undertakings source materials from global supply chains for use in turbines, including critical materials, such as neodymium and dysprosium, and critical minerals including tantalum and tungsten. Materials sourcing risks arise from a low substitution ratio, the concentration of deposits in a few countries, geopolitical considerations, and competition from other sectors. Direct drive turbines, which are being increasingly used for their reliability, can require significantly more critical materials than more traditional drive trains. undertakings can minimize negative externalities and protect themselves from related input cost volatility and supply constraints by creating transparent supply chains, working actively to source materials from reliable suppliers or regions that have minimal environmental or social risks associated with them, supporting research for alternative inputs, and reducing their reliance on these materials.

Resources outflow

Operating a vast network of gas pipelines, equipment, and storage facilities requires a multifaceted, long-term approach to ensuring the integrity of such infrastructure, and the management of related risks. While customers depend on constantly available gas supplies, undertakings are tasked with managing substantial risks-including those related to human health, property, and greenhouse gas (GHG) emissions-that result from operating gas distribution networks and related infrastructure. Aging infrastructure, inadequate monitoring and maintenance, and other operational factors may lead to gas leaks. Gas leaks can result in safety-related risks, such as losses of containment, which may result in fires or explosions that can be particularly severe in urban areas where undertakings often operate. Furthermore, gas leaks also result in fugitive emissions (methane), causing adverse environmental impacts. Regulated gas utilities generally incur no direct costs for gas leaks, as the cost of gas is typically passed directly to customers (though this may vary by region). However, gas leaks that result in safety-related risks and/ or fugitive emissions may financially impact undertakings through a variety of regulatory, legal, and product demand channels. Accidents, particularly fatal accidents, can result in claims of negligence against undertakings, leading to costly court battles and fines. GHG emissions may lead to increased regulatory scrutiny-a critical element directly connected to financial performance, given the importance of regulatory relations- and potential fines and penalties. Importantly, regulated gas utilities can also financially benefit from opportunities for capital investments designed to improve performance and mitigate risks related to safety and emissions. These capital investments may lead to higher rate bases, ultimately benefiting the undertaking and its shareholders. undertakings seek to manage such risks through pipeline replacements, regular inspections and monitoring, employee training and emergency preparedness, investments in technology, and other strategies-all typically done by working closely with regulators. In many parts of the country, concerns about aging infrastructure have caused undertakings in the sector to look for ways to expedite the replacement approval process, especially in cases where pipelines are located near densely populated areas. The Water utilities sector develop, maintain, and operate complex interconnected infrastructure networks that include extensive pipelines, canals, reservoirs, and pump stations. Significant volumes of water are lost in the distribution network (called " non-revenue water, " as it is a distributed volume of water that is not reflected in customer billings). This water is lost primarily because of infrastructure failures and inefficiencies, such as leaking pipes and service connections. Non-revenue real water losses may negatively impact financial performance, raise customer rates, and squander water and other resources such as energy and treatment chemicals. Conversely, improvements to infrastructure and operating processes can limit non-revenue losses, positively impacting revenues and possibly reducing costs. Efficiently directing operational and maintenance expenses or capital expenditures to distribution systems-primarily pipeline and service connection repair, refurbishment, or replacement-can improve enterprise value and provide strong investment returns. The Wind Technology & Project Developers sector’s long-term success depends on its ability to produce energy at a comparatively lower cost than other energy sources. Steel and other materials purchases are one of the largest cost components of turbines and inputs such as steel have exhibited price volatility in the past. In recent years, wind turbines have grown in size, in terms of both the tower height and the swept area of the rotor, to improve energy output and increase the potential for wind energy production in more areas. To achieve this expansion cost-effectively, undertakings can employ innovative methods to increase turbine output while using materials more efficiently. This could influence undertakings’ competitiveness and market share, costs of production, and operational risks related to the supply and price volatility of raw materials, as well as the ability of the sector to scale.

Waste and emissions

Electricity generators must safely dispose of the hazardous by-products of their operations. Coal-fired electricity generation is a major source of hazardous waste because of its by-product, coal ash. Coal ash can have a significant effect on enterprise value in the power-generation segment of the sector. This issue will affect undertakings differently, depending on the extent to which they generate electricity from coal. Coal ash is one of the largest industrial waste streams in the world. It contains heavy metal contaminants that have been associated with cancer and other serious diseases, especially when they leach into groundwater. Coal ash can have beneficial uses when recycled or reused, such as in the creation of fly ash concrete or wallboard, creating revenue opportunities for electric utilities. Safe handling of coal ash, location of coal ash impoundments that minimize harm to human life and/ or the environment, strong monitoring and containment of coal ash, and the sale for beneficial uses of coal ash are important strategies to reduce regulatory compliance costs as well as penalties for non-compliance. There can be significant litigation and/ or remediation costs if the coal ash leaches into the surrounding environment. The Water and wastewater sector treatment facilities produce effluent that poses potential environmental and human health risks. Effluent includes residuals and solids that consist of chemicals used in the treatment process and contaminants removed from raw water or wastewater inputs. Treated effluent is discharged from facilities into surface water or pumped into groundwater. Potential environmental impacts vary depending on the treatment and disposal process. Additionally, consumers and regulators are becoming increasingly concerned by substances including endocrine-disrupting chemicals (EDCs), which wastewater treatment facilities do not typically address. As a result of the environmental risks associated with effluent, treatment facilities are subject to extensive environmental regulations intended to control and monitor their impact. As public and regulatory scrutiny of effluent quality increases with new concerns about substances of emerging concern, undertakings will need to innovate and ensure that effluent is not harmful to the environment or human health. Effluent discharges exceeding maximum limits can result in significant regulatory penalties, and frequent episodes may jeopardize a utility's social license to operate. undertakings can actively manage financial impacts through infrastructure and equipment planning, maintenance, and operations, as well as the deployment of appropriately trained and experienced labor. The Solar Technology and Development sector contains solar panel manufacturing may involve the use of hazardous substances that can cause adverse health and environmental impacts if not properly managed. Common thin-film technologies can utilise materials including cadmium, gallium arsenide, and copper indium gallium (di) selenide, which require careful handling during the manufacturing process and disposal. The handling and disposal of hazardous wastes produced during manufacturing can lead to operating costs, capital expenditures, and in some instances result in regulatory costs. As such, effective management of hazardous materials, including through reduction, reuse, recycling, and safe storage and disposal, can lower operating costs and mitigate potential regulatory penalties or reputational damage. Also Solar panels may contain hazardous substances as well as reusable materials of high economic value. Given the rapid expansion of solar energy globally, increasing volumes of solar panels are expected to reach the end of their useful life in the medium term. In some regions, including parts of the EU, manufacturers are required by law to take financial responsibility for their products at the end-of-life stage, including collection and recycling. Product take-back, recycling, and disposal may result in higher upfront investments or capital expenditures for operators in the sector. However, as more modules reach the end of their life and this issue likely receives more legislative attention, undertakings may differentiate themselves through offering product take-back and recycling services. This could increase revenues as well as result in lower long-term costs by reusing recovered materials in manufacturing processes.

Value strategy

Energy efficiency is a low-lifecycle-cost method to reduce greenhouse gas (GHG) emissions, as less electricity needs to be generated to provide the same end-use energy services. Utilities can partake in a wide range of activities to promote energy efficiency and conservation among their customers. Such strategies include offering rebates for energy-efficient appliances, weatherizing customers' homes, educating customers on energy-saving methods, offering incentives to customers to curb electricity use during times of peak demand ("demand response"), and investing in technology such as smart meters, which allows customers to track their energy usage-among many other strategies. These efforts, which save consumers money, can also manifest in lowered operating costs for electric utilities because they can reduce peak demand. Furthermore, depending on the sentiment of the utilities commission in a undertaking's region, energy efficiency can be a regulatory priority before new builds are considered. How an electric utility stands to gain or lose from this trend toward GHG mitigation is significantly predicated on its regulatory environment. Traditional rate structures generally do not give electric utilities an incentive for energy efficiency, and further, they may economically suffer from reductions in customer demand. This is increasingly driving electric utilities, and their regulators and customers, to pursue alternative ratemaking. Such alternative rate design often "decouples" utility revenues from customer consumption, and may also build in explicit incentives for end-use efficiency and demand reductions. Overall, undertakings whose strategic plan strives to reduce their downside risks from demand fluctuations, gain adequate and timely returns on needed efficiency investments. Further, lowering costs through efficiency initiatives help position utility undertakings to earn stronger risk-adjusted returns over the long term.

Pollution of air

Fuel combustion in electricity-generation operations generates hazardous air pollutants (HAPs), criteria air pollutants (CAPs), and volatile organic compounds (VOCs). HAPs, CAPs, and VOCs have more localized, but nonetheless significant, human health and environmental impacts compared with the global impacts of greenhouse gases (GHGs). The most common and impactful are nitrogen oxides (excluding nitrous oxide), sulfur oxide, particulate matter (PM), lead, and mercury. Emissions of these localized air pollutants are often strictly regulated, creating significant risks for electricity generators. Regulatory and legal risks are higher for those undertakings operating near large communities. A undertaking's energy-generation mix is the best indicator of its relative risk related to air quality. Harmful air emissions from operations may result in regulatory penalties that affect extraordinary expenses, higher regulatory compliance costs, and new capital expenditures to install best-in-class control technology. In some cases, such expenditures can be prohibitive to the continuation of a facility. undertakings can manage air quality concerns through internal actions to reduce emissions, as well as by working with regulators to establish priorities and incorporate risks into short-and long-term capital planning. The Biofuel sector refineries generate air emissions that may include hazardous air pollutants, criteria air pollutants, and volatile organic compounds. Emissions are generated by grain-handling equipment, boilers, wastewater treatment, and cooling, drying, distillation, and fermentation units. In most regions, such emissions are typically subject to regional and federal regulation that seeks to limit emissions below specific thresholds. As a result, air emissions are often subject to emissions permits and abatement can result in operating costs or require capital expenditures. undertakings may also face regulatory compliance costs and penalties, as well as permit restrictions or delays from state and local agencies, if facilities are not compliant with regulations.

Pollution of water

Electricity generation is one of the most water-intensive sectors in the world in terms of water withdrawals. Thermoelectric power plants-typically coal, nuclear, and natural gas-are dependent on large quantities of water for cooling purposes. The sector is facing increasing water-related supply and regulatory risks, potentially requiring capital investment in technology or even resulting in stranded assets. As water supplies tighten in many regions-and electricity generation, agriculture, and community use compete for water supplies in the coming decade-power plants may increasingly be unable to operate at their full capacity, or at all, because of region-specific water constraints. The availability of water is a key factor to consider when calculating the future value of many electricity-generating assets and for evaluating existing proposals for new generation sources. Heightened water scarcity-due to factors such as increasing consumption and reduced supplies as a result of climate change, which could result in more frequent or intense droughts-could prompt regulatory authorities to limit undertakings' ability to withdraw necessary amounts of water, especially in regions with high baseline water stress. Furthermore, undertakings must contend with the growing regulations related to the significant biodiversity impacts that such large withdrawals can cause. To mitigate risks, undertakings can both invest in more efficient water-usage systems for existing plants and place strategic priority on assessing long-term water availability, as well as water-related biodiversity risks, when siting new power plants. undertakings in the sector must ensure that water conforms to regulations, is in line with customer expectations, and is reliably delivered. In order to protect human health and safeguard enterprise value, undertakings must protect water sources from contamination, which may reduce treatment processes and costs. Comprehensive treatment processes are designed, developed, and maintained to meet water quality standards, while the finished water output is routinely monitored for compliance and safety. Natural events, such as forest fires and flooding, can also impact the quality of water sources. Overall, undertakings invest significant resources to consistently deliver safe drinking water to customers. Failure to provide water of adequate quality may result in regulatory fines, litigation, increased operating costs or capital expenditures, reputational risk, and asset or business seizure. In the Biofuel sector refining is typically water-intensive. Biorefineries require water for feedstock processing, fermentation, distillation, and cooling. Although water use at biorefineries is modest relative to the quantities consumed during feedstock crop production, it is concentrated, and thus may have impacts on local water resources. Facilities may also generate wastewater containing salts, organic compounds, dissolved solids, phosphorus, and other substances, requiring wastewater treatment. Biofuel refineries may also be exposed to the risk of reduced water availability and related cost increases or operational disruption. Extraction of water from certain areas for the purposes of refining, as well as contamination of water supplies due to refining operations, could also create regulatory risk and tensions with local communities. Water efficiency in operations and the proper treatment of effluents are therefore important factors for the performance of biofuels undertakings.

Pollution of soil

Wind farm development involves siting and land acquisition, permitting, and engagement with local stakeholders to address concerns about potential environmental and community impacts. Offshore developments can affect the marine ecosystem, and both on and offshore wind farms can have an adverse effect on local animal populations, some of which may be endangered. Obtaining environmental and construction permits for projects can be slowed or prevented if regulators or community members have concerns about ecological impacts from the development. Wind project approval directly affects equipment manufacturers through demand for turbines. While manufacturers do not typically control the project approval process, research and development investments can minimize ecological impacts, leading to long-term benefits. These measures could facilitate project approvals and give wind technology manufacturers a competitive advantage, potentially increasing their market share over time. Also the Biofuels sector utilises a variety of plant-based feedstocks as raw materials for production. Most undertakings purchase feedstocks from agricultural producers and distributors. A growing proportion of the world's arable land is now occupied by biofuel crops. Unsustainable cultivation practices can have negative environmental externalities, including deforestation and biodiversity loss, soil degradation, and water pollution. These factors could adversely affect feedstock crop yields over the short-and long-term. This, in turn, could influence the price and availability of feedstocks for biofuels producers. Consequently, vetting the sustainability of supply chains, such as through certifications or engagement with suppliers, is an important consideration for biofuels producers.

Working conditions

Employees of undertakings in the sector face numerous hazards in the construction and maintenance of electric transmission and distribution (T&D) lines, as well as with the various means of electricity generation. Many of these employees work for extended periods at great heights, operate heavy machinery, and face electrocution risks. While the sector has made significant strides in safety improvements, significant risks and opportunities remain for further improvements. The nature of the sector -as a necessity of modern life and economies, as well as commonly a societally granted monopoly-means that the actions of undertakings in the sector receive significant public and regulatory scrutiny. undertakings need to maintain a culture of safety to ensure adequate working conditions for their workers, ensure strong operational productivity, uphold positive views from the perspective of regulators, and manage potential risks of regulatory penalties. Also in the Wind technology & development sector, wind turbine manufacturers offer operations and maintenance (O&M) services for wind farm owners or operators together with the sales of their products. These activities may include installation, maintenance, monitoring, and repairing turbine installations. The wind farm O&M segment is held to a high safety standard because the work is inherently hazardous. Hazards include physical hazards such as falls from heights and moving mechanical parts, as well as electrical hazards. The quality of O&M services is therefore critical for the safety of wind farm operations, with the potential to affect company reputations and demand for products and services. Operational downtime and impacts on wind farm insurance costs as a result of accidents have the potential to add to the total costs of operating wind farms. Wind farm owners or developers may therefore consider the safety record of turbine and service providers in their requests for tender. undertakings that can improve turbine and O&M safety can potentially reduce operating costs and extraordinary expenses.

Economic, social and cultural rights

A de facto objective of regulated electric utilities is to provide reliable, affordable, and sustainable electricity. undertakings in the sector are tasked with managing these potentially competing priorities to maintain favorable relations with customers and regulators-and ultimately to earn appropriate returns for shareholders. The affordability of energy is particularly challenging for undertakings to balance, as it often conflicts with other core objectives. Utility energy bills are widely perceived to be increasingly unaffordable for low-income customers (affordability is determined by both the net cost of energy bills and the underlying customer economics). Ensuring that utility bills are affordable is crucial for utilities working to build trust (intangible asset value) with regulators and customers. Quality of regulatory relations is a key value driver for utilities, and one of the more closely analyzed issues by investment analysts. The willingness of regulators to grant rate requests, rate structure modifications, cost recovery, and allowed returns is a primary determinant of financial performance and investment risk. Effectively managing affordability may enable utilities to invest more capital, favorably revise rate structures, and increase allowed returns. Furthermore, utilities that do not effectively manage affordability are increasingly exposed to customers defecting from the grid (or reducing reliance on the grid) by implementing distributed energy resources or pursuing other alternative energy sources (e. g., industrial customers' use of combined heat and power). Managing affordability involves operating an efficient business with a well-thought-out, long-term perspective and strategy, as well as working closely with regulators and public policymakers on rate structures and, potentially, bill-assistance programs. While the precise nature of financial impacts of affordability are largely determined by utilities' business models and rate structures, affordability is a critical business issue for utilities to manage in terms of maintaining (and growing) customer bases, building intangible asset value, creating investment and return opportunities, and ultimately delivering shareholder returns. A de facto objective of regulated gas utilities is to deliver natural gas to customers in a safe, reliable, and environmentally responsible manner. undertakings in the sector are tasked with managing these potentially competing priorities to maintain favorable relations with customers and regulators - and ultimately to earn appropriate returns for shareholders. The affordability of energy, from the utility customer perspective, is particularly challenging to balance, as it often conflicts with other core objectives. Utility energy bills are widely perceived to be increasingly more expensive for low income customers (affordability is determined by both the net cost of energy bills and the underlying economics of customers). Playing a role in ensuring that utility

bills are affordable is crucial for utilities in building trust (intangible asset value) with regulators and customers. Quality of regulatory relations is a key value driver for utilities, and one of the more closely analyzed issues by investment analysts. Regulators' willingness, or lack thereof, to grant rate requests, rate structure modifications, cost recovery, and allowed returns is a primary determinant of financial performance and investment risk. Effectively managing affordability may give utilities the opportunity to invest more capital, favorably revise rate structures, and increase allowed returns. Furthermore, utilities that do not effectively manage affordability are increasingly exposed to customers obtaining energy supplies from means other than natural gas (or reducing energy needs) by pursuing alternative energy sources (e. g., industrial customers' use of combined heat and power). Managing affordability involves operating an efficient business with a well-thought-out, long-term perspective and strategy, as well as working closely with regulators and public policymakers on rate structures and, potentially, bill-assistance programs. While the precise nature of financial impacts of affordability are largely determined by utility business models and rate structures, affordability is a critical business issue for utilities to manage in terms of maintaining (and growing) customer bases, building intangible asset value, creating investment and return opportunities, and ultimately delivering shareholder returns. Next to this in the sector Solar Technology & Development, many large, publicly listed solar technology undertakings are involved in project development, including the evaluation and acquisition of land rights, site permitting, and engagement with stakeholders. Successful development is contingent on securing the approval of environmental permits and the permission of local governments and communities. Siting of medium or large solar installations in ecologically sensitive areas, including endangered species habitats, can render environmental permitting more difficult and costly. Project development may also be affected by local land-use laws and community opposition to projects due to their land footprint or concerns over impacts on local water resources. These factors can slow or disrupt the development process, possibly resulting in higher costs, lost revenues, or project delays. undertakings with robust strategies for environmental impact assessment and mitigation can reduce the risk of project delays, increasing the likelihood of timely project completion.

Risk management

Nuclear incidents, while exceedingly rare, can have significant human health and environmental consequences as nuclear accidents can be severe if they do occur. While owners of nuclear power plants in many regions have operated for decades without any major public safety incidents, the occurrence of infrequent but high-magnitude incidents anywhere in the world can have major impacts on the entire nuclear power sector. undertakings that own and operate nuclear plants could face a loss of their license to operate, either entirely or in the operation of nuclear plants, as well as many other financial consequences in the event of an accident-though undertakings carry insurance and may have legal protections from certain liabilities. Failure to comply with the safety regulations can be extremely expensive to nuclear power operators; in extreme circumstances it can make the continued operation of the plant uneconomical. As a result of significant financial repercussions, both from ongoing safety compliance as well as the materialization of tail risk incidents, undertakings that own or operate nuclear plants need to be vigilant in the safety compliance, best practices, and upgrades of their facilities. They also need to maintain robust emergency preparedness training for their staff and a strong safety culture. These measures can reduce the probability that accidents will occur and enable an undertaking to effectively detect and respond to such incidents. | Natural gas produces fewer greenhouse gas (GHG) emissions than other fossil fuels. Its expanded use in the economy is therefore a key strategy for many governments and regulators striving to reduce GHG emissions. Despite the relatively lower emissions, however, the natural gas value chain still produces meaningful levels of GHG emissions overall. As policymakers and regulators look to address climate change, efficient consumption of natural gas will be an important theme over the long term. There is a wide range of measures that utilities can take to promote energy efficiency among their customers, including offering rebates for energy-efficient appliances, weatherizing customers' homes, and educating customers on energy saving methods. How a gas utility stands to gain or lose from the trend toward GHG mitigation is significantly predicated on its regulatory environment. Traditional rate structures generally do not give gas utilities an incentive for energy efficiency and, further, they may economically suffer from reductions in customer demand. This is increasingly driving gas utilities, and their regulators and customers, to pursue alternative ratemaking. Such alternative rate design often "decouples" utility revenues from customer consumption and may also build in explicit incentives for successful utility performance in terms of end-use efficiency and demand reductions. Overall, undertakings whose strategic plan includes efficiency initiatives that strive to reduce downside risks from demand fluctuations, gain returns on needed investments, and lower costs are more likely to be well positioned to earn stronger risk-adjusted returns over the long term. Electricity is critical for the continued function of most elements of modern life, from medicine to finance, creating a societal reliance on continuous service. There are potentially high societal costs from major disruptions to electricity infrastructure. Disruptions can be caused by extreme weather events, natural disasters, and cyber attacks. As the frequency and severity of extreme weather events associated with climate change continues to increase, all segments of electric utilities undertakings-and especially major transmission and distribution (T&D) operations-will face increasing physical threats to their infrastructure. This could result in frequent or significant service disruptions, outages, and the need to upgrade or repair damaged or compromised equipment, all of which may result in substantial costs and damaged perspectives of regulators and customers. The increased usage of smart grid technology has several benefits, including strengthening the resiliency of the grid to extreme weather events. However, this technology can make the grid more vulnerable to cyber attacks, as it provides hackers more entryways into infrastructure systems. undertakings need to implement strategies that minimize the probability and magnitude of impacts from extreme weather events and cyber attacks. They can remain competitive in the face of increasing external competition by actively submitting compelling rate cases to improve the reliability, resilience, and quality of their infrastructure. The Biofuel sector production presents operational safety hazards because of the presence of flammable and explosive substances, high temperatures, and pressurized equipment. Process safety incidents can damage facilities, injure workers, and affect the local environment and communities. While the frequency of occurrence of accidents in the sector is relatively low, when they do take place, the outcomes may be acute, with significant impacts on financial performance. Damaged facilities can be inoperable for extended periods, resulting in lost revenues and large capital expenditures for repairs. undertakings perceived to be at a greater risk for process safety incidents may have a higher cost of capital, while workforce injuries could result in regulatory penalties and litigation. Conversely, undertakings with a strong safety culture and operational safety oversight can more effectively detect and respond to such incidents, mitigating potential financial risks and improving operational efficiency.

Anti-corruption

The Energy Production & Utilities sector is highly dependent on government policies and regulations, which create market demand and incentivize supply with tax breaks and other support for feedstock production. The Energy Production & Utilities sector therefore supports certain regulations and policies related to renewable fuel policy, production tax credits, and feedstock production. While regulatory support can result in positive short-term gains by supporting the market, the potential long-term adverse environmental impacts from energy production may result in a reversal of beneficial policies, leading to a more uncertain regulatory environment. Consequently, energy production undertakings could benefit from developing a clear strategy for engaging regulators that is aligned with long-term sustainable business outcomes and that accounts for environmental externalities.

Water & Waste Services sector

Scopes 1 & 2 GHG emissions

Marine transportation workers face dangers such as hazardous weather and exposure to large machinery and heavy cargo. The greatest health and safety risks stem from loading and unloading cargo at ports. Ships must be loaded and unloaded quickly and on schedule, increasing injury risk, fatigue, and stress. The health and well-being of workers in the sector is also inextricably linked to the safety performance of the undertaking, as a healthy crew is necessary for safe voyages. undertakings with inadequate safety management systems that fail to ensure the health and safety of workers may face higher turnover and higher worker-related expenses, including medical expenses such as insurance premiums and worker payouts.

Resources outflow

Recycling, reuse, composting, and incineration are general methods of diverting waste from landfills. Landfill diversion can mitigate some of the environmental impacts of landfills and reduce the need for landfill expansion. Additionally, waste management undertakings play a critical role in the circular economy by separating and recovering reusable materials such as paper, glass, metal, organic materials, and electronic waste. Pressures from new regulations, customer demand, and the increasing costs of extracting virgin materials are initiating the move toward a circular economy. As a result, waste management undertakings are facing a decrease in the amount of landfilled waste and an expanding recycling market. Cradle-to-cradle approaches initiated by other sectors in the economy have the potential to break down if the recovery and recycling infrastructure or technologies do not exist. undertakings that provide recycling and other resource recovery services will be better able to address changing consumer needs, thereby positioning themselves for revenue growth while playing a critical role in reducing the environmental impact of the wider economy.

Waste and emissions

Undertakings operating landfills are required to manage and reduce risks of potential ecological impacts, including those caused by leachate and hazardous waste. Poor management of landfills and other disposal sites can lead to contamination of the soil, groundwater, and other nearby water bodies. To mitigate risks to the environment and the health of local communities, undertakings must effectively contain and manage leachate, as well as hazardous waste. undertakings that are unable to manage these risks are likely to receive regulatory penalties, lose brand value, worsen future business prospects, and face lawsuits.

Pollution of air

Air pollution is the presence of air contaminants in such quantities and duration that they can be injurious to humans, animals, plants, and/ or property. It also includes contaminants that interfere with enjoyment of life and/ or property. Therefore, odors and toxic gases, such as those emitted from landfills, landfill fires, waste incinerators, and waste treatment plants, are considered air pollution. The financial impacts from excessive air emissions vary depending on the specific location of operations and the prevailing air emissions regulations, but they can include capital expenditures, increased operating costs, fines, and lawsuits from affected communities. Human health impacts and financial consequences of poor air-quality management are likely to be exacerbated by the proximity of waste management facilities to communities. Active management of air pollutants and odors-through technological and process improvements-can therefore mitigate regulatory exposure and the associated future costs of compliance from increasingly stringent air-quality regulations, help undertakings secure and maintain permits, and protect their license to operate.

Working conditions

Organized labor plays an important role in the Water & Waste sector. Many workers are covered under collective bargaining agreements that protect workers' rights and establish wages. High unionization rates leave waste management undertakings vulnerable to shutdowns and delays due to worker strikes if labor concerns are not addressed effectively. Proper management of, and communication around, issues such as worker pay and working conditions can prevent conflicts with workers that could lead to extended strikes, which can slow or shut down operations and create reputational risk. Water & Waste undertakings need a long-term perspective on managing workers-including their pay and benefits-in a way that protects workers' rights and enhances their productivity while ensuring the financial sustainability of an undertaking's operations. The sector's hazardous working conditions make safety a critical issue for Water & Waste operations, and accidents can have a great impact on workers. The Water & Waste sector has higher fatality rates than most sectors. Fatalities and other injuries are due primarily to transportation incidents, contact with hazardous objects and equipment, and exposure to harmful substances. Additionally, temporary workers may be at higher risk because of a lack of training or sector experience. Poor health and safety records can result in fines and penalties and an increase in regulatory compliance costs from more stringent oversight. Water & Waste undertakings must ensure that facilities and vehicles are operated with the highest safety standards and that the number of injuries and accidents is minimized through a strong safety culture. undertakings that develop proactive safety management plans and training requirements for their employees and contractors, including conducting regular audits, are likely to improve safety records and minimize the chance of safety-related financial repercussions.

Entertainment sector group

Casinos & Gaming sector

Energy consumption & mix

With many facilities open 24 hours a day, the Casinos & Gaming sector requires a large amount of energy to operate. Casino facilities often have few windows and therefore rely on their buildings' mechanical systems for heating, ventilation, air-conditioning (HVAC), and lighting. Fossil fuel-based energy production and consumption contribute to significant environmental impacts, including climate change and pollution, and have the potential to impact casino undertakings' results of operations. It is becoming increasingly important for undertakings that rely on electricity consumption for their operations to manage energy efficiency as well as energy availability, including the risks and opportunities associated with energy sourcing from fossil fuels and/ or from renewable and alternative energy sources.

Working conditions

Casino facilities are usually climate-controlled environments with internal air circulation, and have a relatively high concentration of employees and customers. While anti-smoking campaigns have helped some regions enact smoking bans for public places, many casinos remain exempt from such bans. Smoke exposes employees and customers to risks of heart attacks and cancer. In addition, studies have shown that casino dealers exposed to secondhand smoke have higher-than-average rates of respiratory illness. undertakings that derive a significant portion of their revenue from smoking customers may be negatively affected by smoking bans, which are becoming more common. Alternatively, by creating smoke-free facilities, casino operators may be better positioned to attract more non-smoking patrons.

Internal control

While the main purpose of gambling is entertainment, the sector faces a negative perception that is often related to pathological gambling. In addition to pathological gambling which is a progressive addiction characterized by increasing preoccupation with gambling, customers may also experience problem gambling, a less severe form of pathological gambling. While casinos do not cause problem gambling, they provide opportunities to gamble and may earn disproportionately greater revenue from pathological and problem gamblers. Responsible gambling encompasses sector best practices to mitigate the impacts of problem gambling that may result from violations of self-exclusion lists, irresponsible advertising, gambling by minors, or instances where the undertaking has otherwise enabled gambling problems. Highly-publicised incidents related to pathological and problem gambling may damage undertakings' reputations and result in regulatory curtailment of their licenses to operate.

Anti-corruption

By the nature of its business, the Casinos & Gaming sector can be attractive to criminals seeking to launder money or disguise the origin of funds. Risk factors include the large amount of cash transactions, accessibility to multiple facilities, and customer anonymity. Therefore, strict and robust internal controls are necessary for undertakings to prevent violations of reporting and money laundering regulations. Casino operators that fail to detect and prevent money laundering activities may open themselves to investigations. Violations of anti-money laundering laws and regulations could result in criminal prosecution and/ or substantial regulatory penalties.

Leisure Facilities sector

Energy consumption & mix

Leisure facilities undertakings operate large outdoor and indoor facilities that may consume a significant amount of energy. Most of the electricity usage is commercially purchased, which indirectly leads to the release of greenhouse gas (GHG) emissions, a significant contributor to climate change. undertakings in the sector are implementing energy management best practices in order to reduce operating expenses and environmental impacts and to improve their reputation with guests, who are increasingly concerned about environmental sustainability.

Working conditions

Safety concerns in the Leisure Facilities sector can expose employees to injuries if facilities and equipment are not maintained, or if precautions and training procedures are not in place. Amusement park rides, ski slopes, zoological gardens and other facilities may expose employees to potentially unsafe conditions that result in injury or even death. Potential financial impacts associated with employee safety violations include regulatory fines, abatement costs, and negative impacts on brand reputation. These impacts may stem from accidents as well as from chronic safety issues.

Products and services

Leisure facility undertakings operate parks and facilities that expose guests to potentially unsafe conditions that may result in injury and even death. Safety management therefore includes managing the safety of amusement park rides and ski slopes as well as operating buildings where large crowds of people may be present, such as sporting and concert venues. The sector is mainly subject to low-probability but high-magnitude safety concerns. Ensuring the highest standards of safety can help undertakings minimise reputational damage and liabilities from costly lawsuits.

Financial Institutions sector group

Banking sector

Overall business strategy

As financial intermediaries, commercial banks contribute to significant positive and negative environmental and social externalities through their lending practices. Therefore, environmental, social, and governance (ESG) factors can have material implications for the underlying undertakings, assets, and projects that commercial banks lend to across a range of sectors. It is therefore increasingly necessary for undertakings to examine ESG factors when determining the quality of collateral. Commercial banks also have the potential to enable positive environmental and social externalities and to generate significant revenue streams through their lending practices. Commercial banks that fail to address these risks and opportunities could face diminished returns and reduced value for shareholders. Commercial banks should subsequently disclose how ESG factors are integrated into lending processes and the current level of portfolio risk associated with specific sustainability trends. In particular, investor and regulatory pressure is mounting for banks to disclose how they address climate change related risks.

Financial exposure to physical and transition risks, opportunities

An increase in the frequency of extreme weather events associated with climate change may have an adverse impact on the Mortgage Finance sector. Specifically, hurricanes, floods, and other climate change-related events have the potential to lead to missed payments and loan defaults, while also decreasing the value of underlying assets. Disclosure of overall exposure, loan forgiveness programs, and the incorporation of climate change into lending analysis will allow shareholders to determine which mortgage finance firms are best positioned to protect value in light of environmental risks.

Material sustainability risks and opportunities

The 2008 financial crisis highlighted the importance of managing capital adequacy and liquidity risks in the Commercial Banks sector. Specifically, firms that failed to manage the risk suffered significant losses to the value of their financial assets while increasing the amount of liabilities held on their books, which, due to the interconnectedness of the financial system, contributed to a significant market disruption. The systemic nature of the risk results from the interconnectedness of financial institutions and has become a central concern of national and international regulators. As a result, many banks are required to undergo supervisory stress tests to evaluate whether the undertaking has the capital to absorb losses, continue operations, and meet obligations in the event of adverse economic and financial conditions. Their failure to meet regulatory requirements could substantially raise future compliance cost as well as lead to monetary penalties. In an effort to demonstrate how the risks associated with banks' size, complexity, interconnectedness, substitutability, and cross-jurisdictional activity are being managed, commercial banks should enhance disclosure on quantitative and qualitative metrics measuring how well they are positioned to absorb shocks arising from financial and economic stress and meet stricter regulatory requirements.

Risk management

Consumer finance undertakings face risks and opportunities associated with their internal use of data supplied by customers for activities that are not the primary purpose for which the data were collected (for example, for use in targeted advertising and/or transfer to third parties). Ensuring the privacy of personally identifiable information (PII) and other data of account holders is an essential responsibility of undertakings in the Consumer Finance sector. To assess performance on this issue, investors would benefit from disclosure from undertakings on the number of account holders whose information is used for secondary purposes, and their policies and procedures around using such information, including the nature of their opt-in policies. Combined with information on legal or regulatory actions taken against the undertakings that are related to customer protection and privacy, such disclosure would be decision-useful to investors. Consumer finance undertakings that fail to manage performance in this area are susceptible to decreased revenues as a result of lost consumer confidence and churn, as well as to financial impacts stemming from legal exposures.

Sustainability governance and organisation

There are three key elements within the Selling Practices topic, performance of which can materially impact the undertakings operations and financial condition. First, company-policies related to the structure of compensation and/or other incentives may unintentionally create the risk of selling products and services that are not in the best interest of clients. Secondly, a failure to provide transparent information to customers about primary and add-on products can increase the risk of being charged with using deceptive practices. And finally, depending on the characteristics of the portfolio of products sold, poor performance on the first two elements could result in a high concentration of risky products held by customers. Consumer finance undertakings are likely to continue to face increased scrutiny in the wake of high-profile incidents as regulators attempt to ensure transparency and enhanced disclosure. The disclosure of key characteristics of a lending portfolio, including average fees from add-on products, average age of accounts, average APR, average number of trade lines, and average annual fees for pre-paid transaction products will allow shareholders to determine which consumer finance undertakings are better positioned to protect long-term value rather than relying on short-term revenue generation practices. Ability to provide consumer finance products that are in the best interest of customers can help undertakings in the sector not only minimize risk exposure in the existent portfolio of products, but also build trust with new and existent customers, and expand their market share ensuring sustainable revenue growth.

Management and quality of relationsships with business partners

The approach mortgage finance undertakings take when incentivizing employees, and how they communicate with customers is important for multiple reasons. First, the incentive structures and compensation policies of loan originators may unintentionally encourage them to promote lending products and services that are not in the best interest of their clients. Second, the lack of transparency provided to customers with respect to primary and add-on products may impact a undertaking's reputation and invite regulatory scrutiny and costly litigation. Finally, poor performance on the first two elements could affect the characteristics of the portfolio of products, resulting in a high concentration of risky products sold. Mortgage finance undertakings that are able to provide transparent information and fair advice are more likely to protect shareholder value. Enhanced disclosure on key elements of lending practices will allow shareholders to determine which undertakings are better positioned to protect value.

Sustainability governance and organisation

There are three key elements within the Selling Practices topic, performance of which can materially impact company-operations and financial condition. First, undertakings policies related to the structure of compensation and/or other incentives may unintentionally create the risk of selling products and services that are not in the best interest of clients. Secondly, a failure to provide transparent information to customers about primary and add-on products can increase the risk of being charged with using deceptive practices. And finally, depending on the characteristics of the portfolio of products sold, poor performance on the first two elements could result in a high concentration of risky products held by customers. Consumer finance undertakings are likely to continue to face increased scrutiny in the wake of high-profile incidents as regulators attempt to ensure transparency and enhanced disclosure. The disclosure of key characteristics of a lending portfolio, including average fees from add-on products, average age of accounts, average APR, average number of trade lines, and average annual fees for pre-paid transaction products will allow shareholders to determine which consumer finance undertakings are better positioned to protect long-term value rather than relying on short-term revenue generation practices. Ability to provide consumer finance products that are in the best interest of customers can help undertakings in the sector not only minimize risk exposure in the existent portfolio of products, but also build trust with new and existent customers, and expand their market share ensuring sustainable revenue growth.

Economic, social and cultural rights

Commercial banks, as their primary business activity, have to continuously balance their capacity building efforts with the risks and opportunities associated with lending to unbanked, underbanked, or underserved customers. Emerging financing models and technologies provide banks with an opportunity to offer products and services in previously underserved markets and obtain additional sources of revenue. Undertakings that are able to meet the need to extend credit and financial services to low-income populations and small businesses while avoiding predatory and irresponsible lending practices are likely to create long-term value and enhance social capital. These services should also be complemented by efforts to improve financial literacy, which will ensure that customers make informed decisions. The recent financial crisis demonstrated the importance of diversified and resilient funding sources that these communities can provide. By disclosing their approach to financial inclusion and capacity building, commercial banks can provide investors with decision-useful information for assessing banks' ability to ensure long-term, sustainable value creation.

Information

The Mortgage Finance industry aggregates individual data points to determine the terms and conditions of loans including key provisions such as the size of the loan, interest rate, up-front points, or other fees. However, the complex process may result in intentional or unintentional discriminatory lending practices by the mortgage originator.

Disclosing processes in place to ensure non-discriminatory lending, disclosing the amount of mortgage lending broken down by minority status along with relevant financial characteristics, and disclosing the amount of monetary losses as a result of legal proceedings associated with violations of applicable laws and regulations will help investors to assess undertakings' performance. Mortgage finance undertakings can reduce the risk of intentional or unintentional discriminatory lending through the implementation of strong processes, internal controls, and monitoring the loan portfolio, among other techniques. Proactive undertakings that develop strong techniques for preventing discrimination can effectively mitigate the risks associated with discriminatory lending.

Capital Markets sector
Overall business strategy

Environmental, social, and governance (ESG) factors can have material implications for the undertakings, assets, and projects that investment banks provide services to or invest in across a range of sectors. Therefore, by taking these factors into account in their underwriting, advisory, and investing and lending activities, investment banks can address significant positive and negative environmental and social externalities. The potential for both value creation and loss associated with ESG factors suggests that investment asset managment undertakings have a responsibility to their shareholders and clients to incorporate consideration of these factors into analysis and valuation related to all core products, including sell-side research, advisory services, origination, underwriting, and principal transactions. Undertakings that fail to address these risks and opportunities could expose themselves to increased reputational and financial risks. On the other hand, appropriately pricing ESG risks could reduce asset managment undertakings' financial risk exposure, help generate additional revenue, and/ or open new market opportunities. To help investors understand how well undertakings in the sector manage performance around this issue, asset management undertakings should disclose how ESG factors are incorporated into their core products and services.

Material sustainability risks and opportunities

Security and commodity exchanges face increased risks and opportunities associated with information technology. The sector's central position in the proper functioning of financial markets requires that issues including security breaches and technology errors are managed to prevent market disruptions. As security and commodity exchanges face increased volumes of trading associated with the clearing and execution of derivative trades and increased frequency of cyber attacks, the sector will be exposed to new risks and opportunities associated with its reliance on information technology. Failure to ensure continuity of trading may erode customer trust and result in lower trading volumes, thus loss of revenue. Increased disclosure of efforts taken to prevent these risks, in addition to the current performance, will allow shareholders to accurately assess value.

Anti-corruption

The business model of asset management undertakings is dependent on the development of client trust and loyalty. To ensure long-term, mutually beneficial relationships, undertakings need to provide services that satisfy the highest professional standards of the sector, which means taking measures to avoid conflicts of interest, misrepresentation, and negligence. Professional integrity also pertains to following a code of ethics with respect to transparency and disclosure. These measures are important both for strengthening a undertaking's license to operate as well as for attracting and retaining clients. Failure to comply with professional standards can harm not only the clients who rely on the advice, data, and key services these undertakings provide, but it may also negatively affect shareholders. Investment banking and brokerage undertakings could not only face legal penalties related to such actions, but also incur significant negative impacts on revenue from reputational damage. To maintain professional integrity, asset managment undertakings need to ensure that employees have adequate training as well as know and adhere to applicable financial sector regulations. To comply with sector laws and regulations, employers need to ensure that they are aware of any past record of violation of employees who are involved in communications and providing advice to clients. Therefore, a description of management's approach to assuring professional integrity can help investors understand risk exposure as well as any processes in place to avoid misconduct. Additionally, disclosure of the undertaking's amount of legal and regulatory fines and settlements can provide a clearer picture of the extent to which financial institutions are adhering to regulatory norms.

Information

Security and commodity exchanges have a responsibility to ensure equal access to capital markets for all investors. As public markets, these undertakings play a critical role in efficient capital allocation and the equal application of rules to all participants. In addition, undertakings must manage the release of public information to prevent asymmetries. Further, with the advent of high-frequency trading there is heightened concern that technology can lead to advantages for certain traders at the expense of others. Information asymmetries that lead to unfair arbitrage could result in litigations and, potentially, regulatory penalties, additional regulatory oversight and compliance costs, as well as reputational damage that may hurt trading volumes and thus revenues. Disclosure of policies relating to information releases, halts of trading, and the risks and opportunities associated with algorithmic or high-frequency trading will allow investors to further understand how security and commodity exchanges protect shareholder value.

Insurance sector
Overall business strategy

Insurance undertakings are responsible for investing capital to ensure the preservation of premium revenues equivalent to expected policy claim payouts and must be able to maintain this asset-liability parity over the long term. As environmental, social, and governance (ESG+) factors have increasingly been shown to have a material impact on the performance of corporations and other assets, there is an increasing need for insurance undertakings to incorporate these factors into the management of their investments. Failure to address these factors could lead to diminished risk-adjusted returns of their portfolios and limit an undertaking‘s ability to issue claim payments. Undertakings should therefore enhance disclosure on how ESG+ factors, including climate change and natural resource constraints, are incorporated into the investment of policy premiums and affect the portfolio risk.

Financial exposure to physical and transition risks, opportunities

Catastrophe losses associated with extreme weather events will continue to have a material, adverse impact on the Insurance industry. The extent of this impact is likely to evolve as climate change increases the frequency and severity of both modelled and non-modelled natural catastrophes, including hurricanes, floods, and droughts. Failure to appropriately understand environmental risks and price them into the underwritten insurance products may result in higher-than-expected claims on policies. Subsequently, insurance undertakings that incorporate climate change considerations into their underwriting process for individual contracts as well as the management of firm-level risks and capital adequacy will be better positioned to protect shareholder value. Enhanced disclosure of a undertaking’s approach to incorporating these factors, in addition to quantitative data such as the probable maximum loss and total losses attributable to insurance payouts, will provide investors with the information necessary to assess current and future performance on this factor.

Economic, social and cultural rights

Managed care undertakings can play a role in providing additional access by limiting plan costs and rate increases. Undertakings must also comply with regulations intended to control plan costs, including medical loss rations, while also ensuring coverage for all applicants regardless of health status, gender, or pre-existing conditions. Increased regulatory focus on health care costs and the need to comply with evolving regulations continue to present challenges for the industry.

Sustainability governance and organisation

Managed care undertakings manage performance in areas such as responsiveness, complaints, voluntary disenrollment, and customer service in order to maintain competitiveness. Disclosure on key indicators related to plan performance may allow shareholders to understand how managed care undertakings are able to protect corporate value.

Information

Insurance products play an important societal role in alleviating the impact of unexpected economic shocks, allowing policyholders to minimize the financial impact of events such as illnesses, accidents, and deaths. However, the risks of unclear insurance policies, ambiguous product terms, and potentially misleading sales tactics can erode brand reputation, lead to legal disputes, and reduce the number of services and products offered. This may be especially true if regulators deem certain policies overly complex and unsuitable for customers. Moreover, insurance undertakings compete on the basis of financial strength, price, brand reputation, services offered, and customer relationships. Customer dissatisfaction may reduce insurance usage, potentially leading to extremely negative financial outcomes for individuals and families, such as personal bankruptcies. As financial regulators continue to emphasize consumer protection and accountability, undertakings that maintain transparent policy terms and direct customers toward the products best suited to them will be better positioned to maintain their brand reputation, avoid regulatory scrutiny, and protect shareholder value. Failure to inform customers about products in a clear and transparent manner may result in higher number of complaints filed against undertakings, customer churn, and in some instances, regulatory fines and settlements.

Personal safety

Managed care undertakings can play a critical role in maintaining and improving the health of enrollees. In addition, legislation continues to emphasize improved outcomes through provisions, including those that require health plans to provide coverage for preventive services without cost to members. Undertakingss that are able to improve the health of enrollees may be better positioned to protect shareholder value.

Material sustainability risks and opportunities

Insurance undertakings have the potential to pose, amplify, or transmit a threat to the financial system. The size, interconnectedness, and complexity of insurance undertakings are factors that highlight exposure to systemic risk for undertakings in the industry. Insurance undertakings that engage in non-traditional or non-insurance activities have been identified by regulators as being more vulnerable to financial market developments and subsequently more likely to amplify or contribute to systemic risk. As a result, insurance undertakings face the potential of being designated as Systemically Important Financial Institutions. Such firms are subject to stricter prudential regulatory standards and oversight by the central banking systems in various jurisdictions. Specifically, these insurance undertakings will likely face limitations relating to risk-based capital, leverage, liquidity, and credit exposure. In addition, insurance undertakings will be required to maintain a plan for rapid and orderly dissolution in the event of financial distress. Regulatory compliance can be very costly, while the failure to meet qualitative and quantitative regulatory performance thresholds could lead to substantial penalties. To demonstrate how these risks are being managed, insurance undertakings should enhance their disclosures of key aspects of systemic risk management and their ability to meet stricter regulatory requirements.Total fair value of securities lending collateral assets

Risk management

Regulations may require health insurance plans to comply with various requirements relating to the use, disclosure, storage, and transmission of patient health information. Undetakings in this industry are required to develop policies and technical safeguards to protect patient health information. A failure to comply with these evolving standards can lead to significant civil and criminal penalties. These risks are intensified by an increase in cyberattacks that target managed care undertakings.

Business model and strategy

Advances in technology and the development of new policy products have allowed insurance undertakings to limit claim payments while encouraging responsible behaviour. The industry is subsequently in a unique position to generate positive social and environmental externalities. Insurance undertakings have the ability to incentivize healthy lifestyles and safe behaviour as well as the development of sustainability-related projects and technologies such as those focused on renewable energy, energy efficiency, and carbon capture. As the renewable energy industry continues to grow, insurance undertakings may seek related growth opportunities by underwriting insurance in this area. Additionally, such policy clauses that provide incentives through incorporation of environmental, social, and governance (ESG+) factors can be used as tools to mitigate risk in the overall underwriting portfolio, which can reduce insurance payouts over the long term. Therefore, disclosure on premiums written related to energy efficiency and low carbon technology as well as discussion of how undertakings incentivize health, safety, and/ or environmentally responsible actions or behaviours would allow investors to assess how insurance undertakings manage their performance on this topic.

Health Care sector group

Health Care & Services sector

Energy consumption & mix

Health care delivery undertakings operate energy-intensive facilities and rely on both purchased electricity and fuel. The consumption of both can contribute to environmental impacts, including climate change and pollution. Legislative attempts to limit these impacts and to incentivize energy efficiency and renewable energy may result in price volatility associated with fossil fuels and conventional electricity. Undertakings that are able to improve energy efficiency can decrease costs and limit exposure to fluctuations in energy pricing.

Financial exposure to physical and transition risks, opportunities

An increase in extreme weather events associated with climate change could present physical threats to health care delivery facilities and create challenges in serving affected populations. Coupled with the potential spread of infectious diseases, and food and water scarcity, these events may present material implications for the Health Care Delivery industry. Undertaking disclosure on policies, practices, and preparedness relating to climate change will help investors understand how value will be protected.

Waste and emissions

Health care delivery undertakings generate a significant amount of regulated medical and pharmaceutical waste. Disposal fees for these types of waste are typically higher than that of conventional waste and can present a significant cost for the industry. Undertakings that are able to reduce the amount of waste generated by enhanced waste segregation strategies, recycling, and reuse can limit their exposure to these costs.

Working conditions

Health care delivery undertakings will continue to face increased competition for physicians due to increased demand which is intensified by current and future shortages. The ongoing ability to recruit, develop, and retain health care practitioners is critical to success in this industry and disclosure on related performance indicators allows shareholders to understand how undertakings are managing this important human capital issue.

Economic, social and cultural rights

Health care delivery undertakings will continue to face challenges associated with serving uninsured and low-income patients. Disclosure on how undertakings manage the provision of care to uninsured populations will allow shareholders to understand the associated risks and opportunities.

Information
In the U.S., concern over pricing and billing transparency in the Health Care Delivery industry has led to numerous legislative efforts at both the state and federal level. More than 40 states report information on charges or payment rates, and make the information available to the public. For hospitals accepting Medicare patients, the Centers for Medicare & Medicaid Services (CMS) provides average charges per patient and average Medicare payments for the 30 most common ambulatory procedures and the most frequent diagnosis-related groups. Beginning in 2019, CMS is also likely to require that hospitals publish a list of their current standard charges online, and that these charges be updated annually. This would strengthen requirements established in the Patient Protection and Affordable Care Act (PPACA), and be similar to existing requirements in numerous states. These legislative and regulatory efforts, coupled with increased emphasis on health care cost containment, may enhance scrutiny on the pricing and billing practices of undertakings in this industry. Firms that are able to achieve compliance and transparent pricing structures may be better positioned to protect shareholder value.

Personal safety
As the providers of care, the industry treats individuals who are suffering from addiction and related health concerns. Health care delivery undertakings face significant costs in addressing the health care needs of those suffering from addiction and related illnesses. Industry-wide efforts to re-evaluate approaches to pain management through the development of new policies, training, and oversight may have financially material impacts. Legislative and regulatory efforts, coupled with increased emphasis on health care cost containment, may enhance scrutiny on the pricing and billing practices of undertakings in this industry. Firms that are able to achieve compliance and transparent pricing structures may be better positioned to protect shareholder value. The ability to deliver quality care and ensure patient satisfaction is an essential value driver for health care delivery undertakings.

Governance structure
The ability to deliver quality care and ensure patient satisfaction is an essential value driver for health care delivery undertakings.

Risk management
As legislative efforts continue to promote the use of electronic health records and health care delivery undertakings face increasing threats related to cybersecurity, disclosure on the use of electronic health records and data security will allow shareholders to monitor performance in these areas.

Anti-corruption
The ability to ensure compliance in this area may have material implications for health delivery undertakings.

Hospitality sector group

Food & Beverage Services sector

Energy consumption & mix

Restaurant operations have high energy intensity compared to other commercial building operations. Commercial kitchen appliances are extremely energy intensive, and dining areas are typically temperature-controlled for customers. Fossil fuel-based energy production and consumption contribute to significant environmental impacts, including climate change and air pollution, which have the potential to indirectly, yet materially, impact the results of restaurant operations. Regulations on greenhouse gas (GHG) emissions pricing or regulatory incentives for energy efficiency improvements and renewable energy affect conventional and renewable energy prices. undertakings that manage energy consumption at owned and franchise locations can decrease operational costs through energy efficiency upgrades and limit exposure to GHG emissions regulations through the use of renewable energy resources.

Resources inflow

Restaurants source ingredients and products from a wide range of suppliers. Supply chain management is crucial for restaurants to ensure food safety, protect their reputations, and improve revenues. Sourcing quality ingredients to maintain a consistent level of quality across different locations can be operationally challenging, This problem is exacerbated by the global nature of the sector. Demand from food and beverage sectors, including restaurants, drives and shapes agricultural production, indicating that actions by sector players have larger impacts on society. Therefore, sustainable and ethical sourcing by sector players is necessary to ensure continued future supply and to minimize lifecycle impacts of company-operations. Sourcing from suppliers that have high quality standards, employ environmentally sustainable farming methods, and honor labour rights will better position undertakings to protect long-term shareholder value. By increasing the amount of food supply sourced in conformance with environmental and social standards, as well as conformance with animal welfare standards and best practices, restaurant operators will be able to maintain food quality, manage food safety issues, enhance their reputation, and expand their market share.

Waste and emissions

Restaurants produce waste in two main forms: food and packaging. Food waste is generated during the preparation process as well as by unconsumed food. Food waste results in loss of resources, such as water, energy, land, labor, and capital, and produces GHG emissions as a result of decomposition. Moreover, food ingredient deliveries to restaurants are a significant source of packaging waste. Packaging waste includes packaging received from suppliers and packaging disposed by consumers in the restaurant areas. In addition, limited-service restaurants make heavy use of disposable tableware to serve customers. Municipal and federal regulations around packaging are likely to continue evolving to reduce packaging or improve recyclability or biodegradability of packaging. undertakings that are able to stay ahead of regulations will not only see a positive impact on brand reputation, but will likely reduce their cost of compliance. undertakings that are able to reduce waste through various methods, including food recovery, diverting waste from landfills, and packaging reclamation programs, can reduce waste handling costs and improve operational efficiency.

Pollution of water

Water is used throughout restaurant operations, from cooking and dishwashing to cleaning. The restaurant format, size, and equipment all affect water use. Restaurants located in water-stressed regions may be exposed to water usage restrictions or face high water costs. Long-term historic increases in the costs of water, and expectations around continued increases due to overconsumption and constrained supplies resulting from population growth and shifts, pollution, and climate change, indicate the heightened importance of water management. undertakings can reduce water use and associated operational costs through implementing water-efficient practices and using water-efficient commercial kitchen equipment.

Working conditions

The Restaurant sector is labour-intensive, and many of the staff are hourly, part-time, or seasonal workers. The sector is among the top job creators and is an entry point for young and migrant workers to join the workforce. Restaurant employees in franchised or licensed locations may be employed by a third party. In addition, since many restaurant chains exist across continents, ensuring consistent labour standards can be a challenge for restaurant employees in both company-owned and franchise locations. Labor issues at franchises affect brand image because customers cannot make a distinction between company-owned and franchised restaurants. Restaurants that are able to properly manage human capital by offering competitive wages, safe working environments, and other opportunities for professional growth will likely improve employee morale while reducing turnover rates and the associated administrative costs involved in employee acquisition and training.

Personal safety

Both food preparation methods and quality of ingredients can impact food safety in the Restaurants sector. Restaurant food safety is especially challenging to manage with a broad supply chain. The global nature of the sector as well as the franchising model make it difficult for restaurant undertakings to ensure the safety of their food supplies. Failure to monitor the quality of supplied products may increase an undertaking's risk of supply disruptions as well as negative publicity. Food safety issues, such as foodborne illness concerns, in either company-owned or franchise-operated locations can affect the core of a restaurant's reputation. Reputational damage from food safety issues tends to have a long-term impact. undertakings that adhere to sector standards for food preparation and safety are likely to be better positioned to protect shareholder value.

Hotels & Lodging sector

Energy consumption & mix

Hotel buildings require a significant amount of energy resources to operate, which represent a substantial portion of hotel operating expenses. The majority of the sector's electricity usage is commercially purchased. This purchased electricity indirectly leads to the release of greenhouse gas (GHG) emissions, which is a large contributor to climate change. Undertakings in the sector are implementing energy management best practices in order to reduce operating expenses and environmental impacts and to improve their reputations with guests, who are increasingly concerned about environmental sustainability.

Financial exposure to physical and transition risks, opportunities

Hotels operating in climate change-exposed areas may be impacted by physical climate risks including inclement weather and flooding. Inclement weather may damage property and disrupt operations, thereby reducing asset values and revenues. In addition, hotels may face higher insurance premiums for buildings located in coastal regions or may be unable to insure their properties. Hotel operators will likely need to adapt to shifting climate trends such as rising sea levels, hurricanes, and flooding in order to maintain their climate-exposed revenue-generating properties.

Pollution of water

Hotel buildings require a relatively large amount of water resources to operate. While water is not the sector's greatest operating cost, reduced water availability or significant price increases could impact financial results. This impact may be particularly acute in water-stressed region due to supply constraints. Undertakings in the sector are implementing water management best practices in order to reduce operating expenses and environmental impacts and improve to their reputations with guests, who are increasingly concerned about environmental sustainability.

Pollution of soil

Healthy ecosystems are linked with the economic and financial performance of local communities and businesses. The influx of tourists and the waste generated by hotels can present risks to sensitive ecosystems such as coral reefs and nature preserves. Poor environmental protection practices may preclude hotels from obtaining new construction licenses in these sensitive areas and could, in the long term, diminish natural attractions for tourists that help to generate revenue for communities and hotels. In contrast, protection of the environment may make travel destinations more attractive and increase demand for room bookings.

Working conditions

The Hotels & Lodging sector is highly reliant on labor to operate large facilities. A service-oriented workforce that is able to provide guests a pleasant stay is a key value driver for hotel undertakings. This, combined with labor force dynamics, can lead to low job satisfaction that can result in high turnover and potential lawsuits, which contribute to increased expenses for hotel operators. Hotels that work to prevent discriminatory practices and ensure fair wages can improve worker satisfaction and reduce turnover.

Manufacturing sector group

Aerospace & Defence sector

Energy consumption & mix

Energy is a critical input to the manufacturing processes of aerospace and defense undertakings. Purchased electricity represents the largest share of energy expenditures in the sector, followed by purchased fuels. The type of energy used, magnitude of consumption, and energy management strategies depends on the type of products manufactured. An undertaking's energy mix, including the use of electricity generated on-site, grid-sourced electricity, and the use of alternative energy, can play an important role in influencing the cost and reliability of energy supply, and ultimately affect the undertaking's cost structure and regulatory risk.

Resources inflow

Aerospace and defense undertakings are exposed to supply chain risks when critical materials are used in products. undertakings in the sector manufacture products using critical materials with few or no available substitutes, many of which are sourced from deposits concentrated in only a few countries which are subject to geopolitical uncertainty. undertakings in this sector also face competition due to increasing global demand for these materials from other sectors, which can result in price increases and supply risks. undertakings that are able to limit the use of critical materials through use of alternatives, as well as secure their supply, can mitigate the potential for financial impacts stemming from supply disruptions and volatile input prices.

Resources outflow

Customer preferences and regulatory drivers are increasing the demand for energy-efficient and reduced-emissions products in the Aerospace & Defence sector. Many of the sector's products are powered by fossil fuels and release greenhouse gases (GHGs) and other air emissions during use. As the designers and manufacturers of most of the global aerospace and defense transportation fleet, undertakings in this sector have a unique opportunity to support many sectors and government agencies that are striving to meet GHG emissions and fuel-management goals and imperatives. Products with higher fuel economy and lower use-phase emissions may be well positioned to capture expanding market share and adapt to changing customer preferences and regulations around fuel economy and emissions.

Waste and emissions

Aerospace and defence product manufacturing may generate hazardous process waste, including, but not limited to, heavy metals and wastewater treatment sludge. Undertakings face regulatory and operational challenges in managing waste, as some wastes are subject to regulations pertaining to their transport, treatment, storage, and disposal. Waste management strategies include reduced generation, effective treatment and disposal, and recycling and recovery, where possible. Such activities, while requiring initial investment or operating costs, can lower undertakings' long-term cost structure and mitigate the risk of remediation liabilities or regulatory penalties.

Risk management

Undertakings in the Aerospace & Defence sector may develop sensitive military and advanced aviation products, and undertakings in this sector may therefore be at a high risk for cyber attacks. A data security breach can be costly for a undertaking and its clients when information systems are compromised. Ensuring data security may require aerospace and defense undertakings to invest in research and development and increase capital expenditures in the short to medium term to improve the security of their systems and their products. Significant or frequent disruptions or security breaches may result in regulatory action, legal action, or adversely impact revenues and brand value.

Products and services

Product safety is an important consideration for aerospace and defence undertakings given the sector's key role in commercial aviation and military operations. Product safety incidents could result in financial impacts, including increased costs, regulatory penalties, or brand-value impacts that could adversely affect market share. Additionally, counterfeit components have been found in the aerospace and defense supply chain, increasing the risk of safety incidents due to low product quality. Through product design, supplier vetting, and ongoing customer engagement involving maintenance and accident investigations, undertakings in this sector can ensure the safety of their products over the long term, mitigating potential financial consequences such as revenue loss due to repeated safety incidents or recalls.

Sustainability governance and organisation

Aerospace and defence undertakings may be vulnerable to regulatory scrutiny of business ethics because of their operations in regions with weaker government enforcement of business ethics laws. undertakings in this sector have been found in violation of corruption and anti-bribery laws. Unethical practices may jeopardize future revenue growth due to reputational risks and can result in significant legal costs and a higher risk profile. As such, strong governance practices can mitigate the risk of violations of business ethics laws and resulting regulatory penalties or brand-value impacts.

Automobiles & Other Transport Vehicles sector

Energy consumption & mix

Most of the energy consumed in the automobile manufacturing process happens in the supply chain. The use of electricity and fossil fuels by auto parts manufacturers in their production processes results in direct and indirect emissions of greenhouse gases (GHGs). Purchased electricity represents a major share of the energy used in the Auto Parts sector. Sustainability initiatives such as incentives for energy efficiency and renewable energy are making alternative sources of energy more cost-competitive. Regulators and consumers are also pressuring the sector to reduce GHG emissions. Therefore, it is becoming increasingly important for undertakings in energy-intensive sectors to manage the cost and reliability risks associated with their overall energy efficiency, their reliance on different types of energy, and their access to alternative energy sources.

Resources inflow

Auto manufacturing involves the use of significant amounts of materials (including steel, iron, aluminum, and plastics) and can generate substantial amounts of waste (including scrap metal, paint sludge, and shipping materials). As the rate of vehicle ownership expands globally and millions of vehicles reach the end of their useful lives every year, the lifecycle environmental impacts of automobiles are increasing. Automobile undertakings can use design innovation as well as process and technological improvements to mitigate these impacts and achieve material financial benefits. undertakings that innovate to improve materials efficiency in their production processes, including reducing waste and reusing or recycling waste and scrapped vehicles, can contribute to lowering the lifecycle environmental impacts of vehicles and the strain on natural resources from the production of new materials. Through such innovation, undertakings can achieve cost savings by lowering input costs and protect themselves from potential regulatory fines or penalties. They can also protect themselves from fluctuations in the prices and availability of key inputs into their production process that may arise from resource scarcity.

Resources outflow

Auto manufacturing involves the use of significant amounts of materials (including steel, iron, aluminum, and plastics) and can generate substantial amounts of waste (including scrap metal, paint sludge, and shipping materials). As the rate of vehicle ownership expands globally and millions of vehicles reach the end of their useful lives every year, the lifecycle environmental impacts of automobiles are increasing. Automobile undertakings can use design innovation as well as process and technological improvements to mitigate these impacts and achieve material financial benefits. Undertakings that innovate to improve materials efficiency in their production processes, including reducing waste and reusing or recycling waste and scrapped vehicles, can contribute to lowering the lifecycle environmental impacts of vehicles and the strain on natural resources from the production of new materials. Through such innovation, undertakings can achieve cost savings by lowering input costs and protect themselves from potential regulatory fines or penalties. They can also protect themselves from fluctuations in the prices and availability of key inputs into their production process that may arise from resource scarcity.

Waste and emissions

Manufacturing auto parts involves the use of significant amounts of materials (including steel, iron, aluminum, and plastics, among others). Types of waste generated by the sector include machine lubricants and coolants, aqueous and solvent cleaning systems, paint, and scrap metals and plastics. A significant portion of auto parts manufacturers' revenue is spent on the cost of materials. Therefore, undertakings that are able to manage their manufacturing inputs through reducing and recycling waste are likely to be better protected from price volatility and the risk of supply disruptions. Moreover, auto parts manufacturers can achieve savings and improve operational efficiency by increasing the amount of waste that is recycled. At the same time, auto parts manufacturers that cause negative environmental impacts through their waste management practices are likely to face regulatory oversight. Violation of environmental regulations is likely to generate legal expenses as well as capital expenditures for pollution-control facilities and occupational safety and health projects.

Circular enablers

Industrial machinery and goods manufacturing uses large quantities of steel, iron, aluminum, glass, plastics, and other materials. Remanufacturing of industrial machinery systems (called " cores") is an opportunity for industrial machinery undertakings to limit the amount of raw materials needed to produce new machinery, as well as the time and other resources required to produce finished goods. Remanufactured products can also create value from products otherwise destined for disposal or recycling. Industrial machinery undertakings can achieve cost savings by reusing end-of-life parts to build remanufactured machines, which may be resold to customers. Thus, remanufacturing in process and design can reduce demand for raw materials, reduce manufacturing costs, and create new sales channels.

Working conditions

Many workers in the Automobiles sector are covered under collective bargaining agreements that cover fair wages, safe working conditions, and freedom of association, which are among basic worker rights. Meanwhile, due to the global nature of the sector, auto undertakings may also operate in countries where worker rights are not adequately protected. Effective management of, and communication regarding, issues such as worker pay and working conditions can prevent conflicts with workers that could lead to extended periods of strikes, which can slow or shut down manufacturing, reduce revenues, and raise operational risk. Auto manufacturers that manage workers in a way that protects worker rights may face higher labor costs in the short term, but may be better positioned to ensure the long-term financial sustainability of their operations by enhancing worker productivity.

Products and services

Driving is a risky activity, as distracted driving, speeding, drunk driving, and dangerous weather conditions, among other factors, can lead to accidents that expose drivers, passengers, and bystanders to possible injuries and deaths. Accidents can also be caused by defective parts in vehicles, and failure to detect defects before vehicles are sold can have significant financial repercussions for both automobile and auto parts manufacturers. Ensuring vehicle safety and responding in a timely manner when defects are identified can protect auto parts undertakings from regulatory action or customer lawsuits, which might otherwise result in significant costs. It can also help them retain their relationships with original equipment manufacturers (OEMs), which often select Tier 1 suppliers based on their safety performance and reliability. As cars incorporate more sophisticated electronics and other technologies, the risks related to recalls may increase. Through effective management of product safety, auto parts undertakings can enhance their reputation and drive higher sales over the long term.

Management and quality of relationships with business partners

Competitive business practices are an important governance issue for undertakings in the Auto Parts sector. Although sector concentration is low, there is a wide range of auto parts, and competition for business within each category of parts may not be robust. Thus, leading producers of any specific auto part may wield substantial market power in that segment, creating antitrust concerns. Collusion and price fixing by auto parts manufacturers ultimately leads to costs being passed on to consumers through higher vehicle prices. If involvement in such activities is discovered, the imposed penalties and reputational damage may have an acute impact on an undertaking's valuation and balance sheet.

Biotechnology & Pharmaceuticals sector

Scopes 1 & 2 GHG emissions

The distribution of health care products and supplies requires significant transportation networks. Concern over climate change and dwindling natural resources may impact fuel pricing, and expose health care distributors to fluctuations in costs. Undertakings that are able to improve transportation efficiencies may be able to enhance shareholder value.

Resources inflow

For the Biotechnology & Pharmaceuticals industry, supply chain quality is essential to protecting consumer health and corporate value. Biotechnology and pharmaceuticals firms that fail to ensure quality throughout their supply chains are susceptible to lost revenue, supply disruptions, and reputational damage. Disclosure of supply chain audit programs may provide shareholders with an understanding of how undertakings in this industry are protecting shareholder value.

Resources outflow

Health care distributors have a responsibility to reduce the environmental impact of the products that they distribute. Specific opportunities to address these impacts exist in product packaging and take-back programs. Undertakings that are able to address these concerns may be better positioned to meet customer demand and reduce associated costs.

Working conditions

Biotechnology and pharmaceuticals undertakings face intense competition for employees. The industry relies on highly skilled employees to develop new products, conduct clinical trials, manage government regulations, and commercialize new products. Firms that are able to attract and retain employees in light of a constrained talent pool may be better positioned to protect and enhance shareholder value.

Economic, social and cultural rights

Biotechnology and pharmaceuticals undertakings play an important role in providing access to the industry's products around the world. Firms can develop pricing frameworks that account for differing levels of economic development and health care needs across various countries. Further, the industry can target priority diseases in developing countries. Strategic approaches related to access to medicines can yield opportunities for growth, innovation, and unique partnerships, which may enhance shareholder value.

Civil and political rights

Clinical trials are an essential component of the approval process for biotechnology and pharmaceutical products. The safety of clinical trial participants is a critical component of a undertaking's ability to successfully bring a product to market. Oversight of these trials is an important factor in the industry due to the number of clinical trials conducted by third party contract research organizations as well as those conducted in emerging markets. Biotechnology and pharmaceuticals undertakings that effectively manage clinical trials may be positioned to enhance shareholder value through the revenue associated with new products. Stakeholder emphasis on health care cost containment and increased access will likely continue to place downward pricing pressures on the Biotechnology & Pharmaceuticals industry. As a result, undertakings that have relied on raising drug prices, contractual advantages, and reverse payments to protect profits may be challenged to enhance value by efforts to reduce costs. Firms that prevent stakeholder scrutiny of pricing practices may limit their exposure to issues such as regulatory action, or adverse reputational impacts.

Information

Biotechnology and pharmaceuticals undertakings face challenges associated with the marketing of specific products. Direct-to-consumer advertisements for prescription drugs provide opportunities for increasing market share. However, challenges arise from the potential for marketing off-label uses, which can result in significant fines and settlements. Corporate disclosure of legal and regulatory fines and the codes of ethics that govern marketing activities will allow shareholders to better understand performance in this area. Information on product safety can surface after controlled clinical trials and regulatory approval. Subsequently, undertakings are exposed to the financial implications of recalls and other adverse events. Product safety concerns, manufacturing defects, or inadequate disclosure of product-related risks can lead to significant product liability claims. Biotechnology and pharmaceuticals undertakings that limit the incidence of recalls, safety concerns, and enforcement actions for manufacturing concerns may be better positioned to protect shareholder value. In addition, concern over the abuse or resale of certain medications has led to mandated take-back programs. Undertakings that are able to successfully engage in these programs may limit future liabilities.

Personal safety

The World Health Organization estimates that counterfeit drugs represent more than 10 percent of the pharmaceutical supply chain in low and middle-income countries. The issue of fake or substandard medication also presents a significant risk in developed economies. Biotechnology and pharmaceuticals undertakings may face added costs as numerous governments and agencies have implemented drug supply chain regulations in an effort to prevent counterfeit, substandard, or mislabelled drugs from entering the pharmaceutical distribution system. Undertakings that fail to manage this issue effectively may face material risks associated with the potential loss of public confidence and reduced revenue. Information on product safety can surface after controlled clinical trials and regulatory approval. Subsequently, undertakings are exposed to the financial implications of recalls and other adverse events. Product safety concerns, manufacturing defects, or inadequate disclosure of product-related risks can lead to significant product liability claims. Biotechnology and pharmaceuticals firms that limit the incidence of recalls, safety concerns, and enforcement actions for manufacturing concerns may be better positioned to protect shareholder value. In addition, concern over the abuse or resale of certain medications has led to mandated take-back programs. Firms that are able to successfully engage in these programs may limit future liabilities.

Products and services

Biotech undertakings have a responsibility to ensure product safety and address concerns related to toxicity. Further, they face additional risks related to controlled substances and the potential for mislabelled products. Undertakings that limit the incidences of safety or other product concerns may be better positioned to protect shareholder value.

Sustainability governance and organisation

Biotechnology and pharmaceuticals firms are subject to various international, national, and state laws pertaining to health care fraud and abuse. The ability of undertakings to ensure compliance throughout their global and domestic operational footprint may have material implications. Corporate disclosure of legal and regulatory fines and the codes of ethics that govern interactions with health professionals may allow shareholders to monitor performance in this area.

Building Products & Furnishings sector

Energy consumption & mix

Building products and furnishing production is often energy-intensive, with a significant proportion of energy consumption in the sector accounted for by purchased electricity. While fuel combustion on-site contributes to the sector's direct (Scope 1) GHG emissions, electricity purchases from the grid can result in indirect, Scope 2 emissions. The energy intensity of operations may increase with decreasing grades of deposits and increasing depth and scale of operations. The choice between on-site versus grid-sourced electricity, and use of alternative energy, can play an important role in influencing both the costs and reliability of energy supply. Affordable and easily accessible energy is an important competitive factor in a commodity market driven by global competition, and purchased fuels and electricity can account for a significant proportion of total production costs. The way in which a undertaking manages its overall energy efficiency and intensity, its reliance on different types of energy, and its ability to access alternative sources of energy, can therefore be a material factor.

Resources inflow

The Building Products & Furnishings sector utilises large amounts of wood sourced from forests worldwide. Unsustainable production and harvesting of timber can result in adverse environmental and social impacts, including biodiversity loss and harm to the livelihoods of forest-dependent communities. undertakings may inadvertently source wood from areas that are susceptible to unsustainable forestry practices. Reports of illegal logging, environmental pollution, or adverse impacts on communities can result in reputational repercussions that can damage a undertaking's brand value, affecting demand for their products. In addition, regulations that address the importation of illegally produced wood can result in penalties and further damage to brand value. To mitigate these risks, undertakings are increasingly adopting third-party certifications that verify that wood is grown and harvested in a sustainable manner. Obtaining wood sourcing certifications can also provide undertakings with a potential growth channel, as they can satisfy customer demand for certified products.

Resources outflow

Depending on the specific building product or furnishing, significant environmental impacts can arise during raw material sourcing, transportation, manufacturing, use-phase, or end-of-life. Rising consumer and regulatory preference for less-impactful products has spawned the development of more sustainable products, broadly termed “green building materials. ” In addition, product lifecycle certification has arisen as a tool for undertakings and their customers to assess and improve a product’s lifecycle impact. Certification programs typically address specific sustainability characteristics of a product category and include the use of closed-loop materials that help minimize a product’s end-of-life environmental impacts and reduce the need for extracting or producing virgin materials. Through product innovation and design that facilitates end-of-life product recovery and the use of less-impactful materials, the adoption of product certification programs, and partnerships with customers, manufacturers of building products can achieve improvements in lifecycle impacts, reduce regulatory risk, meet growing customer demand, and realize cost savings.

Waste and emissions

Building products and furnishing creates wastes from production processes, pollution control devices, and from hazardous waste management activities present a regulatory risk which can raise operating costs. Regulatory risk remains from evolving environmental laws, including those at local and national levels and for other waste streams. undertakings that reduce waste streams-hazardous waste streams in particular-and recycle by-products, can therefore lower regulatory and litigation risks and costs.

Pollution of air

On-site fuel combustion and production processes in the Construction Materials sector emit criteria air pollutants and hazardous chemicals, including small quantities of organic compounds and heavy metals. Emissions of particular concern include nitrogen oxides, sulfur dioxides, particulate matter, heavy metals (e. g., mercury), dioxins, and volatile organic compounds, among others. These air emissions can have significant, localized human health and environmental impacts. Financial impacts resulting from air emissions will vary depending on the specific location of operations and the applicable air emissions regulations, but could include higher operating or capital expenditures and regulatory or legal penalties. Active management of the issue-through technological and process improvements-could allow undertakings to limit the impact of regulations and benefit from operational efficiencies that could lead to a lower cost structure over time.

Impact metrics

The development, operation, of facilites that creat building products and furnishings can have a range of impacts on biodiversity, such as alterations of landscape, vegetation removal, and impacts to wildlife habitats. undertakings that have an effective environmental management plan for different stages of the project lifecycle may minimize their compliance costs and legal liabilities, face less resistance in developing new mines, and avoid difficulties in obtaining permits, accessing reserves, and facing delays in project completion.

Working conditions

Construction, maintenance and repair services, and other on-site activities require a substantial amount of manual labor. Fatality and injury rates in the Building Products & Furnishings feild may be high compared with those in other sectors as a result of the workforce’s exposure to powered haulage and heavy machinery accidents, fall accidents, exposure to hazardous chemicals, and other unique and potentially dangerous situations. Additionally, temporary workers may be at a higher risk due to lack of training or sector experience. Failing to protect worker health and safety can result in fines and penalties; serious incidents can lead to acute, one-time extraordinary expenses and contingent liabilities from legal and/ or regulatory actions. In addition, health and safety incidents can result in project delays and downtime that raise project costs and lower profitability. Undertakings that seek to properly train both permanent and temporary employees and build a strong safety culture could reduce their risk profile while potentially gaining a competitive advantage in new project bids and proposals as a result of strong workforce health and safety track records.

Other work-related rights

Building products and furnishing undertakings face inherent tension between the need to lower the cost of labor to remain price competitive, and to manage human resources to ensure long-term performance. Working conditions can be physically demanding and hazardous. Labor unions play a key role in representing workers’ interests and managing collective bargaining for better wages and working conditions. At the same time, metals and mining undertakings often operate in areas where worker rights are not adequately protected. The nuances of both domestic and international worker concerns make management of labor relations critical for metals and mining undertakings. Conflict with workers can result in labor strikes and other disruptions that can delay or stop production. Work stoppages frequently result in significant lost revenue and reputational damage. Continued labor stresses can impact the long-term profitability of the business. At the same time, positive outcomes of effective labor engagement can include enhanced work practices, labor utilization, as well as the reduction in safety incidents, accidents, or fatalities.

Civil and political rights

Undertakings are frequently active over long periods of time, and may be involved in multiple projects in a region that can have a wide range of community impacts. Community rights and interests may be affected through environmental and social impacts, such as competition for access to local energy or water resources, air and water emissions, and waste from operations. undertakings rely upon support from local communities to be able to obtain permits and leases as well as to conduct their activities without disruptions. They may experience adverse financial impacts if the community interferes, or lobbies its government to interfere, with the rights of an undertaking in relation to their ability to access, develop, and produce reserves. In addition to community concerns about direct impacts of projects, the presence of these activities may give rise to associated socio-economic concerns, such as education, health, livelihoods, and food security for the community. undertakings that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any socio-economic benefits in return may be exposed to the risk of actions, motivated by resource nationalism, and by host governments and communities. These could include imposition of ad hoc taxes and export restrictions. undertakings in the extractives sectors can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests. Strategies are often underpinned by the integration of community engagement into phases of the project cycle. undertakings are beginning to adopt a "shared value" approach to provide a key socio-economic benefit to the community while allowing the undertaking to profitably operate.

Particular rights of indigenous peoples

Building products and furnishing undertakings face additional community-related risks when operating in conflict zones and in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights. They also face risks when operating in areas with vulnerable communities, such as indigenous peoples. undertakings using private or government security forces to protect their workers and assets may knowingly, or unknowingly, contribute to human rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. undertakings perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits. They could face substantial costs related to compensation or settlement payments, and write-downs in the value of their reserves in such areas. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for undertakings. These instruments include obtaining the free, prior, and informed consent of indigenous peoples for decisions affecting them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for undertakings.

Products and services

Building products and furnishings may contain substances that have the potential to harm human health, including volatile organic compounds and potential reproductive toxins, carcinogens, and endocrine disruptors. In general, these substances are found in products at low concentrations, if at all, and therefore do not pose a health concern. Nonetheless, the sector is exposed to potentially significant regulatory and reputational risk as a result of the use of substances of concern. Actual or perceived human health risks create the potential for future regulation around product chemical content and possible reputational impacts for undertakings, which can significantly affect demand for products. Increasing consumer concern over chemical use is driving the sector's voluntary efforts to eliminate such chemicals from products and use alternative materials. The continued adoption of building certification standards such as LEED are driving demand for products with reduced chemical content. undertakings that effectively manage harmful chemicals in their products may enjoy a competitive advantage over the long term through higher demand, reduced regulatory risk, and improved brand reputation.

Sustainability governance and organisation

Undertakings in the sector face risks associated with bribery, corruption, and anti-competitive practices. This is due to several factors, including the global operations of many undertakings, the need to manage multiple local agents and subcontractors, the complexity of project financing and project permitting, the magnitude of the contracts involved in building large infrastructure projects, and the competitive process necessary to secure contracts with private and public entities. Ethical breaches can result in investigations by authorities, as well as large fines, settlement costs, and damaged reputations. Such breaches may include violations of anti-bribery laws, such as paying government officials in order to gain project contracts. They may also include unethical bidding practices, such as complementary bidding (e. g., submitting an artificially high or otherwise unacceptable bid for a contract that a bidder does not intend to win) and bid-pooling (e. g., coordinating to split contracts and assure each bidder is awarded a certain amount of work). Moreover, undertakings with poor track records can be barred from working on future projects, resulting in lost revenue. Developing an ethical culture through employee training, effective governance structures, and internal controls is critical for undertakings to mitigate risks associated with business ethics.

Chemicals & Biofuels sector

Energy consumption & mix

Containers and packaging manufacturing is energy-intensive, with energy used to power processing units, cogeneration plants, machinery, and non-manufacturing facilities. The type of energy used, magnitude of consumption, and energy management strategies depend on the type of products manufactured. Typically, fossil fuels such as natural gas and biomass are the predominant form of energy used, while purchased electricity may also represent a significant share. Therefore, energy purchases can represent a significant share of production costs. A undertaking's energy mix may include energy generated onsite, purchased grid electricity and fossil fuels, and renewable and alternative energy. Trade-offs in the use of such energy sources include cost, reliability of supply, related water use and air emissions, and regulatory compliance and risk. As such, a undertaking's energy intensity and energy sourcing decisions can affect its operating efficiency and risk profile over time.

Scopes 1 & 2 GHG emissions

The Containers & Packaging sector generates direct (Scope 1) greenhouse gas (GHG) emissions from the combustion of fossil fuels in manufacturing and cogeneration processes. GHG emissions can create regulatory compliance costs or penalties and operating risks for undertakings in the sector. However, resulting financial impacts will vary depending on the magnitude of emissions and the prevailing emissions regulations. The sector may be subject to increasingly stringent regulations as nations seek to limit or reduce emissions. Undertakings that cost-effectively manage GHG emissions through greater energy efficiency, the use of alternative fuels, or manufacturing process advances could benefit from improved operating efficiency and reduced regulatory risk, among other financial benefits.

Resources inflow

The Household & Personal Products sector uses a large amount of materials for product packaging, which often constitutes a significant portion of undertakings' expenses. In addition, packaging design, particularly packaging weight, has a direct impact on transportation expenses, which can be significant. At the same time, the sector is facing pressure from both consumers and large retail outlets to address the environmental characteristics of its packaging, as material extraction and waste contribute to environmental externalities. The sustainability performance of packaging depends largely on the type, use, and ultimate disposal of materials. However, undertakings that effectively manage the sustainability characteristics of their product packaging-including light-weighting of materials, the use of recycled content and recyclable materials, and the use of sustainably sourced materials-may be better positioned to capture shifting consumer demand and avoid (or mitigate the impacts of) regulation related to extended producer responsibility. By managing the sustainability of product packaging, undertakings can also potentially reduce input and transportation costs.

Resources outflow

The Household & Personal Products sector uses a large amount of materials for product packaging, which often constitutes a significant portion of undertakings' expenses. In addition, packaging design, particularly packaging weight, has a direct impact on transportation expenses, which can be significant. At the same time, the sector is facing pressure from both consumers and large retail outlets to address the environmental characteristics of its packaging, as material extraction and waste contribute to environmental externalities. The sustainability performance of packaging depends largely on the type, use, and ultimate disposal of materials. However, undertakings that effectively manage the sustainability characteristics of their product packaging-including light-weighting of materials, the use of recycled content and recyclable materials, and the use of sustainably sourced materials-may be better positioned to capture shifting consumer demand and avoid (or mitigate the impacts of) regulation related to extended producer responsibility. By managing the sustainability of product packaging, undertakings can also potentially reduce input and transportation costs.

Waste and emissions

Chemical manufacturing may generate hazardous process waste, including but not limited to heavy metals, spent acids, catalysts, and wastewater treatment sludge. undertakings face regulatory and operational challenges in managing waste, as some wastes are subject to regulations pertaining to their transport, treatment, storage, and disposal. Waste management strategies include reduced generation, effective treatment and disposal, and recycling and recovery, where possible. Such activities, while requiring initial investment or operating costs, may lower undertakings' long-term cost structure and mitigate the risk of remediation liabilities or regulatory penalties.

Pollution of air

In addition to greenhouse gases (GHGs), chemical manufacturing may produce air emissions including, sulfur dioxides (SOx), nitrogen oxides (NOx), and Hazardous Air Pollutants (HAPs). As with GHGs, these emissions typically stem from the combustion of fuels and the processing of feedstocks. Relative to other sectors, the Chemicals sector is a more significant source of some of these emissions. Undertakings face operating costs, regulatory compliance costs, regulatory penalties in the event of non-compliance, and capital expenditures related to emissions management, while related financial impacts will vary depending on the magnitude of emissions and the prevailing regulations. As such, active management of the issue through technological process improvements or other strategies may mitigate such impacts, improving financial performance and enhancing brand value.

Pollution of water

Water is vital to the Household & Personal Products sector, both as a coolant in manufacturing processes and as a main input for many of the sector's products. Water is becoming a scarcer resource around the world due to increasing consumption as a result of population growth, rapid urbanization, and reduced supplies due to drought and climate change. Many firms in this sector have operations in regions of the world that are facing water scarcity. Without careful planning, undertakings could face increased costs or, worse, lose access to water in these regions, thereby presenting a risk to production. Having rigorous checks in place to ensure a steady supply of water to all factories, as well as investing in technology to increase the efficiency of water use, will help firms in this sector keep a lower risk profile as water scarcity becomes a more pressing global issue.

Working conditions

Employees in chemicals manufacturing facilities face health and safety risks from exposure to heavy machinery, harmful substances, high temperatures and pressure, and electrical hazards, among others. Creating an effective safety culture is critical to proactively mitigate safety impacts, which could result in financial consequences, including higher healthcare costs, litigation, and work disruption. By maintaining a safe work environment and promoting a culture of safety, undertakings can minimize safety-related expenses and potentially improve productivity.

Civil and political rights

Chemical undertakings are important economic contributors to many communities, providing employment opportunities and community development through taxes and capital generation. Meanwhile, issues including environmental policy, community health, and process safety are key issues with important regulatory, operational, financial, and reputational implications for undertakings. Environmental externalities including air emissions and water use can affect human health of those living near chemical facilities over the long term. Meanwhile, process safety incidents can endanger community health and safety, leading to regulatory penalties, legal action, and mitigation costs. Consequently, chemicals undertakings can benefit from building strong relationships with communities in order to mitigate potential operating disruption, reduce regulatory risk, retain top employees, lower the risk of litigation expenses in the event of process safety incidents, and ensure a strong social license to operate. undertakings can adopt various community engagement strategies, such as developing community engagement plans, establishing codes and guidelines to ensure alignment of the organization's interests with those of their surrounding communities, or conducting impact assessments to evaluate projects and mitigate potential adverse impacts.

Personal safety

Palm oil has rapidly risen in popularity as a cheap input for a wide range of goods in the Household & Personal Products sector, including cleaning products, candles, and cosmetics. Palm oil harvesting in specific regions of the world can contribute to deforestation, GHG emissions, and other environmental and social problems. If not sourced responsibly, palm oil materials contribute to environmental and social externalities that can present reputational and regulatory risks for undertakings. Further, undertakings in this sector are exposed to the risk of supply chain disruptions, input price increases, and reputational damage associated with environmental and social externalities from palm oil sourcing. Thus, undertakngs face pressure to track and responsibly source palm oil. Additionally, they face pressure to ensure minimum standards for working conditions in the supply chain, as the production of palm oil is often associated with labor issues. Implementing sourcing standards can contribute to reducing risks, as can innovations at the product-design phase to reduce dependence on controversial materials such as palm oil.

Products and services

Product safety and stewardship is a critical issue for undertakings in the Chemicals sector. The potential for human health or environmental impacts of chemicals during the use-phase can influence product demand and regulatory risk, which in turn can affect revenues and result in higher operating expenses, regulatory compliance costs, and mitigation. The sector can therefore mitigate regulatory risk and grow market share by developing innovative approaches to manage the potential impacts of products during the use phase, including developing alternative products with reduced toxicity. This could contribute to shareholder value through improved competitive positioning, greater market share, reduced regulatory risks, and higher brand value.

Anti-corruption

The Chemicals sector faces strict regulation governing air emissions, water discharge, chemical safety, and process safety, among other issues. Anticipating and adapting to regulatory developments, both in the short and long term, is a critical issue for the sector, as regulatory developments can significantly affect product demand, manufacturing costs, and brand value. Therefore, undertakings with a clear strategy for managing the regulatory environment that aligns corporate performance with sustainable environmental outcomes and accounts for societal externalities could benefit from reduced regulatory uncertainty, stronger brand value, and improved competitive positioning.

Electronics sector

Energy consumption & mix

Electrical and electronic equipment undertakings may use significant amounts of energy. Purchased electricity represents the largest share of energy expenditures in the sector, followed by purchased fuels. The type of energy used, magnitude of consumption, and energy management strategies depends on the type of products manufactured. A undertaking's energy mix, including the use of electricity generated on-site, grid-sourced electricity, and the use of alternative energy, can play an important role in lowering the cost and increasing the reliability of energy supply, and ultimately affect the undertaking's cost structure and exposure to regulatory shifts.

Scopes 1 & 2 GHG emissions

Undertakings in the Semiconductors sector generate greenhouse gas (GHG) emissions, particularly those from perfluorinated compounds, from semiconductor manufacturing operations. GHG emissions can create regulatory compliance costs and operating risks for semiconductors undertakings, although resulting financial impacts will vary depending on the magnitude of emissions and the prevailing emissions regulations. Undertakings that cost-effectively manage GHG emissions through greater energy efficiency, the use of alternative chemicals, or manufacturing process advances could benefit from improved operating efficiency and reduced regulatory risk.

Resources inflow

Undertakings in the Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) sector rely on numerous critical materials as key inputs for finished products. Many of these inputs have few or no available substitutes and are often sourced from deposits concentrated in few countries, many of which are subject to geopolitical uncertainty. Other sustainability impacts related to climate change, land use, resource scarcity, and conflict in regions where the sector's supply chain operates are also increasingly shaping the sector's ability to source materials. Additionally, increased competition for these materials due to growing global demand from other sectors can result in price increases and supply risks. The ability of undertakings to manage potential materials shortages, supply disruptions, price volatility, and reputational risks is made more difficult by the fact that they commonly source materials from supply chains that often lack transparency. Failure to effectively manage this issue can lead to an inability to access necessary materials, reduced margins, constrained revenue growth, and/ or higher costs or capital.

Resources outflow

Undertakings in the Appliance Manufacturing sector are constantly seeking to differentiate their products from those of their competitors. One key differentiating factor is the environmental impact of products over their lifecycle, which is often associated with the cost of using appliances. This issue involves an undertaking's ability to design products with the entire lifecycle in mind, from creation and use to disposal. In particular, this covers energy and water efficiency in appliances, which account for a significant proportion of a home's energy and water use, as well as designing for and facilitating safe end-of-life disposal and recycling. undertakings that prioritize designing and manufacturing products with improved environmental impacts are more likely to grow consumer demand and market share. Furthermore, undertakings that are able to minimize the environmental impacts of products are more likely to be better positioned to increased regulation related to areas such as extended producer responsibility.

Waste and emissions

Semiconductor manufacturing requires hazardous materials, many of which are subject to environmental, health and safety regulations, and generates harmful waste, which may be released into the environment in the form of water and air emissions, and solid waste. The handling and disposal of hazardous wastes produced during manufacturing can lead to increased operating costs, capital expenditures, and in some instances, regulatory costs. undertakings that are able to reduce waste produced during manufacturing and ensure that it is reused, recycled, or disposed of appropriately, will maintain a lower risk profile and face lower regulatory risks as local, regional, and national environmental laws place increasing emphasis on resource conservation and waste management.

Pollution of water

The manufacturing of computers, computer components, and other electronics requires significant volumes of water. Water is becoming a scarce resource around the globe, due to increasing consumption from population growth and rapid urbanization, and reduced supplies due to climate change. Without careful planning, water scarcity can result in higher supply costs, social tensions with local communities and governments, and/ or loss of access to water in water-scarce regions thereby presenting a critical risk to production, and thus revenues. Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) undertakings that are able to increase the efficiency of water use during manufacturing can reduce operating costs and maintain a lower risk profile, ultimately impacting cost of capital and market valuation. Furthermore, firms that prioritize reducing water use and greater efficiency can face lower regulatory risks as local, regional, and national environmental laws place increasing emphasis on resource conservation.

Working conditions

The treatment of workers and the protection of worker rights in the Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) sector is of growing concern among customers, regulators, and leading undertakings. Critical aspects of this issue working conditions, environmental responsibility, and workforce health and safety- particularly as it relates to the hazardous materials and potentially dangerous equipment used in manufacturing. undertakings in this sector operate in a highly competitive environment based on cost and therefore rely heavily on securing low-cost and contract labor. The sector's reliance on subcontractors, labor recruitment firms, and a multi-= -tiered system of suppliers can make it difficult to improve performance on the issue. Further, undertakings are often located in countries with relatively low direct costs and have varying degrees of regulation and enforcement for protecting workers. This dynamic can heighten an undertaking's exposure to reputational risks and impacts on short-and long-term costs and sales. Such effects can arise from increasing regulation and its enforcement in response to high-profile safety or labor incidents, or through a shift in demand away from undertakings associated with such incidents. undertakings with strong supply-chain standards, monitoring, and engagement with suppliers to address labor concerns may therefore be better positioned to protect shareholder value over the long term.

Risk management

The hardware products and related software offered by undertakings in the Hardware sector can have vulnerabilities that expose consumers to data security threats. Therefore, hardware manufacturers play an important role in ensuring security of user data. Such vulnerabilities may occur at any stage of a product lifecycle, including product design, the manufacturing supply chain, product distribution, and the product's use-phase. undertakings in the sector that are unable to establish a robust approach to identifying vulnerabilities may risk exposing consumer data to security threats and potentially eroding the trust of their customer base. The increasing prevalence of cybersecurity threats creates both risks and opportunities for the Hardware sector, as effective product security can be a source of competitive advantage, thus helping undertakings to increase their sales and expand market share. Additionally, concerns about data security and related government actions can also serve as revenue-generating opportunities for this sector through opportunities for federal contracts and the provision of security products.

Products and services

Product safety is of utmost importance to appliance and tool manufacturers. When an appliance malfunctions, it can result in fires or other hazards that damage property and cause injury or even death. The potential for product malfunction and its sometimes-serious consequences exposes firms to risks related to litigation and negative consumer sentiment, which can affect brand value, revenue growth, and/ or market share. Failure to report known product safety hazards to relevant authorities can result in civil penalties. undertakings that dedicate appropriate resources to quality control and testing can minimize the possibility of a product malfunction or recall, and can capture additional market share and limit their exposure to regulatory and litigation risks.

Management and quality of relationsships with business partners

While intellectual property (IP) protection is inherent to the business model of undertakings in the Semiconductors sector, undertakings' IP practices can be a contentious societal issue. IP protection, on the one hand, is an important driver of innovation; on the other hand, some undertakings may also acquire and enforce patents and other IP protection in efforts to restrict competition, particularly if they are dominant market players. Industry standard-setting can involve complex negotiations over patent rights and licensing terms, and undertakings are using cross-licenses and patent pools to address difficulties around patent thickets. However, such sector cooperation can also raise antitrust concerns, for example, with provisions in portfolio cross-licenses that could enable price fixing. Adverse legal or regulatory rulings related to antitrust and IP can expose software and IT services undertakings to costly and lengthy litigations and potential monetary losses as a result. Such rulings may also affect an undertaking's market share and pricing power if its patents or dominant position in key markets are legally challenged, with significant impact on revenue. Therefore, undertakings that can balance the protection of their IP and its use to spur innovation with ensuring their IP management and other business practices do not unfairly restrict competition, have the potential to lower regulatory scrutiny and legal actions while protecting their market value.

Sustainability governance and organisation

Electrical and electronic equipment manufacturers may be vulnerable to regulatory scrutiny of business ethics because of their operations in regions with weaker government enforcement of business ethics laws. undertakings in this sector have been found in violation of corruption laws as well as anti-competitive behavior. Unethical practices may jeopardize future revenue growth due to reputational risks and can result in significant legal costs and a higher risk profile. As such, strong governance practices can mitigate the risk of violations of business ethics laws and resulting regulatory penalties or brand-value impacts.

Food & Beverages sector

Energy consumption & mix

Food and Beverages undertakings such as; Food and Retail distribution, Alcoholic and Non-Alcoholic Beverages production and Processed Foods undertakings are typically more energy-intensive than other types of commercial spaces. Energy is used predominately for refrigeration, heating, ventilation, air conditioning (HVAC) and lighting. In addition there is energy to operate large manufacturing facilities for cooking, refrigeration, and packaging, distribution centers, and warehouses. undertakings in the sector generally purchase the majority of consumed electricity from the grid, while some are beginning to generate energy on-site or add renewable energy into their energy mix. Both purchased electricity and fuel as critical inputs for value creation.

Energy generation and consumption contributes to environmental impacts, including climate change and pollution, which have the potential to directly and indirecty impact the potential to affect the value of undertakings in this sector as regulations of greenhouse gas (GHG) emissions and new incentives for energy efficiency and renewable energy could lead to increased price volatility for fossil fuels and conventional electricity while making alternative sources cost-competitive. Decisions regarding the use of alternative fuels, renewable energy, and on-site generation of electricity versus purchasing from the grid, can play an important role in influencing both the costs and reliability of the energy supply. these impacts have the potential to affect the value of undertakings in this sector as regulations of greenhouse gas (GHG) emissions and new incentives for energy efficiency and renewable energy could lead to increased price volatility for fossil fuels and conventional electricity while making alternative sources cost-competitive.

Energy efficiency in production and distribution can mitigate exposure to volatile energy costs and limit a undertaking's contribution to direct and indirect greenhouse gas (GHG) emissions. Producers may be able to further reduce the risk posed by volatile fossil fuel energy costs-particularly natural gas, which is used heavily in the sector-by diversifying their energy portfolio across a range of sources. undertakings that manage their overall energy use through increased efficiency and use of alternative energy sources can increase profitability by lowering expenses and reducing risk.

Scopes 1 & 2 GHG emissions

Undertakings in the Food and Beverage sector own and operate vehicle fleets to deliver products between its distribution and retail locations. The fuel consumption of vehicle fleets generates direct Scope 1 greenhouse gas (GHG) emissions from large vehicle fleets for distribution and from manufacturing facilities. The large fleets also create significant sector expense, both in terms of operating costs and associated capital expenditures. Fossil fuel consumption can contribute to environmental impacts, including climate change and pollution. These environmental impacts have the potential to affect food retailers and distributors through regulatory exposure. Specifically, refrigeration used in manufacturing facilities and in transport vehicles contributes to a large portion of overall emissions for the sector.

Efficiencies gained in fuel use can reduce costs, mitigate exposure to fossil fuel price volatility, and limit the carbon footprint associated with storage and transportation. Short-term capital expenditures in fuel-efficient fleets and more energy efficient technologies may be outweighed by long-term operational savings and decreased exposure to regulatory risks.

Emissions of refrigeration chemicals from equipment used to store and display perishable foods pose unique regulatory risks for the Food and Beverage sector. International regulations on hydrochlorofluorocarbons (HCFCs) aim to mitigate damage by HCFCs to the Earth's ozone layer. Additionally, many common HCFCs and hydrofluorocarbons (HFCs) are highly potent greenhouse gases (GHGs), which increases the sector's exposure to climate change-related regulations. Regulators can assess penalties to undertakings that violate emissions standards, while undertakings may be required to upgrade or replace equipment, requiring capital expenditures, to reduce their emissions or replace existing refrigerants with potentially costlier, but less environmentally-damaging alternatives.

Water-related Performance Measurement

Food and Beverage undertakings source a wide variety of commodities and ingredients from farmers and/ or intermediary distributors worldswide. The sector's ability to reliably source ingredients at desired price points fluctuates with crop yield and may be affected by climate change, water scarcity, land management, and other resource scarcity considerations.

undertakings that source more productive and less resource-intensive crops or ingredients, or those that work closely with suppliers to increase their adaptability to climate change and other resource scarcity risks, will be better protected from volatility in crop prices and from disruptions in crop supplies. Additionally, undertakings may improve their brand reputation and develop new market opportunities. Failure to effectively manage sourcing risks can lead to higher costs of capital, reduced margins, and constrained revenue growth. Ultimately, climate change, water scarcity, and land-use restrictions present risks to an undertaking's long-term ability to source key materials and ingredients.

Resources inflow

Food and Beverage retailers and distributors source merchandise from a wide range of manufacturers. These suppliers face a myriad of sustainability-related challenges that include resource conservation, water scarcity, animal welfare, fair labour practices, and climate change. When poorly managed, these issues can affect the price and availability of food. Additionally, packaging of such merchandise can have several risks including design, transportation, and disposal can lead to business costs and contribute to the undertaking's environmental footprint. Efforts to reduce the number of materials used in packaging can reduce transportation costs, exposure to supply and price volatility, and the amount of virgin materials extracted.
Consumers are increasingly concerned with the production methods, origins, and externalities associated with the foods they purchase, which may affect a undertaking's reputation. undertakings that can address these concerns properly by engaging with suppliers, implementing sustainable sourcing guidelines, and enhancing supply chain transparency will likely be better positioned to improve supply chain resiliency, mitigate reputational risks, and potentially increase consumer demand or capture new market opportunities.

Resources outflow

Packaging materials represent a major business cost and contribute to the environmental footprint of Food and Beverage undertakings. Each stage of a package's lifecycle, including design, transportation, and disposal, presents its own unique environmental challenges and opportunities. undertakings may be impacted by regulations on allowable packaging materials or end-of-life management of packaging.
undertakings can work with packaging manufacturers on packaging design to generate cost savings, improve brand reputation, and reduce their environmental impact. Innovations such as light-weighting materials can also result in cost benefits in the transportation of goods. Other innovations can improve end-of-life management of products, such as through the use of recyclable or compostable materials and partnerships can pre-empt regulation, help achieve cost savings, and reduce environmental impact. undertakings that effectively manage this issue can improve profitability and reduce cost of capital.

Waste and emissions

The Food and Beverage sector generates waste at various stages of operation. Food waste includes edible or otherwise useful food that does not reach consumers, as well as foods that spoil or are damaged during transportation or stocking or while on store shelves. Food loss and waste represent loss of saleable merchandise for undertakings in the sector and more broadly, a loss of resources used in food production, which include land, water, labor, energy, and agricultural chemicals, as well as contribute to food insecurity. Additionally, food waste can generate greenhouse gas (GHG) emissions during landfill decomposition. Effective food waste management can present financial opportunities to reduce costs associated with inventory loss, as well as help improve food security by more efficiently diverting food resources to beneficial purposes.

Pollution of water

Food and Beverage undertakings rely on a large water supply for cooking, processing, and cleaning finished goods, they may also use a large amount of water in their operations, as water is a key input to their finished products. Additionally, undertakings in the sector generate and must manage its wastewater discharge from processing activities. As water scarcity becomes an issue of increasing importance, food and beverage undertakings-especially those operating in water-stressed regions-may face increasing operational risks. undertakings in the sector may face higher operational costs as well as water shortages due to physical availability and/ or regulations. This especially effects alcoholic beverage undertakings as they rely heavily on large volumes of clean water. undertakings may be exposed to supply disruptions that could significantly impact operations and add to costs. undertakings can manage water-related risks and opportunities through capital investments and assessment of facility locations relative to water scarcity risks, improvements to operational efficiency, and partnerships with regulators and communities on issues related to water access and effluent. undertakings that fail to address local water concerns may face further risk of losing their social license to operate. Improving water management through increased efficiency and recycling, and proper disposal, particularly in regions with baseline water stress, can lead to lower operating costs, reduced risk, and higher intangible asset value. Water management relates to a undertaking's direct water usage, the exposure of its operations to water-stressed regions, and its management of wastewater.

Working conditions

The Food and Beverage sector employs many hourly workers. Low average wages in the sector, which help undertakings maintain low prices for products, may result in labor-related risks. Worker dissatisfaction with wages and benefits, combined with high unionization rates, have led to employee strikes at major food retail undertakings, resulting in business disruption and reputational damage. Additionally, undertakings in the sector have been involved in gender and racial discrimination cases, sometimes resulting in costly financial settlements. undertakings may benefit from taking a long-term perspective on managing workers, including their pay and benefits, in a way that protects the rights of workers and enhances their productivity while strengthening the undertaking's reputation and brand value.

Information

Communication with consumers through product labeling and marketing is an important facet of the Food and Beverage sector. The accuracy and depth of information presented in food labeling is of growing importance to shoppers and regulators alike. It is especially relevant for the sale of private-label products manufactured for food retailers, given direct brand reputation impacts. To inform purchasing decisions, consumers today seek additional information about product ingredients, such as genetically modified organism (GMO) content, and other health and nutritional impacts. These issues can affect the competitive landscape of the sector, as undertakings may be subject to litigation or criticism resulting from making misleading statements or failing to adapt to consumer demand for increased labeling transparency. These factors can have an impact on retailers' brand value and revenue growth. Additionally, regulations addressing the accurate labeling of products and their ingredients present the risk of penalties or litigation for food retail undertakings.

Another area of public concern is the market practices of non-alcoholic beverages undertakings, especially those targeted to children or on nutritional claims, and whether they present potentially untruthful or misleading information. Product labeling and marketing issues can affect the competitive landscape of the sector, as undertakings may be subject to litigation or criticism resulting from making misleading statements or failing to adapt to consumer demand for increased labeling transparency. Additionally, regulations on product labeling and marketing present the risk of penalties or litigation. Communication with consumers through product labeling and marketing is an important facet of processed foods undertakings. The accuracy and depth of information presented in food labeling is of importance to regulators and consumers. Labeling regulations require specific and detailed product information to ensure food safety and inform consumers of nutritional content. All of these factors can impact a undertaking's brand value, operating costs, and revenue growth.

The irresponsible consumption of alcoholic beverages can lead to negative social externalities such as drunk driving, addiction, public health issues, underage drinking, and even death. Every year, irresponsible alcohol consumption contributes to millions of deaths worldwide, a large portion of which includes underage youth and young adults. The harmful use of alcohol is a growing concern, particularly in developing countries that do not have laws to protect against alcohol's detrimental effects. Alcoholic beverage undertakings may be forced to internalize the costs of these social externalities through taxes, lawsuits, or reputational harm, which can have a material impact on operations and financial results. Failing to properly manage social externalities may lead to further unfavourable regulation and erode the sector's social license to operate. Through education, engagement, community partnerships, and responsible marketing, particularly to underage individuals, undertakings can address and mitigate many of the social externalities associated with alcohol misuse. undertakings that effectively manage this issue can reduce the likelihood of extraordinary expenses, improve market share, and decrease liabilities.

Personal safety

Undertakings in the Food and Beverage sector manage global supply chains to source a wide range of ingredient inputs. How undertakings screen, monitor, and engage with suppliers on environmental and social topics affects undertakings' ability to secure supply and manage price fluctuations. Supply chain interruption can cause loss of revenue and negatively impact market share if undertakings are not able to find alternatives for key suppliers or have to source ingredients at higher cost. Supply chain management issues related to labor practices, environmental responsibility, ethics or corruption may also result in regulatory fines and/ or increased long-term operational costs. The consumer-facing nature of the sector increases the reputational risks associated with supplier actions. Managing an undertaking's exposure to environmental and social risks can lead to improved supply chain resiliency and enhanced reputation. Supply chain management issues related to labor and environmental practices, ethics, or corruption may also result in regulatory fines and/ or increased long-term operational costs for undertakings. The consumer-facing nature of the sector increases the reputational risks associated with supplier performance. undertakings can engage with key suppliers to manage environmental and social risks to improve supply chain resiliency, mitigate reputational risks, and potentially increase consumer demand or capture new market opportunities.

Maintaining product quality and safety is crucial Food and Beverage sector, as contamination by pathogens, hazardous substances, or spoilage can present human health risks. Contamination can occur at any stage in the food value chain, including food production, processing, transportation, distribution, and retailing. While undertakings may not be directly responsible for all food safety and recall incidents, they are involved in the process and may still experience financial ramifications, damage to brand value, lower revenues, and increased costs associated with recalls, lost inventory, or litigation. Measures to prevent spoilage and contamination include temperature control, frequent food inspection, and supplier selection. Food safety, as it relates to production quality, spoilage, contamination, supply chain traceability, and allergy labeling, can materially affect undertakings. Food safety recalls can happen for numerous reasons, including packaging defects, food contamination, spoilage, and mislabeling. Food safety issues that arise within a undertaking's supply chain typically result in recalls of final products and can also influence the brand reputation, operations, and revenue of processed foods undertakings. Supply chain traceability is a great concern for undertakings in the sector, particularly amid new regulations. Poor management of food quality and safety may lead to damage to brand value, lower revenues, and increased costs associated with recalls, fines, lost inventory, and/ or litigation. Obtaining food safety certifications or ensuring suppliers meet food safety guidelines may help undertakings in the sector safeguard product safety and communicate the quality of their products to retailers and consumers.

Increasing consumer awareness of food content and nutritional value, and the impact these can have on health, is shaping the Food and Beverage sector's competitive landscape. Demand for food products that are made with natural ingredients or that are certified to be organic, low-fat, low-sugar, or made without genetically modified organisms (GMOs) has driven sector growth in recent years. Although the links between consumer health and certain foods are not well established, consumers have nonetheless shown preferences for food categories that are perceived to be more healthful. Food retailers that recognize the risks and opportunities presented by consumers' shifting preferences and adapt to consumer demands are better positioned to capture opportunities for additional revenue and market share. Key nutritional and health concerns such as obesity, ingredient safety, and nutritional value are shaping the sector's competitive landscape. The health and nutrition characteristics of the sector's products and ingredients are of growing concern to both consumers and regulators, thus creating the potential for these issues to affect a processed food undertaking's reputation and its license to operate. New regulations may impact sector profitability and pose long-term risks in the form of reduced demand for the sector's products. Studies indicate that consuming high-calorie, sugar-sweetened beverages can have adverse health consequences including higher levels of cholesterol, increased risk for heart disease, and obesity. Findings such as these may alter consumer perceptions of the sector's products, leading to long-term shifts in purchasing decisions. Furthermore, efforts to reduce obesity, in the form of new regulations or taxes on sugar-sweetened beverages, have the ability to influence sector profitability and future demand. The potential for adverse health effects from other commonly used ingredients-such as artificial sweeteners-may pose additional concerns, and undertakings may face related litigation and/ or regulation. Opportunities exist in new segments of the beverage market to address consumer demand for improved nutritional value. undertakings that adapt to changing consumer preferences and an evolving regulatory environment by offering more healthful alternatives can capture additional market share and limit their exposure to regulation and litigation.

Risk management

Through electronic payment transactions and the sharing of personal financial data, undertakings establish a relationship of trust with consumers. Data breaches can occur through breaches of the physical payment technology, called point-of-sales breaches, as well as through attacks on cybersecurity. Data breaches that result in the theft or loss of customers' private data can undermine their trust in a undertaking's ability to securely manage their private information. This loss of confidence could result in reduced number of customer visits, lower revenues, and a diminished brand value. Retailers with strong technological and managerial systems to avoid and respond to data breaches can position themselves favourably with customers and reduce potential litigation and costs associated with data breaches.

Products and services

Undertakings in the Food and Beverage sector that source ingredients which are more productive and less resource-intensive, or work closely with suppliers to increase their adaptability to climate change and other resource scarcity risks will be better protected from price volatility and/ or supply disruptions. undertakings source a wide range of ingredients, largely agricultural inputs, from global suppliers. The sector's ability to source ingredients and at certain price points fluctuates with supply availability, which may be affected by climate change, water scarcity, land management, and other resource scarcity considerations. This exposure can lead to price volatility which may affect undertaking profitability. Climate change, water scarcity, and land-use restrictions present risks to a undertaking's long-term ability to source key materials and ingredients. undertakings that source ingredients which are more productive and less resource-intensive, or work closely with suppliers to increase their adaptability to climate change and other resource scarcity risks will be better protected from price volatility and/ or supply disruptions.

Machinery & Equipment sector

Energy consumption & mix

Manufacturing in the Fuel Cells & Industrial Batteries sector requires energy to power machines and cooling, ventilation, lighting, and product-testing systems. Purchased electricity can represent a major share of the energy sources used in the sector and can account for a notable proportion of the total cost of materials and value added. Various sustainability factors are contributing to an increase in the cost of conventional electricity while making alternative sources cost-competitive. Energy efficiency efforts can have a significant positive impact on operational efficiency and profitability, especially given the fact that many undertakings operate on relatively low or negative margins. By improving the efficiency of the manufacturing process and exploring alternative energy sources, fuel cell and industrial battery undertakings can reduce both their indirect environmental impacts and their operating expenses.

Resources inflow

Both customer demand and regulatory requirements are driving innovation in energy-efficient products with lower environmental impacts and lower total cost of ownership. Therefore, research and development in the sector that drive energy and thermal efficiency and enhance storage capacities can lower barriers to adoption. Advances in battery technology to increase storage capabilities and improve charging efficiencies, while lowering costs for customers, are critical for the integration of renewable energy technologies into the grid. Fuel cell and industrial battery manufacturers that are able to improve efficiency in the use phase will be able to increase revenues and market share, pressured by stricter environmental regulations, high energy costs, and customer preferences.

Resources outflow

As the rate of adoption for fuel cells and industrial batteries increases and more products reach their end of life, designing products to facilitate end-of-life management and maximize materials efficiency is likely to become increasingly important. Fuel cells and batteries may contain hazardous substances, which must be properly disposed of as they can pose human health or environmental risks. The emergence of several laws regarding the end-of-life phase of batteries has recently heightened the importance of the issue, creating potential added costs of managing risks, as well as opportunities, through regulatory incentives. Effective design for disassembly and reuse or recycling will be a key element for increasing recovery rates in order to reduce the lifecycle impacts of fuel cells and batteries. Furthermore, given the input price volatility and resource constraints of some raw materials, fuel cell and industrial battery undertakings that are able to develop take-back and recycling systems and reuse recovered materials in manufacturing may increase their long-term operational efficiency and improve their risk profile.

Working conditions

Fuel cell and industrial battery manufacturing workers may be exposed to hazardous substances or workplace accidentthat can have chronic or acute health impacts. Undertakings could face litigation as a result of injuries or chronic health impacts from working in fuel cell and battery manufacturing or recycling facilities. Undertakings that develop and implement strong safety processes and internal controls, including through providing health and safety training, protective gear, improved ventilation, and regular health monitoring, can improve workforce health and safety performance and mitigate regulatory and litigation risks.

Medical Equipment & Services sector

Energy consumption & mix

Chain drug retailers operate thousands of locations that consume large quantities of energy. Electricity is used primarily for lighting and refrigeration purposes. Energy demand is often increased by the fact that many retail locations operate around the clock. Energy efficiency in operation and the diversification of energy portfolios across a range of supply sources can mitigate exposure to rising energy costs and limit a undertaking's contribution to indirect greenhouse gas emissions.

Resources inflow

Supply chain quality is essential to protecting consumer health and corporate value. Medical equipment and supplies firms that fail to ensure quality and traceability throughout their supply chains are susceptible to fines, lost revenue, and reputational damage. In addition, undertakings may need to manage the use of material inputs that are considered scarce. Disclosure of supply chain audit programs, strategies to ensure traceability, and the management of critical materials may provide shareholders with an understanding of how undertakings in this sub-secor are protecting shareholder value.

Resources outflow

Medical equipment and supplies undertakings face increasing challenges associated with the human and environmental impact of the sector's products. undertakings may face consumer and regulatory pressure to limit the use of material inputs that are associated with health concerns, while also addressing issues such as the energy efficiency and end-of-life disposal of specific products. undertakings that are able to address these concerns while engaging in efforts to enhance product take-back may be better positioned to meet consumer demand and reduce future liabilities.

Economic, social and cultural rights

Legislative emphasis on health care cost containment and increased access is likely to continue to place downward pricing pressures on the Medical Equipment & Supplies sector. This pressure may be further articulated by consolidation among health care providers and the role of government-sponsored insurance programs. undertakings that are able to ensure fair pricing are likely to limit the negative impact of cost containment while recognizing the potential revenue opportunities associated with expanded access.

Information

Medical equipment and supplies undertakings face challenges associated with marketing of specific products. Direct-to-consumer advertisements for medical devices and outreach to physicians provide opportunities for increasing market share. However, challenges arise from the potential for marketing off-label uses, which can result in significant fines and settlements. Corporate disclosure of legal and regulatory fines and the codes of ethics that govern marketing activities will allow shareholders to better understand performance in this area.

Personal safety

The drug retailer sector supply chain is long and complex, consisting of distribution networks between manufacturers and retailers. The ability of undertakings to ensure the quality and safety of pharmaceutical and healthcare products is critical to brand value. The sector faces risks associated with counterfeit drugs, and effective supply chain management is essential in mitigating these challenges. Drug retailers that fail to manage their supply chains may incur costs related to recalls, and such incidents may present significant risks to customers. The importance of this issue is elevated by the prevalence of store-brand products, which constitute a growing portion of drugstore sales.

Risk management

Drug retailers, as distributors of prescription medication and operators of retail health clinics, have access to and manage protected health information. Undertakings often have a legal obligation to safeguard their customers' information, a task that includes the proper handling of sensitive information by staff in pharmacies and clinics, as well as the safe storage of information on physical and electronic media. Cyberattacks may compromise health information that is stored electronically, along with customers' financial and personal data. Drug retailers that prevent major data breaches, including point-of-sales breaches and cyber attacks, can avoid harming brand value, reduce contingent liabilities, and maintain market share.

Products and services

Information on product safety and side effects can surface after controlled clinical trials and approval. Subsequently, undertakings are exposed to the financial implications of recalls and other adverse events. Issues related to product safety, such as equipment failures, manufacturing defects, design flaws, or inadequate disclosure of product-related risks, can lead to significant product liability claims. Firms that limit the incidence of recalls, safety concerns, and enforcement actions for manufacturing concerns may be better positioned to protect shareholder value.

Sustainability governance and organisation

Medical equipment and supplies undertakings are subject to various international, national, and state laws pertaining to health care fraud and abuse. The ability of undertakings to ensure compliance throughout their global and domestic operational footprint may have material implications. Corporate disclosure of legal and regulatory fines and the codes of ethics that govern interactions with health professionals may allow shareholders to monitor performance in this area.

Metal Processing sector

Energy consumption & mix

The production of steel requires significant quantities of energy, sourced primarily from the direct combustion of fossil fuels as well as energy purchased from the grid. Energy-intense production has implications for climate change and electricity purchases from the grid can result in indirect Scope 2 emissions. The choice between different production processes-electric arc furnaces and integrated basic oxygen furnace-can influence whether an undertaking uses fossil fuels or purchases electricity. This decision, together with the choice between using coal versus natural gas or on-site versus grid-sourced electricity, can play an important role in influencing both the costs and reliability of energy supply. Affordable, easily accessible, and reliable energy is an important competitive factor in this sector, with energy costs accounting for a substantial portion of manufacturing costs. The way in which an iron and steel undertaking manages its overall energy efficiency, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative sources of energy can influence its profitability.

Scopes 1 & 2 GHG emissions

Iron and steel production generates significant direct greenhouse gas (GHG) emissions, primarily of carbon dioxide and methane, from production processes and on-site fuel combustion. While technological improvements have reduced the GHG emissions per ton of steel produced, steel production remains carbon-intensive relative to other sectors. Regulatory efforts to reduce GHG emissions in response to the risks posed by climate change may result additional regulatory compliance costs and risks for iron and steel undertakings due to climate change mitigation policies. Operational efficiencies can be achieved through the cost-effective reduction of GHG emissions. Such efficiencies can mitigate the potential financial impact of increased fuel costs from regulations that seek to limit-or put a price on-GHG emissions.

Resources inflow

Iron ore and coal are critical raw material inputs to the steel production process. Iron ore mining and coal production are resource-intensive processes. Extraction of these materials often has substantial environmental and social externalities affecting local communities, workers, and ecosystems. Such impacts can result in disruptions to mining operations due to community protests, legal or regulatory action, or increased costs of extraction as a result of regulatory compliance costs or penalties. Iron and steel undertakings could face disruptions as a result, or in some cases, may also be subject to regulatory penalties associated with the environmental or social impact of the mining undertaking supplier. In order to minimize such risks, iron and steel producers may proactively manage their direct suppliers of critical raw materials to ensure that they are not engaged in illegal or otherwise environmentally or socially damaging practices, through appropriate supplier screening, monitoring, and engagement.

Waste and emissions

While waste reclamation rates in steel production are high, the sector generates significant quantities of hazardous wastes. There are three main waste types in the sector-slag, dusts, and sludges. These by-products are often recycled internally or sold to other sectors. However, process wastes such as electric arc furnace dust can have significant environmental and human health impacts, present a regulatory risk, and result in additional operating costs for undertakings. Risks related to the long-term impacts of waste disposal may result in significant costs, including those associated with contaminated off-site disposal properties, for which iron and steel producers may be held responsible for remediation and restoration activities. Undertakings that reduce waste streams and hazardous waste streams in particular, and recycle or sell non-hazardous by-products, could therefore lower regulatory risks and costs while increasing revenues.

Pollution of air

Iron and steel production typically generates criteria air pollutants, volatile organic compounds (VOCs), and hazardous air pollutants, which can have significant localized public health impacts. Of particular concern are sulfur oxides, nitrogen dioxide, lead, carbon monoxide, and manganese, as well as particles such as soot and dust, which are released during the production process. Across North America, Western Europe, and Japan, technological innovation and continuous improvements in steel-making processes have significantly reduced air pollutants from the Iron & Steel Producers sector. However, air pollutants remain a concern due to heightened regulatory and public concern about air pollution, as well as expansion of steel production in emerging markets. Iron and steel production in emerging markets may be impacted by regulatory efforts aimed at curbing air pollution. Active management of facility emissions through implementation of sector best practices across global operations can facilitate the transition to sustainable steel production, lowering costs and potentially enhancing operational efficiency.

Pollution of water

Steel production requires a substantial amount of water. Undertakings face operational, regulatory, and reputational risks due to water scarcity, costs of water acquisition, regulations on effluents or amount of water used, and competition with local communities and other sectors for limited water resources. This is the case especially in regions of water scarcity, due to potential water availability constraints and price volatility. Undertakings that are unable to secure a stable water supply could face production disruptions, while rising water prices could directly increase production costs. Consequently, the adoption of technologies and processes that reduce water consumption could lower operating risks and costs for undertakings by minimizing the impact of regulations, water supply shortages, and community-related disruptions on undertaking operations.

Working conditions

Industrial processes used in iron and steel production can present significant risks to employees and contractors working at iron and steel plants. Given the high temperatures and heavy machinery involved, worker injuries and fatalities are a matter of concern to iron and steel producers. The sector has relatively high fatality rates, signifying the hazardous work environment and requiring a strong safety culture and health and safety policies. While accident rates in the sector are on a long-term decline, worker injuries and fatalities can lead to regulatory penalties, negative publicity, low worker morale and productivity, and increased healthcare and compensation costs.

Oil & Gas - Midstream & Downstream sector

Scopes 1 & 2 GHG emissions

Oil & Gas - Midstream & Downstream operations generate significant direct greenhouse gas (GHG) emissions, from a variety of sources. Emissions primarily consist of carbon dioxide and methane from the stationary combustion of fossil fuels for energy consumption. Energy costs are a significant share of refinery operating costs. Greenhouse gases are also released from process emissions, fugitive emissions resulting from leaks, emissions from venting and flaring, and from non-routine events such as equipment maintenance. The energy intensity of production, and therefore the GHG emissions intensity, can vary significantly depending on the type of crude oil feedstock used and refined product specifications. undertakings that cost-effectively reduce GHG emissions from their operations can create operational efficiencies. Such reduction can also mitigate the impact on value of increased fuel costs from regulations that seek to limit-or put a put a price on- GHG emissions.

Resources outflow

Human health risks and broad environmental risks such as those associated with climate change have raised concerns about the end use of products such as gasoline from the Oil & Gas - Midstream & Downstream sector. In response, some regulatory jurisdictions have implemented product specifications and renewable fuel blends, which pose significant compliance and operational risks for Oil & Gas - Midstream & Downstream undertakings. undertakings may face long-term reductions in revenue from fossil fuel-based products and services due to GHG mitigation policies such as the renewable fuel mandates or standards, as well as competition from non-fossil fuel products. undertakings that purchase credits known as renewable identification numbers (RINs) to meet regulatory requirements for renewable fuels can face regulatory and cost risks. In order to ensure regulatory compliance and position themselves for long-term competitiveness, some undertakings are investing in or purchasing ethanol and other renewable biofuels. Advanced biofuels and fuel technologies have lower lifecycle impacts than traditional biofuels, and can be used to minimize future regulatory risks and public pressure. Although short-term costs to find commercially viable technologies can be significant, investments in R&D for such technologies could serve to advance Oil & Gas - Midstream & Downstream undertakings' long-term profitability.

Waste and emissions

As a byproduct of their operations, Oil & Gas - Midstream & Downstream undertakings generate various forms of waste derived from the processing and storage of petroleum products. Many of these substances are hazardous to human health and the environment and may be subject to regulation. Remediation of inactive or decommissioned sites often takes several years to be completed, and undertakings may accrue liabilities for past operations. Releases of hazardous substances from underground storage tanks (USTs) used by refining facilities and gas stations can affect redevelopment of land for abandoned or closed facilities. Spills and releases during operations can lead to groundwater contamination and other negative impacts. R&M undertakings that reduce and recycle hazardous waste streams ensure the integrity of their USTs, as well as those that have effective and prompt clean-up and remediation measures in place for normal operations and decommissioned facilities, may enjoy reduced regulatory and litigation risks and associated costs.

Value strategy

Natural gas produces fewer greenhouse gas (GHG) emissions than other fossil fuels. Its expanded use in the economy is therefore a key strategy for many governments and regulators striving to reduce GHG emissions. Despite the relatively lower emissions, however, the natural gas value chain still produces meaningful levels of GHG emissions overall. As policymakers and regulators look to address climate change, efficient consumption of natural gas will be an important theme over the long term. There is a wide range of measures that utilities can take to promote energy efficiency among their customers, including offering rebates for energy-efficient appliances, weatherizing customers' homes, and educating customers on energy saving methods. How a gas utility stands to gain or lose from the trend toward GHG mitigation is significantly predicated on its regulatory environment. Traditional rate structures generally do not give gas utilities an incentive for energy efficiency and, further, they may economically suffer from reductions in customer demand. This is increasingly driving gas utilities, and their regulators and customers, to pursue alternative ratemaking. Such alternative rate design often "decouples" utility revenues from customer consumption and may also build in explicit incentives for successful utility performance in terms of end-use efficiency and demand reductions. Overall, undertakings whose strategic plan includes efficiency initiatives that strive to reduce downside risks from demand fluctuations, gain returns on needed investments, and lower costs are more likely to be well positioned to earn stronger risk-adjusted returns over the long term.

Pollution of air

Non-greenhouse gas (GHG) air emissions from Oil & Gas - Midstream & Downstream operations include criteria air pollutants, Volatile Organic Compounds (VOCs), and hazardous air pollutants, which can have significant, localized human health and environmental impacts. Specific emissions of concern include sulfur dioxide, nitrogen oxides, hydrogen sulfide, particulate matter, and VOCs. Releases occur from stationary combustion sources, storage vessels, flares, and equipment leaks, and may also occur as a result of accidents. Human health impacts and financial consequences for R&M undertakings are likely to be exacerbated the closer a facility is to population centers. Active management of the issue-through technological and process improvements-can allow undertakings to limit the impact of regulations and benefit from operational efficiencies that could lead to a lower cost structure over time.

Pollution of water

Refineries can use relatively large quantities of water depending on their size and the complexity of the refining process. This exposes them to the risk of reduced water availability, depending on their location, and related costs. Extraction of water from water-stressed regions or water contamination may also create tensions with local communities. Refinery operations often require wastewater treatment and disposal, often via on-site wastewater treatment plants before discharge. Reducing water use and contamination through recycling and other water management strategies may result in operational efficiencies for undertakings and lower their operating costs. They could also minimize the impacts of regulations, water supply shortages, and community-related disruptions on operations.

Working conditions

Hazards associated with the operations of undertakings in the Oil & Gas - Midstream & Downsteam sector may present risks to employee health and safety. Such hazards include the handling and processing of hydrocarbons, frequently at high temperatures and pressures during refining operations. Accidents or inadvertent exposures to chemicals and other hazards such as heat or noise may result in fatalities, severe injuries, or illnesses. Releases of hydrocarbons or other hazardous substances as a result of accidents or leaks can also have negative consequences for neighboring communities. A undertaking's ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels, can help prevent accidents, mitigate costs and operational downtime, and enhance workforce productivity.

Economic, social and cultural rights

A de facto objective of regulated gas utilities is to deliver natural gas to customers in a safe, reliable, and environmentally responsible manner. undertakings in the sector are tasked with managing these potentially competing priorities to maintain favorable relations with customers and regulators-and ultimately to earn appropriate returns for shareholders. The affordability of energy, from the utility customer perspective, is particularly challenging to balance, as it often conflicts with other core objectives. Utility energy bills are widely perceived to be increasingly more expensive for low income customers (affordability is determined by both the net cost of energy bills and the underlying economics of customers). Playing a role in ensuring that utility bills are affordable is crucial for utilities in building trust (intangible asset value) with regulators and customers. Quality of regulatory relations is a key value driver for utilities, and one of the more closely analyzed issues by investment analysts. Regulators' willingness, or lack thereof, to grant rate requests, rate structure modifications, cost recovery, and allowed returns is a primary determinant of financial performance and investment risk. Effectively managing affordability may give utilities the opportunity to invest more capital, favorably revise rate structures, and increase allowed returns. Furthermore, utilities that do not effectively manage affordability are increasingly exposed to customers obtaining energy supplies from means other than natural gas (or reducing energy needs) by pursuing alternative energy sources (e. g., industrial customers' use of combined heat and power). Managing affordability involves operating an efficient business with a well-thought-out, long-term perspective and strategy, as well as working closely with regulators and public policymakers on rate structures and, potentially, bill-assistance programs. While the precise nature of financial impacts of affordability are largely determined by utility business models and rate structures, affordability is a critical business issue for utilities to manage in terms of maintaining (and growing) customer bases, building intangible asset value, creating investment and return opportunities, and ultimately delivering shareholder returns.

Material sustainability risks and opportunities

The operations of Oil & Gas - Midstream & Downstream undertakings are often characterized by a high number of hazards, including the handling of flammable, volatile substances, the use of highly reactive chemicals, and the processing of fluids at high temperature and pressure. Releases of hydrocarbons or other hazardous substances as a result of accidents can have significant consequences for an undertaking's workforce, as well as external social and environmental consequences. In addition to effective process safety management practices, undertakings frequently prioritize developing a culture of safety to reduce the probability that accidents and other health and safety incidents will occur. If accidents and other emergencies do occur, undertakings with a strong safety culture are often able to more effectively detect and respond to such incidents. A culture that engages and empowers employees and contractors to work with management to safeguard their own health, safety, and well-being and prevent accidents is likely to help undertakings reduce production downtime, mitigate costs, ensure workforce productivity, and maintain their license to operate.

Management and quality of relationsships with business partners

Regulators are responsible for overseeing issues related to pricing integrity and transparency, which includes the potential for market manipulation by oil and gas undertakings, including Oil & Gas - Midstream & Downstream undertakings. Regulatory agencies focusing on refineries may investigate various competitive factors, including utilization and maintenance decisions, product supply decisions, product margins, and capital planning, creating uncertainty regarding future enforcement. The focus of enforcement actions also includes reporting prices to price index publishers, as well as potential price distortions through trading positions in physical transactions, and swaps, futures, and derivatives. Maintaining market integrity and ensuring transparency in product pricing can therefore lower regulatory risks and liabilities for Oil & Gas - Midstream & Downstream undertakings and protect consumers from unfair pricing.

Anti-corruption

Oil & Gas - Midstream & Downstream sector is subject to numerous sustainability-related regulations and an often rapidly changing regulatory environment. Changes to the legal and regulatory environment may result in material impacts on shareholder value. undertakings in the sector regularly participate in the regulatory and legislative process on a wide variety of environmental and societal issues. Such engagement can result from undertakings seeking to ensure sector views are represented in the development of regulations impacting the sector as well as to represent shareholder interests. At the same time, such engagement to influence environmental laws and regulations may adversely affect undertakings' reputations and ultimately impact a undertaking's social license to operate.

Pulp, Paper & Wood products sector

Energy consumption & mix

Pulp, paper and wood products manufacturing is energy-intensive. In most facilities, energy is derived primarily from the combustion of biomass and fossil fuels, while purchased electricity may also be used in some facilities. Decisions regarding the generation of electricity on-site versus sourcing it from the grid, as well as the use of biomass and other renewable energy, can create trade-offs related to the energy supply's cost and reliability for operations and the extent of the regulatory risk from Scope 1 or other air emissions. The manner in which a undertaking manages its energy efficiency, its reliance on different types of energy and the associated sustainability risks, and its ability to access alternative energy sources is likely to mitigate impacts of energy cost variability.

Scopes 1 & 2 GHG emissions

The manufacturing of pulp, paper and wood products generates direct greenhouse gas (GHG) emissions associated with the combustion of fossil fuels and biomass in stationary and mobile engines, cogeneration boilers, and other processing equipment. undertakings in this sector also typically use significant amounts of carbon-neutral biomass for their energy needs, the use of which can reduce the costs associated with purchasing fossil fuels, as well as mitigate regulatory risk associated with carbon emissions. Emissions associated with fossil fuel sources can create regulatory compliance costs, depending on the magnitude of emissions and the prevailing emissions regulations. undertakings that cost-effectively manage GHG emissions through greater energy efficiency, the use of alternative fuels, or manufacturing process improvements can benefit from improved operating efficiency and reduced regulatory compliance costs.

Resources inflow

Pulp, paper and wood products undertakings source wood and wood fiber from forestry management undertakings, paper fiber recyclers, and forests that the undertakings themselves manage. Supply-chain risks include decreased productivity of forestlands due to management practices or climate change, regulations addressing sustainable forest management, and reputational impacts. To mitigate such risks and satisfy growing customer demand for sustainably sourced fiber and paper products, manufacturers implement forest certification and fiber chain-of-custody standards which verify that virgin and recycled fiber originate from sustainably managed forests. In addition, pulp and paper manufacturers face trade-offs from the use of recovered fiber. Products with recycled content are increasingly in demand, providing a possible avenue for product differentiation, while using recycled fiber can minimise the need for virgin fiber. Conversely, manufacturing products with a greater recycled content can increase waste generation and energy consumption, while recycled fiber can be costlier, given demand-supply gaps. Therefore, undertakings can benefit by optimising recycled fiber use to balance its environmental and economic trade-offs.

Pollution of air

Pulp and paper products mills and wood products manufacturer emit air emissions including sulfur oxides, nitrogen oxides, and particulate matter. The sources of emissions include cogeneration fuel boilers, pulp and paper pressure chambers, wood chip pulping, pulping chemical recovery, and process engines. While emissions from the sector have declined considerably in recent years, emissions abatement expenditures can be significant, while evolving air-quality regulations can create regulatory uncertainty. undertakings that can cost-effectively reduce air emissions can improve operational efficiency, benefit from a lower cost structure, and mitigate regulatory risk.

Pollution of water

Pulp, paper and wood products manufacturing is typically a water-intensive process, with water use occurring during in materials processing, process cooling, and steam generation at on-site energy plants. undertakings require ample, stable water supplies and may produce large volumes of wastewater, the majority of which is treated and returned to the environment. Process water typically contains dissolved organic compounds and other solids, underscoring the importance of water treatment. In addition to water effluents, water availability is an important consideration for the sector, as water scarcity could result in higher supply costs, supply disruptions, or tension with local water users. undertakings can adopt various strategies to address water supply and treatment issues, such as cost-effectively enhancing the recycling of process water, improving production techniques to lower water intensity, and ensuring compliance with water-effluent regulations.

Textiles, Apparels, Footwear & Accessories sector

Resources inflow

The Apparel, Accessories & Footwear industry relies on numerous raw materials as key inputs for finished products, including cotton, leather, wool, rubber, and precious minerals and metals. Sustainability impacts related to climate change, land use, resource scarcity, and conflict in regions where the industry's supply chain operates are shaping the industry's ability to source materials. The ability of undertakings to manage potential materials shortages, supply disruptions, price volatility, and reputational risks is made more difficult by the fact that they source materials from geographically diverse regions through supply chains that often lack transparency. Failure to effectively manage this issue can lead to reduced margins, constrained revenue growth, and/ or higher costs or capital. The types of risk associated with sourcing different materials can require different solutions, including engaging with suppliers, enhancing transparency, using certification standards, and/ or using innovative alternative materials.

Pollution of soil

The Apparel, Accessories & Footwear industry's global supply chain contributes significantly to environmental externalities through water consumption and pollution, as well as air pollution. Water pollution results from the discharge of chemicals during water-intensive dyeing and tanning processes, while air pollution stems from the industry's energy use. These impacts have the potential to damage an undertaking's reputation and to affect cost structures over time. The scale of this issue has historically been intensified by the fact that the industry relies on manufacturing partners in emerging markets where environmental regulations and oversight are limited. However, enhanced scrutiny on the part of stakeholders and consumers, coupled with the development of more stringent regulation in certain regions, has led undertakings throughout the industry to work with suppliers to reduce their environmental impact. Apparel, accessories, and footwear undertakings that leverage their market power to work with suppliers to improve operational efficiencies and resource consumption and limit pollution will be able to mitigate costs associated with increased resource scarcity and regulation. Further, those that engage with suppliers through monitoring, auditing, and strict standards will likely be better positioned to protect shareholder value over the long term.

Working conditions in the value chain

The treatment of workers and the protection of worker rights in the Apparel, Accessories, & Footwear industry's supply chain is of growing concern among consumers, regulators, and leading undertakings. Critical aspects of this issue include employee health and safety, fair pay, child labor, and forced labor. Although undertakings continue to improve performance on this issue, the industry's reliance on a multitiered system of suppliers, subcontractors, labor recruitment firms, and part-time workers makes it difficult to manage. Because undertakings in the industry typically contract with suppliers in countries with the lowest direct costs, the industry's products are often manufactured in countries that have limited regulations or enforcement protecting workers. This dynamic can heighten a undertaking's exposure to reputational risks and impacts on short-and long-term costs and sales. Such effects can arise from increasing regulation and its enforcement in response to high-profile safety or labor incidents, production disruptions due to strikes and other labor-related work stoppages, or through a shift in demand away from undertakings associated with such incidents. Undertakings with strong supply chain standards, monitoring, and engagement with suppliers to address labor concerns may therefore be better positioned to protect shareholder value and stakeholder interests over the long term.

Products and services

Consumer Product Safety and Restriction of Chemicals legislation in the EU demonstrate increasing regulatory and stakeholder concern surrounding the use of harmful or potentially harmful substances in consumer products, including apparel, accessories, and footwear. Finished apparel and footwear products have been found to contain traces of chemicals that have been banned or regulated. Depending on the chemical, the amount present in a product, and the type of exposure that consumers face, specific substances can be carcinogenic, and can disrupt hormone activity in humans and other organisms. Failure to manage this issue may generate additional regulatory oversight and impact an undertaking's social license to operate. In addition, the presence of harmful chemicals in products can lead to recalls, litigation, and reputational damage. Undertakings in this industry can work in both the design and manufacturing phases to manage the use of chemicals of concern, develop safe alternatives, and eliminate those that have been banned. Given the industry's reliance on outsourced manufacturing, this involves

proactive partnerships with suppliers. In managing this issue, undertakings must balance the hazard posed to consumers presented by certain chemicals with the quality of a product and its costs of production.

Tobacco sector

Information

Many workers in the Airlines sector are covered under collective bargaining agreements that cover fair wages, safe working conditions, and freedom of association, which are among basic worker rights. Unionization of key personnel may result in higher labor costs via wage or benefits increase. At the same time, labor practices can impact the long-term profitability of the business. Effective management of, and communication around, issues such as worker pay and working conditions can prevent conflicts with workers that could lead to extended periods of strikes, which can slow or shut down operations and damage an undertaking's reputation, potentially reducing revenue and market share.

Personal safety

Driving is a risky activity, as distracted driving, speeding, drunk driving, and dangerous weather conditions, among other factors, can lead to accidents that expose drivers, passengers, and bystanders to possible injuries and deaths. Accidents can also be caused by defective parts in vehicles, and failure to detect defects before vehicles are sold can have significant financial repercussions for both automobile and auto parts manufacturers. Ensuring vehicle safety and responding in a timely manner when defects are identified can protect auto parts undertakings from regulatory action or customer lawsuits, which might otherwise result in significant costs. It can also help them retain their relationships with original equipment manufacturers (OEMs), which often select Tier 1 suppliers based on their safety performance and reliability. As cars incorporate more sophisticated electronics and other technologies, the risks related to recalls may increase. Through effective management of product safety, auto parts undertakings can enhance their reputation and drive higher sales over the long term.

Toys, Sporting goods & Musical instruments sector

Working conditions in the value chain

Cruise lines offer a variety of luxury experiences and activities to their customers, including elaborate shows, casinos, fine dining, indoor skydiving, spa treatments, swimming, and fitness facilities. Each activity comes with its own set of health risks and safety challenges and liabilities that cruise undertakings must navigate. Consumer expectations for safety and comfort are high, so issues such as health risks and physical safety risks are especially important to avoid. Highly publicized cases of crimes, injuries, and illnesses onboard cruise ships can have serious impacts on brand value and ticket sales. There may also be high costs associated with customer lawsuits. While crime rates are low when compared to crime statistics in most developed countries, law enforcement is much trickier, and cases are not as easy to resolve as it is common for ships to take passengers to international waters and to fly a foreign flag, creating uncertainty about which jurisdictions are responsible for law enforcement needs. Undertakings can protect customer health and safety through implementation of a robust safety management system.

Products and services

The Airlines sector is characterized by competitive margins due to high fixed capital and labor costs and competition with government-subsidized carriers in some markets. This pushes airlines to find economies of scale through alliances or consolidation, leading to concentration of the market. The sector is also characterized by high barriers to entry due to limited landing rights and increasing airport congestion. Together, these characteristics may lead undertakings to engage in anti-competitive practices that increase prices for consumers. As a result, antitrust authorities have scrutinized certain airline sector practices such as airport slot management, predatory pricing, and alliances and mergers. This creates a material risk to investors stemming from legal fees, reputational risk, costs associated with a delayed merger or acquisition transaction, and limits on growth by acquisition or merger.

Mining sector group

Coal Operations sector

Scopes 1 & 2 GHG emissions

Coal operations are energy intensive and generate significant direct greenhouse gas (GHG) emissions, including carbon dioxide from fuel use and methane released from coal beds during mining and post-mining activities. This topic covers direct and energy indirect GHG emissions (Scope 1 and Scope 2) related to an undertaking's activities, as well as other indirect GHG emissions (Scope 3) related to the end use of an undertaking's products. Regulatory efforts to reduce GHG emissions in response to the risks posed by climate change may result in higher operating and capital expenditures based on the magnitude of their direct emissions. Operational efficiencies can be achieved through the cost-effective reduction of GHG emissions. Such efficiencies can mitigate the potential financial impact of increased fuel costs from regulations that seek to limit - or put a price on - GHG emissions.

Resources inflow

Estimates suggest that coal undertakings may be unable to extract a significant proportion of their coal reserves if greenhouse gas (GHG) emissions are to be controlled to limit global temperature increases to two degrees Celsius per the Paris Agreement. Stewardship of capital resources while taking into account medium-to long-term trends, particularly related to climate change mitigation actions, is critical in order to prevent asset impairment and maintain profitability and creditworthiness. Globally, regulations and policies are and may continue to be put into place to limit GHG emissions from coal-fired power plants - the customers of coal undertakings - thus lowering the demand for, and subsequently the prices of, coal. Coal demand is also being affected by regulations governing other harmful air emissions that apply to coal-fired power plants. An expansion of GHG-mitigation regulations may increase the magnitude of potential financial impacts in the medium to long term. Along with improved competitiveness of alternative energy technologies, this poses a long-term risk for the reserves and capital expenditures of coal operations undertakings.

Waste and emissions

Handling of solid rock and clay waste, process refuse, and liquid coal waste containing hazardous substances like mercury, arsenic, and cadmium poses operational and regulatory challenges for coal operations undertakings. Coal slurry or tailings ponds can present a significant threat if the impoundments burst, collapse, or leak, leading to destruction of lives, property, and ecosystems, with associated financial impacts that may include regulatory penalties, compensation payments, and remediation or compliance obligations. Permitting of mining operations may be affected, lowering a undertaking's revenue or requiring additional expenditures prior to approval. undertakings' ability to lower the number and size of tailings ponds and ensure the structural integrity of impoundments can help minimise such impacts.

Pollution of water

Coal operations have an impact on both the quality and quantity of local water resources. Coal operations are water intensive. The use of water in coal washing to remove sulfur, in cooling drilling equipment, and in transporting coal in slurry pipelines can impact resources. The severity of these risks can vary depending on the region's water availability and the regulatory environment. Reducing water use and contamination could also create operational efficiencies for undertakings and lower their operating costs. Wastewater treatment and discharge is often regulated by national or local agencies. Violating limits on selenium, sulfate, and dissolved solids could affect coal operations undertakings through significant penalties, compliance costs, delays in production, or higher costs related to mine closure.

Impact metrics

Coal operations can have a range of impacts on biodiversity. Surface mining and mountaintop removal can alter the landscape, removing vegetation and wildlife habitats. Acid mine drainage is particularly significant: it is highly acidic water, rich in heavy metals, formed when surface and shallow subsurface water comes into contact with coal mining overburden, and can have harmful effects on humans, animals, and plants. Biodiversity impacts of coal operations can affect the valuation of reserves and create operational risks. The environmental characteristics of the land where reserves are located could increase extraction costs as a result of increasing awareness and protection of ecosystems. undertakings could also face regulatory or reputational barriers to accessing reserves in ecologically sensitive areas, such as the designation of areas where reserves are located as protected areas. Coal operations undertakings face regulatory risks related to reclamation after a mine is decommissioned, per applicable regulatory requirements to restore mined property according to a prior, approved reclamation plan. Material costs may arise from removing or covering refuse piles, fulfilling water treatment obligations, and dismantling infrastructure at the end of life. Furthermore, ongoing coal operations are subject to laws protecting endangered species. undertakings that have an effective environmental management plan for different stages of the project lifecycle may minimise their compliance costs and legal liabilities, face less resistance in developing new mines, avert delays in project completion, and avoid difficulties in obtaining permits and accessing reserves.

Working conditions

Safety is critical to coal mining operations due to the often hazardous working conditions. Fatalities or injuries can result from a number of hazards associated with the sector, including accidents, cave-ins, explosions, and flooding. Due to these hazards, the sector is characterised by higher-than-average fatality and injury rates. Coal miners are also susceptible to long-term health risks such as chronic lung disease, commonly known as “black lung” disease, as well as mental health problems. Specific federal health and safety laws protect coal mining workers and make provisions for compensation for black lung disease. These can impose additional costs on undertakings or lead to regulatory penalties. Changes in legislation can result in additional liabilities. A undertaking’s ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels, can help prevent accidents, mitigate costs and operational downtime, and enhance workforce productivity.

Other work-related rights

Coal mining undertakings face inherent tension between the need to lower the cost of labour to remain price-competitive and the need to manage human resources to ensure long-term performance. Working conditions related to coal operations are usually physically demanding and hazardous. Labour unions play a key role in representing workers’ interests and managing collective bargaining for better wages and working conditions. This makes the management of labour relations critical, as conflict with workers can result in labour strikes and other disruptions that can delay or stop production, leading to significant lost revenue and reputational damage. Continued labour stresses can impact the long-term profitability of the undertaking. At the same time, positive outcomes of effective labour engagement can include enhanced work practices, labour utilisation, as well as the reduction in safety incidents, accidents, or fatalities.

Child labour is defined as work that ‘deprives children of their childhood, their potential and their dignity, and that is harmful to their physical or mental development including by interfering with their education'. Freedom from child labour is a fundamental human right. Coal is identified as produced with the use of child labour in several countries. Coal mining activities are dangerous to children in various ways. Children face multiple hazards in coal mines, such as severe accidents and injuries, falling rocks, explosions, fires, and collapse of mine walls. Other impacts can result from working in remote areas with limited access to schools and social services. If there is no family or community support, the conditions may also foster alcohol abuse, drugs, and prostitution. Coal undertakings interact with a high number of suppliers and customers, including in countries with low enforcement of human rights. undertakings can be linked to child labour by business relationships in their supply chains, such as during facilities construction. Risks of child labour in the coal sector are often found in artisanal and small- scale mining, with more prevalence in the informal sector and remote areas. Child labour is also more frequent in areas affected by armed conflict. Other impacts on children’s rights and well-being can result from the coal sector’s impacts on the local communities as well as from undertaking’s employment practices. These can include parents’ working conditions, long hours, shift work, and fly-in-fly-out practices.

Civil and political rights

Coal operations take place over a number of years and can have a wide range of community impacts. Community rights and interests may be affected by the environmental and social impacts of operations, air emissions, waste generation, wastewater discharges, and decommissioning activities. Coal operations undertakings often need support from local communities to be able to obtain permits and leases and conduct their activities without disruptions. The expected value of reserves could be affected if the community interferes or lobbies its government to interfere with the rights of a coal undertaking in relation to those reserves. In addition to community concerns about the direct impacts of projects, the presence of coal mining activities may give rise to associated socioeconomic concerns related to education, health, and livelihoods. Coal undertakings that are perceived as engaging in rent-seeking and exploiting community resources without providing any socioeconomic benefits in return may be exposed to the risk of resource nationalism actions by host governments and communities that restrict their activities or impose additional costs. undertakings in the extractives sectors can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests, such as integrating community engagement into each phase of the project cycle. Undertakings that adopt a “shared value” approach may be able to provide key socioeconomic benefits to communities while maintaining profitable operations.

Particular rights of indigenous peoples

Undertakings in the Coal Operations sector can operate and hold assets in areas occupied by indigenous peoples. undertakings perceived as contributing to human rights violations or failing to account for indigenous peoples’ rights may be affected due to protests, riots, or suspension of permits. They could face substantial costs related to compensation or settlement payments, and write-downs in the value of their reserves in such areas. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for undertakings. These instruments include obtaining the free, prior, and informed consent of indigenous peoples for decisions that affect them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples’ rights, creating increasing regulatory risk for undertakings. Furthermore, indigenous peoples are often vulnerable sections of the population, with limited capacity to defend their unique rights and interests.

Mining sector

Energy consumption & mix

Mining and metals production is often energy-intensive, with a significant proportion of energy consumption in the sector accounted for by purchased electricity. While fuel combustion on-site contributes to the sector's direct (Scope 1) GHG emissions, electricity purchases from the grid can result in indirect, Scope 2 emissions. The energy intensity of operations may increase with decreasing grades of deposits and increasing depth and scale of mining operations. The choice between on-site versus grid-sourced electricity, and use of alternative energy, can play an important role in influencing both the costs and reliability of energy supply. Affordable and easily accessible energy is an important competitive factor in a commodity market driven by global competition, and purchased fuels and electricity can account for a significant proportion of total production costs. The way in which an undertaking manages its overall energy efficiency and intensity, its reliance on different types of energy, and its ability to access alternative sources of energy, can therefore be a material factor.

Scopes 1 & 2 GHG emissions

Mining operations are energy-intensive and generate significant direct greenhouse gas (GHG) emissions, including carbon dioxide from fuel use during mining, ore processing, and smelting activities. The extent and type of GHG emissions can vary depending on the metal mined and processed. Regulatory efforts to reduce GHG emissions in response to the risks posed by climate change may result in additional regulatory compliance costs and risks for metals and mining undertakings due to climate change mitigation policies. Operational efficiencies can be achieved through the cost-effective reduction of GHG emissions. Such efficiencies can mitigate the potential financial impact of increased fuel costs from regulations that seek to limit-or put a price on-GHG emissions.

Waste and emissions

The Metals & Mining sector generates large volumes of mineral processing and smelting wastes, including slags and tailings, some of which may be hazardous or chemically reactive. Impoundments for tailings can cover large areas of land. This can present a significant threat if the impoundments burst, collapse, or leak, leading to the loss of life or damage to property and ecosystems. Mineral wastes are also often stored in-pit, using abandoned open pit surface mines. Such storage can create the potential for groundwater contamination and could affect the stability of active mines in the area. Undertakings that reduce and recycle waste streams while implementing policies to manage risks related to the integrity of tailings facilities may enjoy lower regulatory and litigation risks, remediation liabilities, and costs. Additionally, tailings can contain hazardous chemical residues from extraction and processing operations. Undertakings' ability to manage the sourcing, transport, use, and disposal of mining and metal processing chemicals and by-products can reduce associated risks.

Pollution of air

Non-greenhouse gas (GHG) air emissions from the Metals & Mining sector include hazardous air pollutants, criteria air pollutants, and Volatile Organic Compounds (VOCs) from smelting and refining activities. These can have significant, localized human health and environmental impacts. Depending on the metal, uncaptured sulfur dioxide, lead, mercury, cadmium, and arsenic are among the chief pollutants, along with particulate matter. Financial impacts resulting from air emissions will vary depending on the specific location of operations and the applicable air emissions regulations. Active management of the issue-through technological and process improvements-could allow undertakings to limit the impacts of increasingly stringent air quality regulations globally. Undertakings could also benefit from operational efficiencies that could lead to a lower cost structure over time.

Pollution of water

Mining and metals production can impact both the availability and the quality of local water resources. Metals and mining undertakings face operational, regulatory, and reputational risks due to water scarcity, costs of water acquisition, regulations on effluents or amount of water used, and competition with local communities and other sectors for limited water resources. Impacts associated with water management may include higher costs, liabilities, and lost revenues due to curtailment or suspension of operations. The severity of these risks can vary depending on the region's water availability and the regulatory environment. Undertakings in the sector may deploy new technologies to manage risks related to water risk, including desalination, water recirculation, and innovative waste-disposal solutions. Reducing water use and contamination can create operational efficiencies for undertakings and lower their operating costs.

Impact metrics

The development, operation, closure, and remediation of mines can have a range of impacts on biodiversity, such as alterations of landscape, vegetation removal, and impacts to wildlife habitats. Acid rock drainage is a particularly significant risk: it is highly acidic water, rich in heavy metals, formed when surface and shallow subsurface water come into contact with mining overburden. Acid rock drainage can have harmful effects on humans, animals, and plants. Biodiversity impacts of mining operations can affect the valuation of reserves and create operational risks. The environmental characteristics of the land where reserves are located could increase extraction costs due to increasing interest in the protection of ecosystems. Undertakings could also face regulatory or reputational barriers to accessing reserves in ecologically sensitive areas. This may include new protection status afforded to areas where reserves are located. Metals and mining undertakings face regulatory risks related to reclamation after a mine is decommissioned, per applicable regulatory requirements to restore mined property according to a prior, approved reclamation plan. Material costs may arise from removing or covering refuse piles, meeting water treatment obligations, and dismantling infrastructure at the end of life. Furthermore, ongoing mining operations are subject to laws protecting endangered species. Undertakings that have an effective environmental management plan for different stages of the project lifecycle may minimize their compliance costs and legal liabilities, face less resistance in developing new mines, and avoid difficulties in obtaining permits, accessing reserves, and facing delays in project completion.

Working conditions

Safety is critical to mining operations due to the often hazardous working conditions. The Metals & Mining sector has relatively high fatality rates compared to other sectors. Fatalities or injuries can result from a number of hazards associated with the sector, including powered haulage and machinery as well as mine integrity. Poor health and safety records can result in fines and penalties, and an increase in regulatory compliance costs from more stringent oversight. An undertaking's ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels, can help prevent accidents, mitigate costs and operational downtime, and enhance workforce productivity.

Other work-related rights

Metals and mining undertakings face inherent tension between the need to lower the cost of labour to remain price competitive, and to manage human resources to ensure long-term performance. Working conditions related to metal and mining operations are usually physically demanding and hazardous. Labour unions play a key role in representing workers' interests and managing collective bargaining for better wages and working conditions. At the same time, metals and mining undertakings often operate in areas where worker rights are not adequately protected. The nuances of both domestic and international worker concerns make management of labour relations critical for metals and mining undertakings. Conflict with workers can result in labour strikes and other disruptions that can delay or stop production. Work stoppages frequently result in significant lost revenue and reputational damage. Continued labour stresses can impact the long-term profitability of the business. At the same time, positive outcomes of effective labour engagement can include enhanced work practices, labour utilisation, as well as the reduction in safety incidents, accidents, or fatalities.

Civil and political rights

Mining facilities are frequently active over long periods of time, and undertakings may be involved in multiple projects in a region that can have a wide range of community impacts. Community rights and interests may be affected through environmental and social impacts of mining operations, such as competition for access to local energy or water resources, air and water emissions, and waste from operations. Mining undertakings rely upon support from local communities to be able to obtain permits and leases as well as to conduct their activities without disruptions. Undertakings may experience adverse financial impacts if the community interferes, or lobbies its government to interfere, with the rights of a mining undertaking in relation to their ability to access, develop, and produce reserves. In addition to community concerns about direct impacts of projects, the presence of mining activities may give rise to associated socio-economic concerns, such as education, health, livelihoods, and food security for the community. Metals and mining undertakings that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any socio-economic benefits in return may be exposed to the risk of actions, motivated by resource nationalism, and by host governments and communities. These could include imposition of ad hoc taxes and export restrictions. Undertakings in the extractives sectors can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests. Strategies are often underpinned by the integration of community engagement into phases of the project cycle. Undertakings are beginning to adopt a "shared value" approach to provide a key socio-economic benefit to the community while allowing the undertaking to profitably operate.

Particular rights of indigenous peoples

Metals and mining undertakings face additional community-related risks when operating in conflict zones and in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights. They also face risks when operating in areas with vulnerable communities, such as indigenous peoples. undertakings using private or government security forces to protect their workers and assets may knowingly, or unknowingly, contribute to human rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. undertakings perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits. They could face substantial costs related to compensation or settlement payments, and write-downs in the value of their reserves in such areas. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for undertakings. These instruments include obtaining the free, prior, and informed consent of indigenous peoples for decisions affecting them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for undertakings.

Sustainability governance and organisation

Managing business ethics and maintaining an appropriate level of transparency in payments to governments or individuals are significant issues for the mining sector. This is due to the importance of government relations to undertakings' ability to conduct business in this sector and to gain access to mining reserves. The emergence of several anti-corruption, anti-bribery, and payments-transparency laws and initiatives create regulatory mechanisms to reduce certain risks. Violations of these laws could lead to significant one-time costs or higher ongoing compliance costs, whereas successful compliance with such regulations could provide risk mitigation opportunities and avoid adverse outcomes. undertakings with significant reserves or operations in corruption-prone countries could face heightened risks. undertakings are under pressure to ensure that their governance structures and business practices can address corruption and wilful or unintentional participation in illegal or unethical payments or gifts to government officials or private persons.

Oil & Gas - Upstream & Services sector

Scopes 1 & 2 GHG emissions

Exploration &Production (E&P) activities generate significant direct greenhouse gas (GHG) emissions from a variety of sources. Emissions can be combusted, including those arising from flaring or power generation equipment, as well as uncombusted, including those emissions arising from gas processing equipment, venting, flaring, and fugitive methane. Regulatory efforts to reduce GHG emissions in response to the risks posed by climate change may result in additional regulatory compliance costs and risks for E&P undertakings. With natural gas production from shale resources expanding, the management of the emission of methane, a highly potent GHG, from oil and gas E&P systems has emerged as a major operational, reputational, and regulatory risk for undertakings. Furthermore, the development of unconventional hydrocarbon resources may be more or less GHG-intensive than conventional oil and gas, with associated impacts to regulatory risk. Energy efficiency, use of less carbon-intensive fuels, or process improvements to reduce fugitive emissions, venting, and flaring, can provide benefits to E&P undertakings in the form of climate risk mitigation, lower costs, or increased revenues.

While direct greenhouse gas (GHG) emissions and associated regulatory risks are relatively low for oil and gas services providers relative to other sectors, emissions from the operations of their customers-the oil and gas exploration and production (E&P) undertakings-can be significant. Emissions include GHGs that can contribute to climate change as well as other air pollutants that can have significant localized human health and environmental impacts. Increasing regulation and high costs of fuels associated with these emissions present substantial risk to E&P undertakings. This is driving undertakings to seek ways to lower their emissions, including converting pumps and engines to run on natural gas instead of diesel fuel. Oil and gas services undertakings compete for contracts with E&P undertakings partly on the basis of providing cutting-edge, efficient technologies that can help customers reduce costs and improve process efficiencies. Services undertakings can gain a competitive advantage and protect their revenues and market share by providing customers with services and equipment that reduce the emissions and fuel consumption of E&P activities, and by capturing saleable gas that may otherwise be flared or escape through leaks.

Resources inflow

Estimates suggest that exploration and production (E&P) undertakings may be unable to extract a significant proportion of their proved and probable oil and gas reserves if greenhouse gas (GHG) emissions are to be controlled to limit global temperature increases to two degrees Celsius as per the Paris Agreement. undertakings with more carbon-intensive reserves and production and higher capital costs are likely to face greater risks. Regulatory limits on GHG emissions, together with improved competitiveness of alternative energy technologies, could lower or reduce the growth in global demand, and therefore reduce prices for oil and gas products. Extraction costs could increase with regulations that put a price on GHG emissions. These factors could affect the economic viability to extract oil and gas reserves. Regulatory actions that are more abrupt than anticipated, or those focusing on sectors with high emissions, could impair asset values over a short period of time. Stewardship of capital resources and production decisions that take into account near-and long-term trends related to climate change mitigation actions can help prevent current asset impairment and maintain profitability and creditworthiness.

Waste and emissions

Oil and Gas -Services undertakings produce oilfield chemicals as well as drilling and hydraulic fracturing fluids based on demand from Exploration & Production (E&P) undertakings. While the risk of leaks from a properly drilled and completed well is low, contamination of local water resources can result from contact with hydraulic fracturing fluids and produced water and may arise from issues related to well integrity. Concerns about certain chemicals used in hydraulic fracturing fluids have led to fracturing bans, regulation, and legislative proposals to mandate disclosure of chemicals used in some regions. The exact chemical composition of hydraulic fracturing fluids is often proprietary information, and undertakings compete to create the most effective formulas. Some undertakings are voluntarily disclosing information about the hydraulic fracturing chemicals they use through an sector registry, FracFocus. Due to public and regulatory attention to the potential hazards of drilling fluids, undertakings that are able to manage issues related to well development and integrity, the production and use of produce effective non-hazardous fracking fluids, and the reduction of the volumes of drilling fluids used per well, may increase their market share and revenues and lower the risk that regulations affect demand for their products.

Pollution of air

Air emissions from E&P operations other than greenhouse gas emissions include hazardous air pollutants, criteria air pollutants, and volatile organic compounds (VOCs), which can have significant, localized human health and environmental impacts. Of particular concern are sulfur dioxide, nitrogen dioxide, and VOC emissions. The financial impacts on undertakings from air emissions will vary depending on the specific locations of operations and the prevailing air emissions regulations. As E&P operations expand close to population centers, the impacts on human health are likely to be exacerbated if air emissions limits are breached. Active management of the issue-through technological and process improvements-could allow undertakings to limit the impact of regulations in an environment of increasing regulatory and public concerns about air quality. undertakings could benefit from operational efficiencies that may lead to a lower cost structure over time.

Pollution of water

Depending on the extraction technique, exploration and production operations may consume significant quantities of water, which may expose undertakings to the risk of reduced water availability, regulations limiting usage, or related cost increases, particularly in water-stressed regions. Contamination of local water resources can result from incidents involving produced water, flowback water, hydraulic fracturing fluids, and other well fluids. Historically, there has been concern regarding the impacts of hydraulic fracturing operations on the contamination of groundwater supplies. Concerns about chemicals used in hydraulic fracturing fluids have led to increased disclosure by undertakings through a voluntary sector registry, FracFocus. There have also been related state regulations, as well as legislative proposals to repeal federal exemptions for hydraulic fracturing operations. Reducing water use and contamination through recycling, other water management strategies, and use of non-toxic fracturing fluids could create operational efficiency for undertakings and lower their operating costs. Such strategies could also minimize the impacts that regulations, water supply shortages, and community-related disruptions have on operations.

Oil and gas producers also face risks and costs associated with wastewater disposal. As such, undertakings that provide these oil and gas producers with services have developed technologies and processes such as closed-loop water recycling systems to reduce customers' water consumption and disposal costs. These offerings provide service undertakings the potential to gain market share and increase revenues, as management of drilling and wastewater can be a significant competitive factor for their customers.

Impact metrics

The exploration and production (E&P) sector's activities can have significant impacts on biodiversity. Examples include habitat loss and alteration through land use for exploration, production, disposing of drilling and associated wastes, and decommissioning of onshore and offshore wells. Oil spills and leaks are a threat to species and habitats impacted by hydrocarbon contamination. Biodiversity impacts of E&P operations can affect the valuation of oil and gas reserves and create operational risks. The environmental characteristics of the land where reserves are located could increase extraction costs as a result of increasing awareness and protection of ecosystems, making such reserves uneconomical to extract. undertakings could also face regulatory or reputational barriers to accessing reserves in ecologically sensitive areas. This may include new protection statuses afforded to areas where reserves are located. Areas such as the Arctic and certain shorelines with mangroves and swamps are not only extremely ecologically sensitive, but also entail more complex and expensive cleanup operations if hydrocarbon spills or leaks occur there. Negative future impacts on the value of reserves could be mitigated by taking into consideration the location of reserves in or near protected areas when making investment or capital expenditure decisions. undertakings with a good track record of minimizing biodiversity impacts could gain a competitive advantage in accessing new reserves in or near protected areas. Ongoing E&P operations could be at risk in the absence of effective environmental management plans for different stages of the project lifecycle, due to regulatory penalties, litigation, community protests, and associated costs.

Pollution of soil

Oil and gas exploration and development activities, and associated services and support activities, can have significant impacts on biodiversity and ecosystems, particularly when undertakings operate in ecologically sensitive areas or are characterized by highly resource-intensive operations. These can occur through disposal of drilling and associated wastes, well decommissioning, land use, and fuel spills. Producers face regulatory risks from legislation and permitting to protect ecosystems, and from regulations specifically related to well decommissioning or underground waste injection. Oil and gas services undertakings that are able to offer cost-effective and efficient production and decommissioning technologies that mitigate impacts on biodiversity by reducing land use, drilling wastes, and spills can lower associated risks for their customers and gain a competitive advantage.

Working conditions

Workers involved in in the service sector and those within exploration and production (E&P) activities face significant health and safety risks due to the harsh working environments and the hazards of handling oil and gas. In addition to acute impacts resulting from accidents, workers may develop chronic health conditions, including those caused by silica or dust inhalation, as well as mental health problems. A significant proportion of the workforce at oil and gas drilling sites consists of temporary workers and employees of Oil and Gas Services undertakings. Therefore, health impacts on, and the safety performance of, such workers also have impacts on E&P and Service undertakings by influencing worker productivity and costs. Additional health and safety protocols may be needed to protect women and minorities, particularly when they operate in regions where they continue to face discrimination. Services undertakings compete on the basis of their reputation and ability to perform activities on a consistently safe basis. Customers evaluate instances of accidents, spills, injuries, and fatalities when considering awarding contracts to services undertakings.

Sustainability governance and organisation

Civil and political rights

Exploration and production (E&P) activities take place over a number of years, and undertakings may be involved in multiple projects in a region that can have a wide range of community impacts. Community rights and interests may be affected by environmental and social impacts of E&P operations, such as competition for access to local energy or water resources, air and water emissions, and waste from operations. E&P undertakings frequently need support from local communities to be able to obtain permits and leases and conduct their activities without disruptions. undertakings may experience adverse financial impacts if the community interferes, or lobbies its government to interfere, with the rights of an E&P undertaking in relation to their ability to access, develop, and produce reserves. In addition to community concerns about the direct impacts of projects, the presence of E&P activities may result in associated socioeconomic impacts related to education, health, livelihoods, and food security for the community. E&P undertakings that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any socioeconomic benefits in return may be exposed to the risk of resource nationalism actions by host governments and communities. These could include imposition of ad hoc taxes and export restrictions. These risks may vary depending on the country, and could be higher in countries heavily reliant on oil and gas for their economic growth. undertakings in the extractives sectors can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests, such as integrating community engagement into each phase of the project cycle. undertakings are beginning to adopt a "shared value" approach to provide a key socioeconomic benefit to the community while allowing the undertaking to profitably operate.

Particular rights of indigenous peoples

Exploration and production (E&P) undertakings face additional community-related risks when operating in conflict zones; in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights; or in areas with vulnerable communities such as indigenous peoples. undertakings using private or government security forces to protect their workers and assets may knowingly or unknowingly contribute to human rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. undertakings perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits. They could face substantial costs related to compensation or settlement payments and write-downs in the value of their reserves in such areas. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for undertakings, including obtaining the free, prior, and informed consent of indigenous peoples for decisions that affect them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for undertakings.

Material sustainability risks and opportunities

The exploration and production (E&P) sector faces significant hazards associated with exploration, development, and production activities. Releases of hydrocarbons or other hazardous substances as a result of accidents can also have significant consequences for an undertaking's workforce, as well as external social and environmental consequences. In addition to effective process safety management practices, undertakings frequently prioritize developing a culture of safety to reduce the probability that accidents and other health and safety incidents will occur. If accidents and other emergencies do occur, undertakings with a strong safety culture are often able to more effectively detect and respond to such incidents. A culture that engages and empowers employees and contractors to work with management to safeguard their own health, safety, and well-being and prevent accidents is likely to help undertakings reduce production downtime, mitigate costs, ensure workforce productivity, and maintain their license to operate.

Services undertakings are subject to significant risks associated with low-probability, high-consequence events associated with oil and gas exploration, development, and production activities. Such events may result in multiple fatalities, significant property damage, or a significant adverse impact to the environment. Services undertakings may be affected indirectly through the impacts that safety incidents or emergencies can have on their Exploration &Production (E&P) customers. Additionally, significant incidents can have wide-ranging negative social and environmental consequences, for which both E&P and service undertakings may be held liable. Services undertakings compete on the basis of their reputation and ability to perform activities on a consistently safe basis. In addition to implementing effective process safety management practices, undertakings frequently prioritize developing a strong culture of safety in order to reduce the probability that accidents and other health and safety incidents will occur. If accidents and other emergencies do occur, undertakings with a strong safety culture are often able to more effectively detect and respond to such incidents. A culture that engages and empowers employees and contractors to work with management and E&P undertakings in order to safeguard their own health, safety, and well-being and to prevent accidents is likely to help services undertakings reduce risks to financial value.

Sustainability governance and organisation

With operations across the globe, oil and gas services undertakings interact with many government and local officials, either directly or through agents, in order to secure contracts with state-owned oil undertakings and multinational corporations. Bribery and corruption are common in some regions, and in others, to the transparency of payments to governments may be a significant issue. The emergence of several anti-corruption, anti-bribery, and payments-transparency laws and initiatives create regulatory mechanisms to reduce certain risks. Violations of these could lead to significant one-time costs or higher ongoing compliance costs, whereas successful compliance with such regulations could provide risk mitigation opportunities and avoid adverse outcomes. Oil and gas services undertakings are under pressure to ensure that their governance structures and practices can address corruption, wilful or unintentional participation in illegal or unethical payments and gifts to government officials or private persons, or the risk of otherwise unfairly influencing these individuals, especially in areas of heightened risk.

Anti-corruption

The Oil & Gas – Services sector and the Exploration & Production sector is subject to numerous sustainability-related regulations and an often rapidly changing regulatory environment. Changes to the legal and regulatory environment may result in material impacts on shareholder value. undertakings in the sector regularly participate in the regulatory and legislative process on a wide variety of environmental and societal issues, and may do so directly or through representation by an sector association. Such engagement can result from undertakings seeking to ensure sector views are represented in the development of regulations impacting the sector as well as to represent shareholder interests. At the same time, such engagement to influence environmental laws and regulations may adversely affect undertakings' reputations with stakeholders and ultimately impact the undertaking's social license to operate. undertakings that are able to balance these viewpoints may be better positioned to respond to medium-to long-term regulatory developments.

Real Estate sector group

Real Estate & Services sector

Energy consumption & mix

Real estate assets consume significant amounts of energy, primarily related to space heating, ventilating, air conditioning, water heating, lighting, and the use of equipment and appliances. The type of energy used, magnitude of consumption, and strategies for energy management are highly dependent on the real estate asset class, among other factors. Generally, grid electricity consumption is the predominant form of consumed energy, though on-site fuel combustion and renewable energy production also serve an important roles. Energy costs may be borne by undertakings in the sector and/ or the property occupants; either way, energy management is a significant sector issue. To the extent that the real estate owner assumes direct responsibility for energy costs, such costs often represent significant operating costs, inherently indicating the importance of energy management. Energy pricing volatility and a general trend of electricity price increases, energy-related regulations, wide variations in energy performance across the existing building stock, and opportunities for efficiency improvements through economically attractive capital investments all further point to the importance of energy management. Energy costs assumed by occupants, either in whole or in part, are nonetheless likely to significantly impact undertakings in the sector, albeit through differing channels. Building energy performance is a notable driver of tenant demand, as it allows them to control operating costs, mitigate the environmental impacts of operations, and, often just as importantly, maintain a reputation for resource conservation. Additionally, real estate owners may be exposed to energy-related regulations even when energy costs are the responsibility of occupants. Overall, undertakings in the sector that effectively manage the energy performance of their assets may see reduced operating costs and regulatory risks, as well as increased tenant demand, rental rates, and occupancy rates-all of which drive revenue and asset value appreciation. Improving the energy performance of assets is highly dependent on property type and location, target tenant market, local building codes, physical and legal opportunities to deploy distributed renewable energy, ability to measure consumption, and performance of existing building stock, among other factors.

Financial exposure to physical and transition risks, opportunities

Climate change affects undertakings in the sector via frequent or high-impact extreme weather events and changing climate patterns. The manner in which an undertaking's business model is structured to incorporate ongoing assessments of climate change risks, and the adaptation to such risks, is likely to be increasingly connected to undertaking value over the long term. More specifically, investment strategies with assets located on floodplains and in coastal regions that are exposed to inclement weather may have increased needs around risk mitigation and business model adaptation to climate change over the long term. These strategies are especially important in light of the long-term challenges associated with flood insurance rates, the financial stability of government-subsidized flood insurance programs, and financing stipulations or other creditor concerns. Besides insurance, other risk mitigation measures include improvements to physical asset resiliency and lease terms that transfer risk to tenants, although these measures can create their own costs and risks for real estate undertakings. To ensure long-term growth and protection of shareholder value, undertakings need to implement climate change adaptation strategies that are comprehensive, account for trade-offs between various risk mitigation strategies, and integrate consideration of all projected costs and benefits over the long term.

Circular enablers

In the Real Estate & Services sector, buildings owned or occupied by clients generally have significant sustainability impacts. Buildings, and the activities that take place within them, drive energy consumption, direct and indirect greenhouse gas (GHG) emissions, water consumption, waste generation, and indoor environmental quality concerns that can impact the health of occupants. undertakings in the sector have an opportunity to improve the sustainability impacts of buildings and their operations through sustainability-related services. These services may include utility data management, energy procurement, energy and water benchmarking, resource efficiency improvements, activities related to sustainability certifications, and sustainability consulting and training. undertakings in the sector can further impact building sustainability by arranging leases that incentivize both owners and tenants to enhance sustainability performance, while yielding financial benefits for both parties. Providing these services can drive new revenue growth and increase client retention; effective sustainability services can benefit owners and/ or tenants through improved asset values, increased tenant demand, decreased operating costs, and improved tenant experiences.

Pollution of water

Buildings consume significant amounts of water in their operations, through water fixtures, building equipment, appliances, and irrigation. Operating costs resulting from water consumption may represent significant costs depending on property type, tenant operations, geographical locations, and other factors. undertakings in the sector can be responsible for a building's water costs, or common area water costs, though it is common to allocate all, or a portion, of these costs to occupants. In these arrangements, water management continues to play an important role through tenant demand and regulatory exposure. Tenants may assess the water efficiency of real estate assets in an effort to control operating costs, mitigate environmental impacts of operations, and, often just as importantly, develop a reputation for resource conservation. Additionally, real estate owners may be exposed to water-related regulations even when water costs are the responsibility of occupants. Overall, undertakings in the sector that

effectively manage water efficiency of assets, even when they don't face direct exposure to water costs, may see reduced operating costs and regulatory exposure, as well as increased tenant demand, rental rates, and occupancy rates-all of which drive revenue and asset value appreciation. Long-term historic increases in the costs of water-and expectations of continued increases due to overconsumption and constrained supplies resulting from population growth and shifts, pollution, and climate change- indicate the heightened importance of water management. The ability to improve asset water efficiency is highly dependent on the property type, locational water availability, target tenant market, local building codes, the ability to measure consumption, and the level of current efficiency of existing building stock, among other factors.

Enabling activities

Real estate assets generate significant sustainability impacts, including resource consumption-namely energy and water -waste generation, and impacts on occupant health through indoor environmental quality. While undertakings in the sector own real estate assets, it is the tenant operations of such assets that is a dominant driver of sustainability impacts produced by the built environment. Tenants may design and construct leased spaces according to their operating needs. In turn, their operations consume significant amounts of energy and water, generate waste, and impact the health of those living, working, shopping, or visiting the properties. While these sustainability impacts are often generated by tenant operations and activities, real estate owners have an important role in influencing tenant sustainability impacts. The manner in which undertakings in the sector structure their agreements, contracts, and relationships with tenants is instrumental in effectively managing the sustainability impacts of their tenants, and ultimately, the impacts of their assets. Managing tenant sustainability impacts may include mitigating the problem of split incentives by aligning both parties' financial interests with sustainability outcomes, establishing systematic measurement and communication of resource consumption data, creating shared performance goals, and mandating minimum sustainability performance or design requirements, among other strategies. Effective management of tenant sustainability impacts, particularly related to energy, water, and indoor environmental quality, may drive asset value appreciation, increase tenant demand and satisfaction, decrease direct operating costs, and/ or decrease risks related to building codes and regulations.

Anti-corruption

The business model of real estate & Services undertakings is dependent on client trust and loyalty. To ensure long-term, mutually beneficial relationships, undertakings need to provide services that satisfy the highest professional and ethical standards of the sector. Professional integrity is an important governance issue, as the range of services and the number of professionals within a single organization can make the management of conflicts of interest more challenging. Brokerage and appraisal services may come with particularly high risk of conflicts of interest and negligence. In order to manage and avoid these risks, undertakings in the sector can implement a range of governance measures, including employee training, oversight, and policies, procedures, and enforcement systems focused on transparency and appropriate disclosures. Effective management of these risks can lead to increased client trust and better brand value in the market, adding to long-term revenue growth. Inadequate management of risks may lead to regulatory fines and penalties, as well as decreased client trust and a loss in business.

Services sector group

Advertising & Marketing sector

Equal opportunities/ Non-discrimination

Competitive advantage in the Advertising & Marketing sector is derived from a undertaking's ability to produce creative, cutting-edge ideas. Undertakings in this sector aim to attract top talent to create the most successful ad campaigns. Additionally, larger undertakings have clients across the globe, and must employ a diverse workforce to effectively reach diverse audiences. Connecting with a target markets has been shown to rely, to a large extent, upon employing a workforce that is reflective of the community served. A diverse workforce is thus a critical success factor to improving service outcomes and enhancing a undertaking's financial performance.

Information

Undertakings have a legal responsibility to ensure that advertising about their products and services is truthful and not deceptive. While much of the burden of compliance with regulations about ad content and placement lies with the client, ad agencies play a vital role in the creation of ad content and are responsible for advising their clients regarding applicable regulations. Consumer protection laws provide guidance and restrictions on advertising to children and on advertising regulated products, such as alcohol and tobacco. Regulators should investigate the involvement of the ad agency in any deceptive advertising and take action against the agency. Advertising and marketing undertakings exposed to these regulations and concerns have responded by participating in self-regulatory programs that address these areas.

Risk management

Due to the increasing prevalence of social media, location-based mobile applications, and e-commerce, the digital footprints of customers offer a more complete picture of their habits than was previously available to advertisers. Advertisers can collect and/ or purchase highly detailed information about the habits and lives of buyers, and advertising strategies can be precisely targeted. Being part of a sector that uses large quantities of data about private citizens, advertising and marketing undertakings must uphold the rules and regulations put in place by the GDPR regulations and weigh the benefits of targeted advertising versus customer concerns about data privacy.

Education sector

Information

For-profit education undertakings that admit and enroll more students generate more revenue. Therefore, undertakings may turn to aggressive recruitment strategies, such as spending significant amounts of money on marketing rather than on instruction and student services. Such aggressive recruiting practices have resulted in additional public and regulatory scrutiny of for-profit education undertakings. Using false or misleading advertisements to recruit prospective students may result in significant fines for undertakings and loss of eligibility for government-funded student loans. Limits on these funding sources may create incentives for undertakings to mislead students into taking on private loans that they are not able to repay, presenting a significant reputational risk to undertakings in the sector. Enhanced disclosure will allow shareholders to better understand the undertaking's policies and practices for marketing and recruiting to attract students.

Personal safety

Increasing tuition requirements are pushing more students to take on government and private loans to finance their education. Rapid growth in student debt creates significant economic and social externalities if student loans go into default. Many programs at for-profit colleges prepare students for gainful employment in recognized occupations. Therefore, colleges that provide high-quality education and facilitate completion of programs increase the chances of graduates obtaining employment and paying off their loans. In the absence of sufficient educational and career management support, graduates may end up with high debt and few employable skills. Performing poorly on accountability metrics such as graduation rates, default rates, and job placement rates may jeopardize eligibility for funding. At the same time, transparent disclosure of these metrics to prospective students is directly related to institutions' ability to attract and retain students.

Risk management

Colleges and universities are frequent and compelling targets for cyber criminals. The sector may face data security risks due to the large number of personal records processed and stored, the mix of intellectual property and personally identifiable information held (e. g., social security numbers, vaccination records, and other information required for admission), and the open, collaborative environment of many campuses. The exposure of sensitive information through cybersecurity breaches, other malicious activities, or student negligence may result in significant social externalities such as identity fraud and theft. Data breaches may compromise public perception of the effectiveness of a school's security measures, which could result in reputational damage and difficulty in attracting and retaining students, as well as significant costs to fix the consequences of a breach and prevent future breaches. Enhanced disclosure on the number and nature of security breaches, management strategies to address these risks, and policies and procedures to protect student information will allow shareholders to understand the effectiveness of management strategies that schools employ regarding this issue.

Professional & Commercial Services sector

Equal opportunities/ Non-discrimination

Developing a broad base of employees that are valued, respected, and supported throughout an organization is essential for the long-term growth prospects of professional and commercial services undertakings. Human capital is the major source of revenue generation, contributing knowledge, talent, advice, and various technical skills. While financial and non-financial service providers may have a high level of diversity among lower-level employees, they may still lack diversity among senior management. Enhancing workforce diversity, particularly among management positions, is likely to help undertakings attract and develop the best talent. High levels of employee engagement, fair treatment, and equitable levels of pay and advancement opportunities for all workers are all likely to contribute to increased productivity and performance through all levels of the undertaking.

Risk management

Undertakings in every segment of the Professional & Commercial Services sector are entrusted with customer data. Employment and temporary staffing agencies as well as data providers and consulting undertakings store, process, and transmit increasing amounts of sensitive personal data about employees, clients, and candidates. In addition, the clients of financial and non-financial services providers are likely to handle sensitive information and may share this information with professional and commercial services undertakings. The exposure of sensitive customer information through cybersecurity breaches, other malicious activities, or employee negligence may result in significant risks such as identity fraud and theft. Data breaches may compromise perception of the effectiveness of a service provider's security measures, which could result in reputational damage and adversely impact a undertaking's ability to attract and retain clients.

Anti-corruption

The business model of professional and commercial services undertakings is dependent on the development of client trust and loyalty. To ensure long-term and mutually beneficial relationships, undertakings seek to provide services that satisfy the highest professional standards of the sector. Professional integrity is an important governance issue in the sector, as the collective organization of professionals inside a single organization can make the detection and prevention of conflicts of interest, bias, or negligence more challenging. Training employees adequately, providing advice and distributing data free from bias and error, and taking other measures to ensure professional integrity are important both for strengthening a undertaking's license to operate as well as for attracting and retaining clients.

Technology sector group

Media & Communication sector

Energy consumption & mix

Individual telecommunication services undertakings consume substantial amounts of energy. Depending on the source of energy and the efficiency of its generation, electricity consumption by telecom network infrastructure can contribute significantly to environmental externalities, such as climate change, creating sustainability risks for the sector. Although network equipment and data centers are becoming more energy-efficient, their overall energy consumption is increasing with the expansion in telecommunications infrastructure and data traffic. The way in which telecommunication services undertakings manage their overall energy efficiency or intensity, their reliance on different types of energy, and their ability to access alternative sources of energy will become increasingly material as the global regulatory focus on climate change increases, bringing with it incentives for energy efficiency and renewable energy as well as pricing of greenhouse gas emissions (GHG). Since expenditures on energy can be significant in the sector, undertakings that are able to improve the energy-efficiency of their operation are likely to see cost savings and higher profit margins. With the Internet & Media Services sector providing a growing amount of content and service offerings, undertakings in this sector increasingly own, operate, or rent more data centers and other hardware. Thus, the management of the energy and water use associated with IT hardware infrastructure is of great importance to shareholder value. Data centers need to be powered continuously. Disruptions to the energy supply can have a material impact on operations, depending on the magnitude and timing of the disruption. undertakings face a trade-off between energy and water consumption due to data center cooling needs. Cooling data centers with water instead of chillers is a means of improving energy efficiency, but it can lead to dependence on significant local water resources. Decisions about data center specifications are important for managing costs, obtaining a reliable supply of energy and water, and lowering reputational risks, particularly as there is an increasing global regulatory focus on climate change and as opportunities arise from innovations in energy efficiency and renewable energy.

Resources outflow

Due to the rapid obsolescence of communications devices, particularly mobile phones, they represent an increasing proportion of electronic waste (e-waste) going to landfills, driven in part by a low recycling rate. Telecommunication services undertakings face growing regulatory risks related to this issue. Multiple jurisdictions have implemented e-waste recycling laws mandating that electronics retailers and manufacturers create a system for recycling, reuse, or proper disposal of electronic devices. While many of these laws in their early days covered a limited scope of products, newer laws extend to mobile devices requiring undertakings to finance the collection, treatment, recycling, or proper disposal of e-waste, as concerns around e-waste from communications devices increase. E-waste laws often require vendors or manufacturers to pay for the recycling of such waste or put in place product take-back and recycling programs. Penalties or costs, due to such laws, together with potential revenues generated from refurbishing and re-selling products, are increasingly providing incentives for undertakings in the sector to manage end-of-life impacts. Many telecommunication services undertakings work in partnership with phone manufacturers to bundle telecom services and mobile devices, and therefore have a shared responsibility for end-of-life management of such devices. Their relationship with customers provides an opportunity for effective management of product recycling, reuse, and disposal. Establishing take-back programs to recover end-of-life materials for further reuse, recycling, or remanufacturing can allow undertakings cost savings and more resilient supply of manufacturing materials.

Pollution of water

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Equal opportunities/ Non-discrimination

Employees are key contributors to value creation in the Internet Media & Services sector. While the number of job openings in the sector continues to grow, undertakings are finding it difficult to recruit qualified employees to fill these positions. The shortage in technically skilled domestic employees has created intense competition to acquire highly skilled employees, contributing to high employee turnover rates. In response to talent shortages, undertakings are hiring foreign nationals, which creates risks related to perceived social implications in the host and home countries of workers. undertakings offer significant monetary and non-monetary benefits in order to improve employee engagement and, therefore, retention and productivity increase. Initiatives to improve employee engagement and work-life balance might influence the recruitment and retention of a diverse workforce. As the sector is characterized by relatively low representation from women and minority groups, efforts to recruit from and develop diverse talent pools can serve to address the talent shortage and generally to improve the value of undertaking offerings. Greater workforce diversity is important for innovation, and it helps undertakings understand the needs of their diverse and global customer base.

Information

Media pluralism, which is diversity in the broadest sense, includes both external and internal pluralism. External pluralism refers to media ownership, independent editorial boards, channels, titles, or programs. Internal pluralism refers to the social, racial/ ethnic, and political diversity represented in media content. Media and entertainment undertakings can ensure pluralism by maintaining on-and off-screen diversity and by safeguarding the independence of editorial boards and programming.

Material sustainability risks and opportunities

Given the systemic importance of telecommunications networks, systemic or economy-wide disruption may be created if the network infrastructure of telecommunication services undertakings is unreliable and prone to business continuity risks. As the frequency of extreme weather events associated with climate change increases, telecommunication services undertakings will face growing physical threats to network infrastructure, with potentially significant social or systemic impacts. In the absence of resilient and reliable infrastructure, undertakings may face lost revenue associated with service outages and unplanned capital expenditures to repair damaged or compromised equipment. undertakings that successfully implement measures to address business continuity risks, including an identification of critical business operations, or to enhance resilience of the system are likely to substantially reduce their risk exposure and, hence, lower their cost of capital. While implementation of such measures may have upfront costs, undertakings are likely to see long-term benefits in terms of lower remediation expenses in cases of high-impact disruptions.

Risk management

As customers pay increased attention to privacy issues surrounding cell phone, internet, and email services, telecommunication services undertakings will have to implement strong management practices and guidelines related to their use of customer data. Telecommunication services undertakings use growing volumes of customer location, web browsing, and demographic data to improve their services as well as to generate revenue by selling such data to third parties. Growing public concern about privacy has led to increased regulatory scrutiny over the use, collection, and sale of consumer data. These trends are increasing the importance to telecommunication services undertakings of adopting and communicating in a transparent manner policies about providing customer data to third parties, including the amount and type of data provided and the nature of its use (for example, use for commercial purposes). Additionally, telecommunication services undertakings receive, and must determine whether to comply with, government requests for customer information. undertakings in the sector that fail to manage performance in this area are susceptible to decreased revenues as a result of lost consumer confidence and churn, as well as to financial impacts stemming from legal exposures. undertakings in the Internet & Media Services sector rely on customer data to innovate new tools and services, generate revenues through advertising sales, and track and prevent criminal activities, such as hacking and online predators targeting children. However, the use and storage of a wide range of customer data, such as personal, demographic, content, and behavioral data, raises privacy concerns, leading to increased regulatory scrutiny in many countries around the world. undertakings face reputational risks from providing access to user data to governments, which raises concerns that the data may be used to limit the freedoms of citizens. undertakings may also face increased costs of compliance associated with the varying local laws or government demands related to censorship of culturally or politically sensitive material on websites. This issue has impacts on undertaking's profitability through the loss of users and can influence decisions to enter or operate in certain markets. undertakings in the Internet Media & Services sector are subject to a large and growing number of cyber attacks and social engineering threats, which puts customer information and an undertaking's own data at risk. Inadequate prevention, detection, and remediation of data security threats can influence customer acquisition and retention and result in decreased market share and lower demand for the undertaking’s products and/ or services. By identifying and addressing data security threats in a timely manner undertakings can protect brand value and will be better positioned for customer acquisition and retention. Furthermore, effective management can avoid significant expenses associated with data breaches-most commonly directed at recapturing users following a breach. The Telecommunication Services sector is particularly vulnerable to data security threats, as undertakings manage an increasing volume of customer data, including personally identifiable information, as well as demographic, behavioral, and location data. Recent examples of cyber attacks on critical telecommunications infrastructure illustrate the need for enhanced network security. Inadequate

prevention, detection, and remediation of data security threats can influence customer acquisition and retention and result in decreased market share and lower demand for the undertaking's products. In addition to reputational damage and customer turnover, data breaches can also result in increased expenses, commonly associated with remediation efforts such as identity protection offerings and employee training on data protection. As the providers of critical infrastructure, the ability of undertakings to combat cyber attacks is likely to affect reputation and brand value, with a long-term impact on market share and revenue growth potential. Therefore, undertakings that can identify and address data security risks in a timely manner are likely to be in a better position to protect market share and brand value while also reducing risk exposure to cyber attacks. Additionally, new and emerging data security standards and regulations are likely to affect the operating expenses of undertakings through increased costs of compliance.

Management and quality of relationsships with business partners

Undertakings in this sector rely on their intellectual property (IP) to generate revenue. However, while IP protection is inherent to their business model, strong IP protections may sometimes conflict with the interests of society. Proponents of IP protection assert its importance as a driver of innovation. Opponents argue that assigning ownership can stifle innovation and competition by enabling the creation of monopolies. Despite the sector's best efforts, media piracy is rampant and undertakings devote significant resources to protecting and enforcing their IP rights. Media and entertainment undertakings therefore must balance protecting their intellectual property with ensuring access to media and allowing fair use. Despite the openness of the Internet, undertakings in the Internet Media & Services sector spend a significant proportion of their revenues on intellectual property (IP) protection, including acquiring patents and copyrights. While IP protection is inherent to the business model of some undertakings in the sector and is an important driver of innovation, the IP practices of undertakings can be a contentious societal issue. undertakings could sometimes acquire patents and other IP protection to restrict competition and access to benefits from innovation, particularly if they are dominant market players. Due to the complexity of software, its abstract nature, and increasing IP rights protection related to software, Internet Media &Services undertakings have to navigate overlapping patent claims to be able to operate. As a result, undertakings in the sector may find themselves constantly in litigation or subject to regulatory scrutiny either due to allegations of patent violations if they engage in unethical business practices, or are perceived as doing so, or because they are suing others for IP infringement. Adverse legal or regulatory rulings related to antitrust and IP can expose internet media and services undertakings to costly and lengthy litigations and potential monetary losses as a result. Such rulings may also affect an undertaking's market share and pricing power if its patents or dominant position in key markets are legally challenged, with significant impact on revenue. Therefore, undertakings that can balance the protection of their IP and its use to spur innovation with ensuring their IP management and other business practices do not unfairly restrict competition, have the potential to lower regulatory scrutiny and legal actions while protecting their market value. The Telecommunication Services sector contains classic examples of natural monopolies, where high capital costs can allow them to offer the most efficient production. Given the concentrated nature of telecommunications, cable, and satellite undertakings, they must manage their growth strategies within the parameters of a regulatory landscape designed to ensure competition. In addition to natural monopoly, many undertakings in this sector benefit from terminal access monopolies over the so-called "last-mile" of their networks, given their contractual relationship with each subscriber and the barriers for subscribers to change service providers. The nature of this relationship is the basis of much of the discussion around the need to protect an Open Internet, where all data on the Internet is treated equally in terms of performance and access. The sector faces ongoing legislative and regulatory actions aimed at ensuring competition, which could limit the market share and growth potential of some larger players. Merger and acquisition activity by dominant market players has come under regulatory scrutiny. This has resulted in undertakings abandoning plans to consolidate, affecting their value. Strong reliance on market dominance can also be a source of risk if undertakings are vulnerable to legal challenges, increasing their risk profile and cost of capital.

Public engagement

Audiences rely on journalists for accurate and timely information on current events. Principles of journalism include accuracy, fairness, minimization of harm, independence, accountability, and transparency. Failure to adhere to these principles can affect the credibility of not only the journalist, but also of the undertaking responsible for publishing or broadcasting these materials. As regulations around the disclosure of sponsorship and endorsement evolve, transparency is important for both journalism and entertainment content.

Software & IT Services sector

Energy consumption & mix

With the growth of cloud-based service offerings, undertakings in this sector own, operate, or rent increasingly more data centers and other hardware; thus, managing the energy and water use associated with IT hardware infrastructure is important to shareholder value. Data centers need to be powered continuously, and disruptions to the energy supply can have a material impact on operations, depending on the magnitude and timing of the disruption. undertakings face a tradeoff between energy and water consumption due to data center cooling needs; cooling data centers with water instead of chillers is a means of improving energy efficiency, but it can lead to dependence on significant local water resources. Decisions about data center specifications are important for

managing costs, obtaining a reliable supply of energy and water, and lowering reputational risks, particularly as there is an increasing global regulatory focus on climate change and as opportunities arise from innovations in energy efficiency and renewable energy.

Pollution of water

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Equal opportunities/ Non-discrimination

Employees are key contributors to value creation in the Software & IT Services sector. While the number of job openings in the sector continues to grow, undertakings commonly find it difficult to recruit qualified employees to fill these positions. The shortage in technically skilled domestic employees has created intense competition to acquire highly skilled employees, contributing to high employee turnover rates. To respond to talent shortages, undertakings often hire foreign nationals and offshore operations, creating employee management and sustainability challenges and related business risks. Some undertakings contribute to relevant education and training programs to expand the availability of domestic, skilled employees. Undertakings offer significant monetary and non-monetary benefits to improve employee engagement and therefore retention and productivity. Initiatives to improve employee engagement and work-life balance may influence the recruitment and retention of a diverse workforce. The sector is characterized by relatively low representation from women and minority groups; efforts to recruit from and develop diverse talent pools can serve to address the talent shortage and generally improve the value of undertaking offerings. Greater workforce diversity is important for innovation and helps undertakings understand the needs of their diverse and global customer base.

Material sustainability risks and opportunities

With trends toward increased cloud computing and use of Software as a Service (SaaS), software and IT service providers need to ensure they have robust infrastructure and policies in place to minimize disruptions to their services. Disruptions such as programming errors or server downtime have the potential to generate systemic risks, as computing and data storage functions move from individual undertaking servers in various sectors to data centers of cloud-computing service providers. The risks are heightened particularly if the affected customers are in sensitive sectors, such as financial institutions or utilities, which are considered critical national infrastructure. undertakings' investments in improving the reliability and quality of their IT infrastructure and services are likely to affect their ability to attract and retain customers, thereby impacting revenues and opportunities in new markets.

Risk management

Software & IT services undertakings are targets of growing data security threats from cyber attacks and social engineering, which puts their own data and their customers' data at risk. Inadequate prevention, detection, and remediation of data security threats can influence customer acquisition and retention and result in decreased market share and lower demand for the undertaking's products. In addition to reputational damage and customer turnover, data breaches can also result in increased expenses, commonly associated with remediation efforts such as identity protection offerings and employee training on data protection. Meanwhile, new and emerging data security standards and regulations are likely to affect the operating expenses of undertakings through increased costs of compliance. Additionally, undertakings in this sector are well-positioned to uncover revenue opportunities by providing secure software and services to meet the demand for ensuring data is kept secure.

Management and quality of relationsships with business partners

Undertakings in the Software & IT Services sector spend a significant proportion of their revenues on IP protection, including acquiring patents and copyrights. While IP protection is inherent to the business model of some undertakings in the sector and is an important driver of innovation, undertakings' IP practices can sometimes be a contentious societal issue. undertakings could sometimes acquire patents and other IP protection to restrict competition and access to benefits from innovation, particularly if they are dominant market players. Due to the complexity of software, its abstract nature, and increasing IP rights protection related to software, undertakings in the sector must navigate overlapping patent claims to be able to operate. As a result, undertakings in the sector may find themselves constantly in litigation or subject to regulatory scrutiny either due to allegations of patent violations if they engage in unethical business practices, or are perceived as doing so, or because they are suing others for IP infringement. Adverse legal or regulatory rulings related to antitrust and IP can expose undertakings in the sector to costly and lengthy litigations and potential monetary losses as a result. Such rulings may also affect an undertaking's market share and pricing power if its patents or dominant position in key markets are legally challenged, with potentially significant impacts on revenue. Therefore, undertakings that can balance the protection

of their IP and its use to spur innovation while ensuring their IP management and other business practices do not unfairly restrict competition, have the potential to lower regulatory scrutiny and legal actions while protecting their market value.

Transportation sector group

Transportation sector

Scopes 1 & 2 GHG emissions

Cruise lines generate emissions mainly from the combustion of diesel in ship engines. The sector's reliance on heavy fuel oil ("bunker fuel") is of material concern due to rising fuel costs and intensifying greenhouse gas (GHG) regulations. Evolving environmental regulations are driving the adoption of more fuel-efficient engines, engine retrofits, and the use of cleaner-burning fuels. Fuel constitutes a major expense for sector players, providing a further incentive for investing in upgrades or retrofits to boost fuel efficiency. In addition, violation of GHG regulations can lead to fines and compliance costs.

Resources inflow

Many undertakings in the Air Freight & Logistics sector contract with large, complex networks of asset-based third-party providers to provide freight transportation services to their customers. Contracting is especially common among undertakings providing freight forwarding, logistics, brokerage, and intermodal services. These contractors range across all modes of transport such as motor carriers, railroads, air freight, and ocean carriers. undertakings need to manage the relationships with their contractors in order to ensure that contractor actions that lead to environmental or social impacts do not result in material adverse effects on their own operations, such as decreased brand value. At the same time, undertakings that are able to offer low-carbon logistics solutions may capture market share from customers seeking to reduce the carbon footprint of their shipments.

Pollution of air

Compared to other modes of transport, road freight has a more localized negative effect on air quality through its emissions of sulfur oxides (SOx), nitrogen oxides (NOx), and particulate matter (PM). Heavy reliance on diesel fuel is of particular concern; although diesel engines realize better gas mileage than gasoline engines, they generate more harmful air pollutants. Using alternative fuels and filtering emissions prior to release can help undertakings comply with air quality regulations and avoid contributing to smog in cities and dense population centers, which may damage their social license to operate.

Pollution of soil

The operations and waste disposal practices of marine transportation undertakings can create substantial environmental externalities, such as water pollution and damage to marine life. Seagoing vessels routinely discharge ballast water, bilge water, and untreated sewage. Compliance with international regulations intended to manage the ecological impacts of operation can require significant capital expenditures to upgrade or install waste management systems. Illegal dumping of bilge water and other unregulated discharges can lead to hefty fines, negatively affecting an undertaking's risk profile. Operating in areas of protected conservation status, such as Emission Control Areas (ECAs) and Particularly Sensitive Sea Areas (PSSAs), can increase the risk of ecological impact as well as the risk of violating environmental regulations.

Working conditions

Many workers in the Airlines sector are covered under collective bargaining agreements that cover fair wages, safe working conditions, and freedom of association, which are among basic worker rights. Unionization of key personnel may result in higher labor costs via wage or benefits increase. At the same time, labor practices can impact the long-term profitability of the business. Effective management of, and communication around, issues such as worker pay and working conditions can prevent conflicts with workers that could lead to extended periods of strikes, which can slow or shut down operations and damage a undertaking's reputation, potentially reducing revenue and market share.

Products and services

Cruise lines offer a variety of luxury experiences and activities to their customers, including elaborate shows, casinos, fine dining, indoor skydiving, spa treatments, swimming, and fitness facilities. Each activity comes with its own set of health risks and safety challenges and liabilities that cruise undertakings must navigate. Consumer expectations for safety and comfort are high, so issues such as health risks and physical safety risks are especially important to avoid. Highly publicized cases of crimes, injuries, and illnesses onboard cruise ships can have serious impacts on brand value and ticket sales. There may also be high costs associated with customer lawsuits. While crime rates are low when compared to crime statistics in most developed countries, law enforcement is much trickier, and cases are not as easy to resolve as it is common for ships to take passengers to international waters and to fly a foreign flag, creating uncertainty about which jurisdictions are responsible for law enforcement needs. Undertakings can protect customer health and safety through implementation of a robust safety management system.

Management and quality of relationsships with business partners

The Airlines sector is characterized by competitive margins due to high fixed capital and labor costs and competition with government-subsidized carriers in some markets. This pushes airlines to find economies of scale through alliances or consolidation, leading to concentration of the market. The sector is also characterized by high barriers to entry due to limited landing rights and increasing airport congestion. Together, these characteristics may lead undertakings to engage in anti-competitive practices that increase prices for consumers. As a result, antitrust authorities have scrutinized certain airline sector practices such as airport slot management, predatory pricing, and alliances and mergers. This creates a material risk to investors stemming from legal fees, reputational risk, costs associated with a delayed merger or acquisition transaction, and limits on growth by acquisition or merger.

Material sustainability risks and opportunities

Marine transportation workers face dangers such as hazardous weather and exposure to large machinery and heavy cargo. The greatest health and safety risks stem from loading and unloading cargo at ports. Ships must be loaded and unloaded quickly and on schedule, increasing injury risk, fatigue, and stress. The health and well-being of workers in the sector is also inextricably linked to the safety performance of the undertaking, as a healthy crew is necessary for safe voyages. Undertakings with inadequate safety management systems that fail to ensure the health and safety of workers may face higher turnover and higher worker-related expenses, including medical expenses such as insurance premiums and worker payouts.

Wholesale & Retail sector group

Wholesale & Retail trade sector

Energy consumption & mix

A large part of the energy consumed by the E-Commerce industry is used to power critical hardware and IT infrastructure in data centers. Data centers need to be powered continuously, and disruptions to the energy supply can have a material impact on operations, depending on the magnitude and timing of the disruption. Undertakings also face a trade-off when it comes to energy and water consumption for their data centre cooling needs: Cooling data centres with water instead of chillers is a means of improving energy efficiency, but it can lead to dependence on significant local water resources. Undertakings that effectively manage this issue may benefit from cost savings and minimize reputational risks, as there is growing concern over energy and water use. Undertakings in this industry require significant amounts of energy for their retail facilities and warehouses. Sustainability factors—such as the increasing number of GHG-emissions regulations, incentives for energy efficiency and renewable energy—are leading to price increases in conventional electricity sources while making alternative sources more cost-competitive. Fossil fuel-based energy production and consumption contribute to significant environmental impacts, including climate change and pollution. Decisions regarding energy sourcing and type, as well as the use of alternative energy, can create trade-offs related to the energy supply's cost and reliability for operations. It is becoming increasingly important for undertakings to manage their overall energy efficiency, and their access to alternative energy sources. Efficiency in this area can have financial implications through direct cost savings, which are particularly beneficial in this low-margin industry.

Resources outflow

A significant part of the E-Commerce industry's added value comes from firms' ability to move a wide array of goods efficiently to consumers who would otherwise have to personally travel to collect the goods from brick-and-mortar stores. As the volume of packaging shipments increases, the industry may become more exposed to environmental externalities, such as carbon pricing and subsequent rising fuel costs that present risks associated with the shipping of products. While firms that outsource shipping and logistics have less control over the specific processes of shipping operations, they can still select suppliers with more energy-efficient business practices. As this is a highly competitive and low-margin industry, the ability to shave off shipping costs through fuel reduction and more efficient routing can allow firms to pass those savings on to their customers. Additionally, e-commerce firms have an incentive to minimize the use of packaging. Efficient packaging can lead to cost savings from reducing the amount of material that needs to be purchased, as well as saving on logistics costs, as more products can fit into a single shipping load. By providing fuel-efficient and alternative fuel vehicles, car rental and leasing undertakings can enhance the environmental sustainability of their operations while also achieving financial benefits. Consumer demand for more efficient vehicles is growing, motivated by both environmental stewardship and the lower operating costs associated with fuel efficiency. In addition to providing fuel-efficient and low-emission fleets, undertakings in the industry are adapting to changing vehicle needs by providing car-sharing services. In urban settings, car sharing is an attractive alternative to vehicle ownership that reduces congestion and the environmental impacts associated with private ownership of vehicles. By maximizing fleet utilization rates through car-sharing, undertakings can enhance business efficiency. Undertakings in the Multiline and Specialty Retailers & Distributors industry sell a wide array of products including electronics, clothing, furnishings, and cosmetics, which all have varying environmental and social impacts throughout their lifecycles. The size and subsequent buying power of many undertakings in this industry allow them to work with their suppliers to source products and packaging with lower lifecycle environmental and social impacts. Undertakings that perform well in this regard may benefit from increased customer demand and improved margins. Taking a proactive approach to engaging suppliers, using certification standards, and reducing the environmental impacts of packaging are strategies commonly employed by undertakings in the industry.

Pollution of water

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Working conditions

Retail's significance to the economy as a major employer means that it is also often at the centre of public labour-practice discussions. This can have serious reputational implications for undertakings in the industry whose performance on labour relations is poor. The low-average wages in the industry, which help undertakings maintain low prices on products, may increase these labour-related risks. Since customers regularly interact directly with employees, undertakings can face a decrease in market share and revenue from negative consumer sentiment due to public disagreement between undertakings and their workers. Undertakings can enhance labour productivity and employee engagement by taking a long-term approach to managing workers in areas such as compensation and workers' rights. In addition to mitigating risks, improvements in labour productivity can help strengthen a undertaking's reputation and reduce its cost of capital.

Risk management

Consumers trust retail undertakings with their financial and personal data every time they make a noncash transaction. Credit cards and debit cards have steadily eclipsed cash and checks as consumers' preferred payment methods. In these noncash transactions, retailers build up a relationship of trust with consumers, assuring them of the safety of their personal information. Data breaches can occur both through breaches of the physical payment technology, called point-of-sales breaches, as well as through cyber-attacks. As consumers become more educated about the threats of cybercrime, particularly in the wake of continued high-profile attacks, having a reputation as a secure undertaking is increasingly important to maintain or gain market share. Retailers that prevent major data breaches can also avoid harming brand value and reduce liabilities.

Material sustainability risks and opportunities

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Products and services

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