

HOCHTIEF's Assessment of longer-term emerging Top ESG Opportunities & Risks

Current status of implementation-project HOCHTIEF Sustainability Plan 2025, as of July 27, 2022

	Opportunity	Category	Description	Potential	Initiatives/Measures
1	Circular economy approach to reduce, reuse, recycle materials	Sustainable Products & Services	The transition to a circular economy will change the way buildings are designed and materials are used. A shift in regulations and demand in combination with new technology potentially decreases costs	<ul style="list-style-type: none"> • Increased re- and upcycling • Shift to (reusable) modular construction designs and use of second hand materials • Reduction of carbon footprint • Reduce of resource demand • Increased and stringent material tracking 	<ul style="list-style-type: none"> • Thorough analysis and evaluation of supply chain • More frequent and more efficient recycling and reusing approaches • Expand the Cradle to Cradle research (i.e. avoid / reuse waste) and apply newest technological innovations
2	Forward looking management of public projects and procurement	Resilience	Increased sustainability requirements and climate aspects for public projects and procurement resulting in a need for adequate preparation of this development	<ul style="list-style-type: none"> • New public projects covering life-cycle of assets, such as new PPP projects 	<ul style="list-style-type: none"> • Anticipate long term changes in demand • Enhance reputation for successfully implemented public projects that fulfill the highest sustainability and climate standards by targeting respective projects • Increase stakeholder trust
3	Effective management and recruitment of specialists and talents	Diversity and talent	Coping with risks and opportunities related to environmental and social matters requires a suited work force. Therefore, the recruitment of sustainability and climate specialists is crucial	<ul style="list-style-type: none"> • Increase number of specifically qualified employees and assuring long term ability to deliver projects • Gain competitive advantage by qualified and trained workforce 	<ul style="list-style-type: none"> • Enhance reputation for fulfilling highest sustainability and climate standards • Increase workers' benefits to attract highly specialized experts in an increasingly competitive labor market • Train existing staff to meet the increasing market demand • Increase sustainability and climate change criteria in recruitment decisions
4	Innovative, advanced and low emission construction equipment and materials	Sustainable Products & Services	Increasing environmental regulation requires especially resource intensive sectors to increase investment in the research and utilization of sustainable materials and equipment	<ul style="list-style-type: none"> • Procurement of new equipment and materials • Reduced resource usage (increasing material efficiency) 	<ul style="list-style-type: none"> • Increase R&D of new construction methods, procedures and technologies • Adopt innovative materials and equipment • Provide additional training for employees • Hiring of specialists and well trained Experts • Identifying new subcontractors and suppliers able to match new sustainability needs
5	New digital technological capabilities	Digital & Innovation	Increasing digitalization affects the construction industry with its ability to create efficiency in operations, effectiveness, and provide new opportunities. New digital technologies such as virtual and augmented reality, drones, robotics, blockchain or artificial intelligence provide increasing set of new capabilities and product offerings	<ul style="list-style-type: none"> • Increase process efficiency • More rapid and transparent collaboration along the value chain • Increase process efficiency • Real-time monitoring of connected machines, equipment workforce • Cost efficiencies • Gaining competitive advantage 	<ul style="list-style-type: none"> • Increase R&D of new digital technologies in our digital competence center Nexlore • Further develop the already existing digital products and services such Building Information Modeling (BIM)

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6	Renewable energy use	Technological	The use of renewable energy is one of the key drivers for a carbon neutral transformation of the economy. Within the construction sector this is not only relevant for the execution phase, but for all upstream and downstream processes	<ul style="list-style-type: none"> • Long-term cost reduction • Less dependency on volatile fossil fuel based energy prices • Reduction of carbon footprint • Compliance with emerging standards and self-set targets (e.g. Net Zero 2045) 	<ul style="list-style-type: none"> • Switch to renewable energy sources for all upstream and downstream processes • Production of renewable energy (e.g. by installing remote power supply systems or photovoltaic systems) • Group wide financial incentives for the procurement of renewable energy • Sustainability Plan 2025 targets
7	Green and compact (space extensive) construction	Sustainable Products & Services	In addition to stricter environmental regulations, swift urbanization in emerging and rapidly growing economies and regions will lead to increased demand for green and smart constructions	<ul style="list-style-type: none"> • New building and infrastructure projects • Establishment of new markets in strongly growing and already densely populated regions • Reputational gains in rapidly growing sector 	<ul style="list-style-type: none"> • Continue strategic focus on green constructions • Increase investment in employees training and promotion of green buildings • Explore smart space constructions • Seek cooperation with relevant research institutes
8	Retro-fitting and reconstruction of buildings	Sustainable Products & Services	Environmental regulations, rising resource and cost pressure makes the retro-fitting of buildings increasingly attractive to customers. Physical damage caused by extreme weather events, additionally poses new opportunities for reconstruction	<ul style="list-style-type: none"> • New and increased business opportunities • Novel revenue streams • Reputational gains 	<ul style="list-style-type: none"> • Extend business model to include additional services, such as refurbishment • Investigate market opportunities for occasional reconstruction services
9	Expanding market for climate change adaptation projects	Sustainable Products & Services	Increased demand for climate change adaptation measures (e.g. flood, wind or sea level rise protection measures)	<ul style="list-style-type: none"> • New projects for climate change adaptation measures 	<ul style="list-style-type: none"> • Develop a strategy to cope with the increased demand • Increase offerings for respective projects

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	Risk	Category	Description	Impact	Mitigation
1	Extreme Weather	Climate	Increase in frequency and intensity of extreme weather events due to climate change such as heat waves/wildfires, flooding and hurricanes (cyclones, typhoons)	<ul style="list-style-type: none"> • Increased construction costs • Increased insurance costs/premiums • Increased energy costs • Higher costs due to construction delays • Increase maintenance and repair costs for strained equipment due to extreme weather conditions • Potential harm to workforce / increased injury rates of employees & subs with potential fines and litigation • Decreased worker productivity • Loss of workforce due to higher fluctuation 	<p>General: Being more selective on markets, adjust pricing, contractually balance risk, insure risk, increase precautionary & Health Safety Environment (HSE) measures, use of new technology</p> <p>Specific:</p> <ul style="list-style-type: none"> • More detailed assessment of local weather risks at future potential and actual construction sites • Development of flood protection scheme and ad hoc measures for high risk areas • Use of water resilient building materials • Use of heat resilient materials and equipment for changing conditions, • Additional air conditioning applications • Provide adequate health and safety measures for workers including further H&S trainings • Provide adequate relax and recovery facilities on the project site
2	Phase out of carbon-intensive technologies/processes	Sustainable Products & Services	E.g. demand driven decreasing use of diesel powered machines, of carbon intensive cement or promotion of renewable energy resulting in higher market competition for substitutional technologies and materials	<ul style="list-style-type: none"> • Increased operational costs • Loss of market shares in case of non-preparedness 	<p>General: Being more selective on markets, adjust pricing, increase precautionary measures, use of new technology</p> <p>Specific:</p> <ul style="list-style-type: none"> • Develop a strategy for the procurement and usage of new or substitutional technologies and materials • Investigate natural and new material compositions • Explore alternative fuels in pilot projects • Aim for cooperation with relevant research institutes
3	Cyberattacks	Digital & Innovation	Deploying cutting-edge digital technologies on construction sites and back-offices makes business environment more vulnerable to cyberattacks	<ul style="list-style-type: none"> • Loss of confidential data • Disruption of project execution and/or operations of infrastructure due to disruptions in communication, data exchange or data accessibility • Reduced productivity • Increased costs for protection measures 	<ul style="list-style-type: none"> • Educate & train employees • Continuous improvement of IT-policies • Manage and control IT-security standards and processes • Increase preparedness and continuous evolution of contingency plans • Run vulnerability tests including simulated hacker attacks • Track new risks and weaknesses • Implement and evolve technical and organizational measures

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4	Water Stress	Climate	Overexploitation and/or mismanagement of natural resources could lead to a shortage in natural resources. In particular, water stress becomes more severe in already affected areas and occurs in new areas resulting in a decrease in water availability for dust suppression or cement preparation and in an increase in competition with other end users	<ul style="list-style-type: none"> • Increased water costs • Lack of water availability • Higher costs due to construction delays • Decrease of productivity • Reputational damage and stakeholder exasperation 	<p>General: Being more selective on markets, adjust pricing, contractually balance risk, insure risk, increase precautionary measures, use of new technology</p> <p>Specific:</p> <ul style="list-style-type: none"> • Reduce water consumption • Increase reusing and recycling of water • Decrease dependence on fresh ground and surface water • Utilize grey water if possible • Include stakeholders into the water management process to avoid conflicts
5	Skills Shortage/Aging Population	Social	As people are getting older on average, especially western countries are predicted to face challenges with an aging population. Countries like Germany already have a shortage for skilled workers in many sectors, which is meant to increase over the next decades. HOCHTIEF has core businesses in the U.S. (Turner), Australia (CIMIC) and Europe. Therefore, HOCHTIEF needs to find strategies to attract talent both today and also in the long-term future to stay competitive	<ul style="list-style-type: none"> • Increasing labour costs due to decreasing supply of qualified workforce, with higher search costs due to increasing competition for talent and increasing costs to retain qualified personnel • Higher costs due to construction delays • Reduced ability to bid for orders/tenders • Higher fluctuation/loss of employees 	<ul style="list-style-type: none"> • Adapt human resources strategy, with respective employee development programs • Attach top priority to occupational safety and health for our employees and develop further personnel measures to maintain HOCHTIEF's attractiveness as an employer for different target groups and skill profiles
6	Regulatory framework	Regulatory	Policies that restrict the use of technologies and materials e.g. policy driven ban of diesel powered machines, carbon intensive cement or promotion of renewable energy resulting in higher market competition for substitutional technologies and materials	<ul style="list-style-type: none"> • Increased operational costs • Loss of market shares in case of non-preparedness • Reputational damage in case of non-preparedness 	<ul style="list-style-type: none"> • Develop a strategy for the procurement and usage of new or substitutional technologies and materials • Expand offering of construction with environmentally friendly materials • Increase R&D investment in resource efficient construction approaches