

TCFD Report

UltraTech Cement Limited - FY 2022-23

"ENRICHING LIVES"



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About UltraTech

UltraTech Cement Limited is the cement flagship company of the Aditya Birla Group. UltraTech recorded the net revenues of USD\$-7.9 billion in FY-2022-23. UltraTech is the third largest cement producer in the world, excluding China. The Company's business operations span India, UAE, Bahrain and Sri Lanka.

UltraTech Cement Limited is an integrated building solutions provider. UltraTech is the largest manufacturer of grey cement and ready-mix concrete (RMC) in India. It is also one of the leading players in the white cement segment in India. UltraTech offers a slew of speciality concretes that meet specific needs of discerning customers. UltraTech's Building Products business provides an array of scientifically engineered products to cater to new-age construction. Through its Building Solutions division, UltraTech offers a one-stop-shop solution to individual home builders.

UltraTech is a founding member of Global Cement and Concrete Association (GCCA). It is a signatory to the GCCA Climate Ambition 2050 and has committed to the Net Zero Concrete Roadmap announced by GCCA. UltraTech is focused on accelerating the decarbonisation of its operations. It has adopted new age tools like the Science Based Targets Initiative (SBTi) and Internal Carbon Price as well as set ambitious environmental targets through both EP100 and RE100. UltraTech is the first company in India and the second company in Asia to issue dollar-based sustainability linked bonds.

As part of the Aditya Birla Group, our business is underpinned by the Group's Sustainability Framework. Further information on our sustainability framework and performance is available on our website.

https://www.ultratechcement.com/about-us/sustainability/sustainability





Largest single brand retail chain across India

- One-stop building solution for different stages of the construction life cycle, catering to the retail customer with 3,450 plus outlets in 500+ districts
- Over 65% of outlets in rural and Tier 3 geographies
- Partner with leading brands to provide quality construction products for individual home builders

Contemporary



Re-engineered products from the house of UltraTech

Building products

Waterproofing

- Liquid waterproofing Cementitious Waterproofing
- **Dry mix mortars**
- Plasters mortars Adhesives and sealants ٠
 - Flooring
- Repair and rehabilitation •

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About this report

This report intends to provide an overview of UltraTech Cement's climate change strategy, performance, governance, risk, and opportunity management in alignment with the Task Force on Climate Change-related Financial Disclosures (TCFD) recommendations. It reflects the strategic outlook of UltraTech Cement to drive climate action towards decarbonization as well as resiliency to the effects of climate change. This report supplements climate change-related disclosures in the Integrated and Sustainability Report of the Company*.

"In FY 2022-23, we formally put in words our Group's Purpose statement. At its heart is the commitment to enrich lives by building dynamic and responsible businesses and institutions that inspire trust. Every day, we strive to honour this commitment through our brands, products, services, solutions, actions, relationships, and institutions."

*https://www.ultratechcement.com/content/dam/ultratechcementwebsite/pdf/financials/annua I-reports/integrated-and-sustainability-report-2023-single-page.pdf

Cement and Concrete: Making a Material Difference

Cement is a key component of concrete and is an integral part of our everyday lives. It is the second-most consumed product globally after potable water and is required in everything that is built. Cement is vital to the economy and the well-being of billions across the world. Concrete structures play a critical role in providing housing, enabling transportation, supporting energy generation, and manufacturing facilities.

Several characteristics of concrete make it a material that is conducive to a low-carbon transformation as well as for building resilient buildings and protecting communities from the effects of climate change.

Properties conducive to low-carbon transformation		
Carbon uptake	Concrete reabsorbs a significant amount of CO ₂ over its lifetime in a process known as carbon uptake or recarbonation.	
Circular economy	Concrete buildings and other structures are long-lasting and ma be re-used or re-proposed at end of life. Further, there is hig potential for circularity in concrete production with was materials such as fly ash and steel slag used as material input and waste products of multiple industries used as alternative fu in cement kilns.	
Design for disassembly	It is possible to design concrete structures in a manner that is conducive to disassembly and reuse of parts in other construction projects.	
Versatility	As concrete is highly versatile it allows structural engineers and architects to explore a wide range of applications. For instance, the potential use of concrete blocks in energy storage and the possibility of cement batteries being integrated in buildings are examples of how novel concrete applications could support decarbonization of the global economy.	

Properties	Properties conducive to enhancing resiliency of buildings		
Passive cooling	Concrete can be used to passively heat or cool buildings, reducing energy requirements while also reducing the risk of overheating of homes.		
Water resistance	Concrete is inherently water-resistant, so it is an ideal material for building bridges and for keeping water out of homes. Further, certain additives in concrete can improve its water resistance and contribute to buildings become more resilient to heavy precipitation.		
Fire resistance	As concrete is resistant to fire, it contributes to safety of residents as well as fire fighters. Further, with instances of forest fires rising		

Properties conducive to enhancing resiliency of buildings				
	due to climate change, concrete may play an important role in making communities around the world more resilient.			
Disaster resilience	Concrete structures have a better track record in surviving extreme weather events compared to other materials, and therefore reduce the need for reconstruction following natural calamities.			

With all the benefits of cement and concrete, it is also important to acknowledge the need to transform the way cement is produced today, to mitigate its contribution to emissions of greenhouse gases, and ultimately to achieve net zero concrete production. The cement industry currently represents about 7-8 % of global greenhouse gas emissions ¹and is the third-largest industrial energy consumer. Cement production involves the decomposition of limestone (calcium carbonate), which represents about two-thirds of the total carbon emissions generated in the process, with the remaining emissions resulting from fuel combustion.

Rising population, urbanisation patterns and infrastructure development needs are expected to increase the global cement production, which is set to grow by 12-23% against 2014 level by 2050². The demand for cement in the construction industry drives production. By 2050, 70% of the global population is expected to reside and work in cities. At present, some 60% of this urban area is still to be built.³ The cement sector faces the challenge of meeting its growing demand while significantly cutting down carbon emissions from its production.

UltraTech Cement recognizes the potential role of cement and concrete in addressing climate change challenges including the challenge of decarbonizing cement production itself. Our Company has developed a strategy that is built on the prospects of capitalizing the opportunity to contribute to a climate-resilient and a low-carbon future through the Company's products and energy transformation. In this report, we have highlighted key elements of this strategy as well as the opportunities that we aim to capture.

¹ https://www.ifc.org/wps/wcm/connect/c015acbf-8465-4f8e-95e8-857511f10bbb/202008-COVID-19-impacton-cement-industry.pdf?MOD=AJPERES&CVID=ngxQLJQ

² https://www.wbcsd.org/contentwbc/download/4586/61682/1

³ WBCSD (2020), Construction and Building Materials TCFD Preparer Forum, Retrieved from:

https://www.wbcsd.org/Programs/Redefining-Value/TCFD/Resources/Construction-and-Building-Materials-share-TCFD-implementation-experience

Climate Action at UltraTech: 2022-23

Business impact

We are fully aware of the risks posed by climate change to our operations, supply chain, and profitability. While our primary market is currently focused within the country and its neighbouring regions, we recognise that the outlook for exports, along with the global transition to a low-carbon economy and evolving customer preferences, may have an impact on our overall profit margins.

Cause of impact on value chain

As a cement manufacturer, we acknowledge that our industry is inherently carbon intensive due to the nature of our raw materials. This places us in the category of a hard-to-abate sector when it comes to reducing GHG emissions. We recognise the potential risks associated with upcoming global regulations aimed at curbing emissions. Failure to meet our Net Zero target within the specified timeframe could result in reputational damage, loss of brand value, and financial implications for our Company.

Business strategy

We have taken proactive steps to drive sustainability and reduce our environmental impact. This includes adopting voluntary targets for GHG emission reduction, replacing fossil-based electricity with renewable energy sources and implementing Waste Heat Recovery Systems (WHRS) across our manufacturing Units. We are also optimising our product mix by incorporating lower cementitious content, prioritising the use of sustainable materials. Furthermore, we are actively exploring innovative technologies like Carbon Capture, Utilisation, and Storage (CCUS) in collaboration with startups such as CarbonOrO, Coomtech, and Fortera. Additionally, we are considering kiln electrification with Coolbrook to further enhance our carbon reduction efforts.

Our target

- Reduction of net specific Scope 1 emissions by 27% by 2032, from 2017 as base year.
- Substitution of 34% of electricity by green energy by 2024.

Our progress

- 12% reduction in specific net CO2 emissions till FY 2022-23.
- 19.27% electricity substituted through green energy till FY 2022-23.
- MoU signed with Coolbrook Oy, Finland for implementation of their technology RotoDynamic HeaterTM.

Climate Change Governance at UltraTech Cement

UltraTech believes that a strong governance with a purpose is instrumental in driving climate change actions and creating long-term value for all our stakeholders. Good corporate governance is core to our business, and we are forever aspiring to attain the pinnacle of success in a very transparent and ethical way. For us, at UltraTech, sustainability is central to the way we run our business. The adoption of new, cleaner, and greener technology together with the constant effort across all plants and processes to become more energy efficient has bolstered our commitment to deliver Net Zero Concrete by 2050.

UltraTech has established a robust governance framework to shape climate change and sustainability strategies for driving related actions, addressing risks and opportunities, and ensuring accountability. This framework consists of a Board level Risk Management and Sustainability Committee ("RMC") chaired by an independent director and includes executive directors. The Committee guides all aspects of our operations, ensuring sustainable resource utilization aligned with our vision and mission. It plays a pivotal role in overseeing climate risk and its impact on business and etching climate change and sustainability related aspects in the Company's core business strategy. We make all decisions in alignment with our vision and mission statement and design strategies that are in the best interests of all stakeholders.



The board has identified several skills, expertise and competencies to effectively function and discharge their responsibilities, including industry knowledge, Innovation, Corporate Governance, Strategic Expertise, Sustainability, Risk Management, etc. The RMC is responsible for driving the Company's climate change agenda, and the Managing Director is responsible for its implementation.

The Chief Sustainability Officer (CSO) works closely with the Board-level committee and the respective Unit-level committees as well as teams, in the implementation and review of the climate performance of the Company.

The objectives and scope of the RMS Committee broadly include:

Overall responsibility to monitor and approve risk management and sustainability framework.

Set climate change and sustainability strategies and targets

- Implement strategy and targets through Corporate and Unit- level Risk Management and Sustainability Committees
- Review the progress of climate change and sustainability-related targets, KPIs, and issues regularly
- Monitor and approve risk management and sustainability framework
- Review various business risks, including climate change risks, and recommend an action plan to mitigate the identified risks

The committee meets half-yearly to oversee progress against climate change related targets and commitments and to review developments in external environment and climate-related risks and opportunities. Topics of discussion and review revolved around the below areas:

- Net Zero commitment
- **GCCA** climate ambition
- Renewable energy targets
- Science based target initiative (SBTi)
- Water positivity targets

Company-level targets, commitments, and action plans pertaining to sustainability and climate change are also reviewed by Unit-level Committees. The Corporate Sustainability Team ensures that key decisions and responsibilities at the board level are relayed to Unit-level Committees. The Unit Head leads the Unit-level committees and consists of senior management at respect units. The Unit-level committees translate targets and commitments at the company level, such as commitment to Science Based Targets, renewable energy targets, water positivity targets, etc., to site-specific action plans.

Driving performance by integrating climate change targets with board KRAs

UltraTech encourages management and achievement of climate related targets by integrating in the key responsibility areas (KRAs) of respective personnel and providing performance incentives. Climate change and sustainability targets have been integrated with the KRAs of the executive directors and senior management. Initiatives such as increasing alternative fuel rate, energy efficiency, increasing the share of WHRS, water positivity, and renewable energy, among others, are also part of our executive compensation targets.

UltraTech Cement's Climate Strategy and Performance

UltraTech is committed to transitioning to a low-carbon business and is actively factoring climate-related risks and opportunities into the Company's business strategy. It is reflected in the strategic long-term plan, which integrates GHG emissions reduction to planned business growth. The Company's approach is based on a multi-pronged strategy encompassing decarbonizing the energy mix, focusing on low-carbon products, and diversification of the business across the value chain of the building and construction sector.

Strategic focus areas toward a low-carbon future

(A) Increasing share of green power

UltraTech is directing focused efforts toward increasing its green energy power mix, which includes waste-to-heat recovery systems (WHRS) and renewable energy (Solar and Wind).

In FY23, 76 MW of onsite and offsite Renewable Energy capacity have been added, which is 28% higher than last year and 43 MW of WHRS capacity has been added which is over 25% higher than last year. The total renewable energy is 345 MW and total energy from WHRS is 210MW. Through WHRS, we capture and utilize the waste heat released from the systems to generate electricity catering to our operations.

The total green energy capacity of UltraTech is 555 MW, which is over 19% of the total power consumption of the Company. We have target to achieve green energy 34% of by total power consumption by FY24.

The financial savings from renewable energy is estimated to be 40% lower and 85% lower from WHRS. Considering an installed capacity of 500 MW with target of 302 MW of WHRS capacity, the financial savings are estimated over 8% in the total energy cost.

(B) Product innovation

There is a significant focus on diversification of the product portfolio to serve the building and construction industry better. Besides manufacturing cement, Ultratech also manufactures ready-mix concrete, building products, and building solutions. These businesses have a high-growth potential and represent an opportunity to generate revenue through a comparatively less emissions-intensive line of business. We are producing a range of low-carbon products across businesses – including blended cement products, blended concrete, and recycled concrete. There are also concentrated efforts to produce products that can increase the resiliency of the building and construction sector to the damaging effects of climate change, such as flooding and aggravation of water stress.

UltraTech has been relentlessly working towards applying its scientific knowledge and R&D capability to develop innovative low-carbon products. We have been exploring new cement products with lower clinker ratios that reduce carbon emissions; in FY23 clinker conversion ratio stood at 1.41.

For example, concentrated efforts are being taken to explore using Limestone Calcined Clay Cement (LC3) based on a blend of limestone and calcined clay. LC3 is made using limestone and low-grade clays, available in abundant quantities. This cement type is considered a low-carbon and cost-effective product as it does not require capital-intensive modifications to existing cement plants and can enable about 50% clinker replacement. It has the potential to reduce carbon emissions by up to 40%.

At UltraTech, we actively contribute to sustainability through the production of green cement. Green cement contributed to 69% of total sales in FY 23.

(C) Circular economy initiatives

UltraTech is working towards reducing the consumption of primary materials in the manufacturing process by utilizing waste or by-products such as fly ash, slag, and other industrial waste materials as raw materials and fuel in the production of green cement such as PPC (Portland Pozzolana Cement), PSC (Portland Slag Cement), PPC Super and Composite cement. We are engaging with fly ash and slag providers for long-term contracts that ensure sustainable supply over a longer period of time.

Usage of alternative fuels in cement kilns serves two purposes – effective waste management disposal and displacement of solid fuel (coal, Petcoke) consumption. Municipal solid waste and agricultural waste are utilized as fuel source across all our integrated cement plants as sources of fuel. Hazardous waste from automobiles, refinery and pharmaceuticals industries is also used as fuel. In some plants, spent carbon, organic residue, distillation residue, bottom sludge and cotton waste are also utilized, this has helped UltraTech to reduce the consumption of solid fuel by 5.2%.

In addition to the above, The RMC business of UltraTech is currently recycling and enhancing the use of construction demolition wastes in RMC concrete. In FY23, 8,512 MT of Construction and demolition (C&D) waste in RMC plants was used and contributed in reducing the material intensity and GHG emissions intensity of construction.

(D) Operationalising Internal Carbon Pricing (ICP)

Internal carbon pricing is an effective tool to internalize the cost of carbon, and to factor the risk associated with emitting greenhouse gases. UltraTech has implemented an internal carbon pricing mechanism with a defined shadow price of USD 10 per tCO2e. ICP is applied in all CAPEX decisions across the company. CAPEX proposals submitted to senior management for approvals are standardized and consists of return-on-investment calculation with and without ICP. This has helped in accelerating adoption of low carbon technologies and levers.

(E) Lower energy consumption

UltraTech is focusing on achieving highest levels of efficiency across its operations. UltraTech has been focusing on ensuring that new cement plants are commissioned without coal-based captive power. In addition, new cement plants are designed with initiatives for achieving high levels of operational efficiency. Some of these initiatives include implementation of WHRS, solar power, modification in coolers for achieving low heat equipment, dry ash system, etc. In case of acquisitions, focused efforts are directed towards bringing the lowest carbon intensity at par with UltraTech's levels through retrofits with latest technologies.

(F) Value chain initiatives

UltraTech has positioned its grinding units and integrated units as a strategy to reduce the carbon footprint across value chain. Grinding units are located closer to the end users, source of supplementary cementitious materials and integrated units are closer to limestones mines. This enables transportation of products over shorter distances, avoiding emissions associated with transportation of products over longer distances. In addition to this, it is ensured that cement transportation is maximized by rail and sea freight. In FY 23, 57,000 MT of phosphogypsum consignment transported from Odisha to Gujarat using coastal waterway transport.

On product side, life cycle assessments are conducted to assess the associated carbon emissions throughout the value chain. we are continually strengthening our portfolio of 'Green' products basis consumer insights and currently offer over 70 Green Pro-certified Concrete and Building Products. Our cement products have received Green Pro certification from the Indian Green Building Council, aligning with our commitment to being a certified green company

Commitments to climate action

Ultratech Cement has adopted several commitments that shape the trajectory of the company's climate action. Public voluntary commitments towards climate action enhance the transparency as well as the accountability of the company's climate strategy.

SCIENCE BASE TAROETS RENA AVOIS WINT T. S. COM	Science-based Target Initiative: Commitment to build business in line with "well below 2 degrees Celsius world" under the Paris agreement and reduce Scope 1 GHG intensity by 27% by 2032 (baseline: 2017)
gc ca	Global Cement and Concrete Association: Commitment to the ambition of achieving carbon neutral concrete by 2050 laid out by GCCA
<u></u>	Sustainability-linked bonds: UltraTech has raised USD 400M, 10-year, in the form of sustainability-linked bonds linked to emission intensity reduction of the company
EP 100	EP 100: Alignment with the Energy Productivity Initiative by the Climate Group has driven UltraTech to undertake efforts towards doubling the energy productivity by 2035 from 2009-2010 levels.
RE 100	RE 100: UltraTech Cement target to reach 100% electricity requirement for its entire global operations through renewable energy by 2050.

Climate performance against targets

Target	Performance	
Climate change, energy and Emissions	FY 22	FY 23
Reducing scope 1 carbon emissions by 27% by 2032 from 2017 level (approved by SBTi)	Reduction in carbon emission intensity by 9 %	Reduction in carbon emission intensity by 12 %
34% electricity to be met through combination of Renewable energy (RE) and Waste heat recovery system (WHRS) by 2024	17.6% of electricity consumption met through RE and WHRS	19.3% of electricity consumption met through RE and WHRS
Water Management		
Become 5 times water positive by 2024	3.8 times water positive	4.2 times water positive

Key metrics

Parameter	Metrices	Unit	FY 22	FY 23
GHG	Scope 1	tCO ₂	6,14,53,953	6,25,30,455
Emission	Scope 2	tCO ₂	10,49,149	16,95,036
	Net emission intensity (Scope 1)	Kg CO ₂ per ton of cementitious material	582	557
Energy Mix	Green energy mix	% of total energy	17.6%	19.3%
	AFR rate	% Thermal energy substitution	4.6%	5.2%
Water Use	Water positivity	times	3.8	4.2
	Water recycled and reused	%	11.0%	10.8%
Carbon Pricing	Internal Carbon price	\$	10\$	10\$
Physical risk coverage	Insurance coverage for natural calamity	%	100%	100%

Note: The increase in the Scope1 and 2 emission is mainly due to higher production and new capacity commissioning, however emission intensity is lower than last year.

Climate-related Opportunities

While UltraTech Cement has adopted a robust climate change strategy and governance framework, we believe that the future holds many opportunities to go beyond decarbonization of cement production towards decarbonization of built environments as well as increased resiliency of vulnerable populations to climate change.

Enhancing resiliency of building sector

UltraTech Cement is offering building products and solutions that lead to optimization of concrete mixing, improving overall quality and strength of the construction to alleviate the impacts on extreme weather events on buildings. Several products have been developed that are designed to make buildings more resilient to dampness and ensure judicious use of water. This is also leading to reduced wear and tear of buildings, increasing their longevity, thereby reducing the use of input materials and natural resources during their entire lifecycle. We also collaborate with the construction industry and provide training to masons to increase overall durability of concrete structures.

By working more closely with the construction sector, our company is well-positioned to augment the design and construction of sustainable built environments. This will not only add to resiliency of society at large, including those depending on affordable housing, but will also contribute to growing our business segments of building products and services.

Access to sustainable finance

UltraTech is the first company in India to issue dollar-based sustainability linked bonds, raising USD 400 M. As part of this, there is a performance target to reduce 22.2% of carbon emissions for every ton of cementitious material the company produces by 2030 against 2017 levels.

UltraTech is working towards reducing its carbon intensity to ensure associated targets are met. In addition to enhancing accessibility to financial capital, this has also opened opportunities to tap the international markets at lower Interest rate and build a global brand.

Sustainability-linked bonds is only one form of innovative financing mechanisms that present opportunities for UltraTech Cement and other corporates towards meeting their climate ambitions. Other mechanisms such as transition bonds, green bonds, carbon markets under a renewed international trading mechanism all represent opportunities to support the execution of our carbon strategy.

Low- carbon future of cement

Cement companies have several options to decarbonize cement production. However, only a small portion (around 20 percent)⁴ will come from operational advances, while the remainder will need to come from technological innovation and new business growth horizons.

Over 70 products certified by GreenPro, the largest Eco label in India, which enables the end users in the building sector to choose sustainable materials for reducing the environment impact- during the construction, operation and maintenance of buildings. UltraTech's products not only focuses on sustainable aspects during construction phase, but throughout the lifecycle of the building.



Operational advances, such as energy-efficiency measures, have already largely been implemented, and the emissions-reduction potential from alternative fuels and clinker substitution is limited by the decreasing availability of input materials. The most promising levers, in terms of emissions-reduction potential, are still in development and have only been piloted or implemented on a small scale.

Aside for emerging technologies such as carbon capture utilization and storage, kiln electrification and green hydrogen as an energy source, there are significant opportunities for the cement industry to carve a low-carbon future by re-inventing the product and business model itself.



⁴https://www.mckinsey.com/~/media/mckinsey/industries/chemicals/our%20insights/laying%20the%20found ation%20for%20zero%20carbon%20cement/laying-the-foundation-for-zero-carbon-cement-v3.pdf?shouldIndex=false

(A) Production of low clinker cement

Clinker can be substituted by cementitious materials such as natural and calcined pozzolans, as well as industrial by-products such as fly ash and blast furnace slag. Substitution of clinker by alternative materials such as granulated slag from steel blast furnaces and fly ash from coal-fired power plants is an effective way to move towards a low-carbon growth. Carbon emissions are directly proportionate to the amount of clinker used in cement production. Increasing the use of blended materials and the market deployment of blended cements reduces the clinker required per tonne of cement or per cubic metre of concrete produced. The use of alternative binding materials could offer potential opportunities for process CO₂ emissions reductions by using different mixes of raw materials or alternatives compared to Portland cement. The following are examples of opportunities for increasing the market deployment of blended cement products:

- Increase the demand for concrete roads from blended cement products: The construction of concrete roads holds several benefits over bituminous roads such as: longer service life of > 40 years, lower lifecycle costs, lower maintenance, higher resistance to extreme weather conditions such as heavy rainfall and wider temperature ranges and potential for reducing fuel consumption in transportation. In India, the share of concrete roads is relatively low compared to other geographies and there is an opportunity to bridge this gap leveraging the superior characteristics of concrete as a material, while also enabling lower dependency on clinker in concrete application.
- Promoting the use of hollow concrete blocks or autoclaved aerated concrete (AAC) blocks for construction of housing: The use of hollow concrete / AAC blocks in affordable housing can lead to improved resiliency of homes to extreme weather events. Further, these materials can potentially decrease energy requirements for cooling and heating of homes as against home constructed from conventional clay-based bricks.

(B) Product diversification

UltraTech Cement is developing various low-carbon products to reduce GHG emissions. Blended cement products, namely UltraTech Super Cement, has strength equivalent to OPC with a lower clinker ratio and GHG intensity. Ultratech Premium composite cement consists of high-quality clinker blended with judicious amounts of superior blast furnace slag with high glass content. It is ideal for producing reinforced cement concrete (RCC) in marine and aggressive environments due to its superior resistance to attack of sulphates and chlorides. In the RMC Business, recycled concrete and blended concrete products are also contributing to reducing GHG emissions for the construction sector. In addition to these products, our focus is on increasing production of Portland Pozolana Cement (PPC) and Portland Slag Cement (PSC) and composite cement, both of which have low GHG intensity.



New types of cement may be required to address challenges associated with high clinker ratio coupled with lack of fly ash availability. If coal-based power will be phased down, as required under a transition to net zero emissions for India, then the cement industry will have to find alternative to fly ash blended cement for reducing the process emissions from calcination of limestone. For example, clay-based cement and composite cement could represent opportunities to reduce clinker ratio without relying excessively on fly ash. UltraTech Cement plans to explore alternative forms of cement in the future to mitigate this risk and is closely monitoring the development of standards for these new materials.

(C) Business model diversification

In the short to medium term, as carbon emission reduction will become crucial, larger focus will be on a differentiated and carbon- conscious business models. In the coming future, it is anticipated that the cement industry will shift from mass production of raw materials to prefabricated construction materials, enabling a resource efficient construction model.

Prefabricated construction materials, such as pre-cast cement or concrete modules have enormous potential to reduce carbon emissions. This can be achieved with efficient input materials of low carbon cement, process efficiencies, reuse of modular elements and reduced waste generation. The pre-cast/fabricated business model also has the potential to reduce building construction costs through material savings and spending on personnel.

UltraTech is cognizant of these potential long-term changes in the construction sector and is exploring business diversification opportunities as an integral part of business strategy. Our company and has already embarked on broadening its products and solutions offering beyond grey and white cement. The company is diversified into various businesses in the extended value chain including ready-mix concrete (RMC), building products, and building services.

Climate Change Risk Management

UltraTech has a defined risk management policy and management framework for identifying and managing climate-change related business risks. A multi-disciplinary company-wide risk management process helps in the identification, assessment, and management of climate change related risks and opportunities. ERM framework helps in making business more resilient through effective monitoring of the business risks and determining the response strategy well in advance.

Identifying and assessing climate-related risks

Cement sector is exposed to numerous climate change risks. Though all of them might not be material today in terms of their financial impact and long- term time horizon, their early identification and assessment is crucial for developing a risk mitigation plan.

Climate risks are assessed in line with our risk management policy to support their relative prioritization. Sectoral review and relevant stakeholder interactions are done regularly to develop a laundry list of climate change related risks. The process enables mapping of both business and location specific risks. Identified risks are then mapped to the company's risk matrix which classifies the risk according to impact and likelihood. Prioritized risks are then consolidated at corporate level and presented to the Board level committee for review UltraTech is planning to integrate another dimension of 'velocity' to the risk matrix process to ensure a robust process of assessing impact long-term time horizon and accordingly define mitigation plans.

Management and integration of climate-related risks

Sustainability related climate change risks and opportunities are integrated into the Group's Risk Management Framework. These risks are classified as ESG risks that are related energy, emissions, water, among other areas.

Prioritized climate risks are managed through Board and Unit level Risk Management and Sustainability committees. The Risk Management & Sustainability Committee at the Board is responsible to ensure proactive management and mitigation of risks, including climate related risks. The Company Secretary acts as a Secretary to the Committee.

Functional and Unit heads are responsible to identify risks, develop mitigation plans, and update and review their respective risk registers as per the defined process. Consolidated risk report is submitted to the Corporate Risk Management Committee on a quarterly basis which further presents findings to the Board committee. Committee meetings occur quarterly to review the progress and prepare mitigation plans. A feedback mechanism is in place that allows employees to directly report on potential risks in an anonymous way. Risk management Committee has a reward system for encouraging employees towards risk identification and reporting.

On a regular basis, online and in-person training programs are conducted to map emerging climate change risks and opportunities for internal stakeholders to create awareness and

share best practices on risk identification and mitigation. UltraTech has also linked ESG risk related targets with KRA of Senior executives in the company.

Climate risks management

Physical Risks - Acute physical risk

In line with the TCFD recommendations, UltraTech has carried out a comprehensive risk assessment review to identify climate-related physical and transition risks. The categorization has been done as per below:

- Physical risks: Risks resulting from event driven or longer-term change in climatic patterns causing damage to assets or supply chain disruption.
 - > Acute physical risks: Floods, cyclones, and droughts
 - Chronic physical risks: Variation in temperature, precipitation patterns and water stress
- Transition Risks: Risks emerging from transition to low-carbon business pathway that involves regulatory changes, technology, and market changes to address mitigation and adaptation requirements related to climate change.

The company has developed a risk mitigation strategy against each of the climate-risks, summarized as follows.

Risk description	Risk mitigation strategy		
Acute physical risks can potentially impact sales volumes led by disruption of business operations due to interruption in supply chain, rise in logistics costs, power outage, infrastructure damages, manpower shortage, among other aspects. Some of our sites have been exposed to extreme weather events during the last few years, such as floods and cyclones. In the last three	Disaster management plans, health and safety protocols and adequate communication protocols during extreme weather events ensure safety at sites and minimize the impact on workforce. Annual weather forecasts are considered in supply chain decisions globally to mitigate risk of delays in sourcing of fuels due to natural calamities. Insurance coverage is in place to protect against damages to business assets or loss of materials in warehouses or transit due to extreme weather events.		
years, sites located in Bhubaneshwar, Chennai and Gujarat have been impacted due to extreme weather events. One of the sites in West Bengal also faced production delays due to cyclone Amphan, but no permanent damage to assets or employees was reported.	Moreover, the company's sites are highly diversified geographically with pan-India presence. If a manufacturing plant faces business disruption or shutdown due to extreme weather events, alternative plants in other locations can serve the respective customer. Widespread logistics network with warehouses across different parts of the country enable flexibility in our operations.		

Physical Risks - Chronic physical risk

Risk description

As highlighted in the IPCC AR6, no region of the world in unaffected by climate change. India is expected to be vulnerable to long-term chronic physical risks, such as variation in temperature, precipitation and water stress. Water is crucial to our operations and where plants are in areas of water stress. it is important that we have long term visibility of precipitation patterns. Over the years, the company has not witnessed any impact on its facilities due to heat waves as a result of rising temperatures. However, further rise in temperatures could impact well-being of our people and local communities in the future. Potential impact of variation in temperature and precipitation patterns has been assessed through scenario analysis.

Risk mitigation strategy

Rainwater harvesting systems have been installed across sites. Harvested rainwater is either reused within the site or injected into the ground for raising groundwater levels. In addition, at several our manufacturing sites, Zero Liquid Discharge (ZLD) plants have been installed to enable reuse of 100% treated water within the sites. As a result, nearly 41 sites are water positive. The endeavour is to make all sites water positive, enabling us to be future-ready for mitigating risks of water stress.

Measures to mitigate risks of heat waves have been introduced across sites, making UltraTech resilient to such risks. Minimal work in mid-day hours in warehouses or outdoor areas during peak summer days, flexible work hours with early morning and late evening hours to avoid exposure to heat waves and compliance to WASH Pledge (ensuring availability of drinking water) protect workers' health during peak summer and help in mitigating the risks. Widespread logistics network with warehouses across different parts of the country enable flexibility in our operations.

Transition Risks - Policy and regulation			
Risk description	Risk mitigation strategy		
Emerging climate-related regulations and carbon pricing mechanisms may financially impact business in the long-run. For example, Emission Trading Scheme (ETS) and Carbon Tax has been adopted in several geographies around the world. India has committed to achieve net zero emissions by 2070 leading up to COP26 in Glasgow and has updated national decarbonization targets including:	UltraTech Cement is committed to net zero concrete by 2050 and has committed to reduced emissions aligned with Science Based Targets. This is backed by a robust climate change mitigation strategy. We are prepared to be aligned with emerging risks pertaining to climate change policy changes. Further information on our voluntary commitments such as SBTi, sustainability- linked bonds, Net Zero, GCCA climate		

•	Installing non-fossil fuel electricity capacity of 500 GW by 2030	ambition, RE100, EP 100 are given in the section on Climate resilience.
•	Sourcing 50% of energy requirement from renewables by 2030	
•	Reducing 1 billion tonnes of projected emissions from now till 2030	
•	Achieving carbon intensity reduction of 45% over 2005 levels by 2030	
While there is no carbon tax or cap and trade mechanism in India, national level commitments may, in the future, cascade down to various industry sectors through the introduction of new climate change policies.		

Transition Risks – Technology

Risk description	Risk mitigation strategy
Delay in adopting low-carbon technologies may lead to increased indirect operating costs. This could be through write-offs and early retirement of existing assets due to phase out of conventional fuels and technological advances towards shifting to low- carbon intensive primary energy sources. Evolving technologies may lead to substitution of existing products and services with lower emissions options, which could lead to revenue loss. Businesses may need to make investments in demonstration plants and new technologies which may not be viable.	We have strategically reduced dependency on coal-based power generation and are focussed on increasing the share of WHRS and renewable energy. We utilize waste or by-products from other industries and are reducing clinker ratio leading to reduction in emissions intensity. Further, we are also making efforts to track the technology and cost trends in emerging areas such as carbon capture, utilization and storage (CCUS), hydrogen and kiln electrification.

Transition Risks – Market	
Risk description	Risk mitigation strategy
Reduced demand for the existing product offering could impact revenue. Increasing awareness about climate change impact	There is significant focus on diversification of product portfolio to better serve the building and construction industry. Apart from

poses risks of changing preference of	manufacturing cement, we also manufacture
customers towards the use low- emission	ready-mix concrete, building products and
cement in business processes. Investors are	building solutions. We produce a range of low-
expected to indulge in business with	carbon products across businesses -
environmentally conscious organizations. It is	including blended cement products, blended
critical to account for market changes such	concrete and recycled concrete. For further
as increasing cost of raw materials in the	details, refer to the section on Climate-related
future and be future-ready by diversifying	opportunities.
product portfolio and exploring the low-	
carbon blended cement business.	

Transition Risks – Reputation

Risk description	Risk mitigation strategy
The risk of being perceived as a large carbon emitter company may lead to negative branding and impact relationship with various stakeholders, such as customers, investors, and potential employees. Inability to meet carbon emission reduction targets may have negative impact on reputation and shifting preferences of customers towards environmental-friendly materials, thereby impacting the sales volume of the company.	We engage with stakeholders on climate risk issues and this report represents a step in increased transparency towards our climate change governance, risk management, strategy and performance. We are committed to align with the Paris Agreement goals and are judiciously monitoring climate change performance at the Board-level, Unit-level and across all relevant functions.

The risk mitigation strategy against each of our risks is formally integrated in our enterprise risk management framework. Further, our risk assessment is informed via a scenario analysis across physical and transition risks.

Scenario Analysis – Physical Risks

Assessing the potential impact of physical risks via scenario analysis helps the company with risk mitigation planning to enhance resilience of the business, supply chain and communities at large to extreme weather events. As per the physical risk assessment conducted this year, it has been found that the company has faced negligible financial consequences of extreme weather events so far owing to strategic initiatives and the implementation of various mitigation measures. UltraTech has carried out scenario analysis for assessing the impact of physical risks on its business so that proactive measures can be undertaken in high-risk areas to ensure uninterrupted business functioning in the short, medium and long-run.

For physical risks that do not have significant impact in the short-term but may increase in the long run, four scenarios have been considered. This includes RCP 8.5, RCP 6, RCP 4.5 and RCP 2.6 scenarios. A Representative Concentration Pathway (RCP) is a greenhouse gas concentration trajectory defined by the IPCC. The pathways describe different climate futures, all of which are considered possible depending on the volume of greenhouse gases (GHG)

emitted in the years to come. All four scenarios have been considered to assess impact of temperature and precipitation changes in areas where the company operates. Maximum possible impact has been considered based on projections up to 2100.

Scenario	Description	Avg temperature increase by 2081-2100
RCP 2.6	Radiative forcing peaks at approximately 3 W m-2 before 2100 and then declines (the corresponding ECP* assuming constant emissions after 2100);	1ºC
RCP 4.5	Intermediate stabilisation pathway in which radiative forcing is stabilised at approximately 4.5 W m-2 after 2100 (the corresponding ECPs assuming constant concentrations after 2150)	1.8ºC
RCP 6	Intermediate stabilisation pathway in which radiative forcing is stabilised at approximately 6 W m-2 after 2100 (the corresponding ECPs assuming constant concentrations after 2150)	2.2ºC
RCP 8.5 Radiative forcing reaches greater than 8.5 W m-2 by 2100 and continues to rise for some amount of time (the corresponding ECP assuming constant emissions after 2100 and constant concentrations after 2250).		3.7ºC

Radiative forcing is the change in energy flux in the atmosphere caused by natural and/or anthropogenic factors of climate change

ECP stands for Extended Concentration Pathways (ECPs) which describe extensions of the RCPs from 2100 to 2500

Physical risks analysis findings

Acute physical risks: Such risks can potentially impact sales volumes because of disruption of business operations due to interruption in supply chain, rise in logistics costs, power outage, infrastructure damages, manpower shortage, among other aspects.

Few sites have been exposed to extreme weather events during the last few years, such as floods and cyclones. In the last three years, sites located in Bhubaneswar, Chennai and Gujarat have been impacted due to extreme weather events. Some of the sites are in

geographies that are susceptible to periodic heat waves. However, there are several measures implemented to mitigate the impact of physical risks.

Given its pan-India presence, the company's sites are highly diversified geographically. If a manufacturing plant faces business disruption or shutdown due to extreme weather events, alternative plants in other locations can serve the market need. Also, its wide logistics network, with warehouses across different parts of the country, enable flexibility in the company's operations.

Annual weather forecasts are considered in supply chain decisions in order to mitigate the risk of delays in sourcing of fuels. The company has developed strategic partnerships with geographically diverse global vendors for fuels. Regular monitoring of environmental, political and regulatory developments, coupled with flexible contracts mitigate risks of supply chain disruptions. Inventory norms for fuels are periodically reviewed considering probability and expected impact of likely supply chain disruptions due to above developments. Insurance coverage is in place to protect against damages to business assets or loss of material in warehouses due to extreme weather events.

The company has not witnessed any impact of heat waves on its facilities. Nevertheless, it ensures that its employees are protected during peak summer days. It is committed to the WASH Pledge, ensuring adequate availability of safe drinking water to workers. Warehouses are also secured with early morning and late evening operational hours.

Disaster management plans, health and safety protocols and adequate communication protocols during extreme weather events ensure safety at sites and minimise the impact on the workforce.

The financial impact of physical risks is estimated to be less than 1% of EBITDA. Risk mitigation measures have largely insulated the company from the impact of extreme weather events.

Chronic physical risks: The company's vast geographical presence makes it vulnerable to long-term chronic physical risks, such as variation in temperature, precipitation and water scarcity. Potential impact of variation in temperature and precipitation patterns has been assessed through scenario analysis across all four scenarios. Less than a quarter of the cement plants are in sites with extremely high water-stress, combined with a projected long-term decrease in precipitation patterns.

The company has implemented several measures which protect the business from the identified chronic risks. Rainwater harvesting systems have also been installed across sites. Harvested rainwater is either used within the sites or recharged into the ground for raising groundwater levels. In addition, the manufacturing sites are Zero Liquid Discharge ("ZLD") and they reuse 100% of treated water within the sites.

As a result, majority of our sites are water positive. The endeavour is to make all sites water positive, enabling the company to be future-ready for mitigating risks of water stress.

Scenario Analysis - Transition Risks

Scenario analysis has been conducted in alignment with ETP B2DS and IPCC 1.5-degree scenario for assessing the impact of transition risks on UltraTech. The potential impact of evolution of climate policies has been considered under both scenarios to test the resiliency

of the company as well as the potential pathways for decarbonization to comply with policy mechanisms such as emission trading schemes. Both scenarios involve more stringent rate of decarbonization as compared to India's current pledge to achieve net zero by 2070. A B2DS implies a scenario where industry will be required to achieve net zero by 2060 whereas 1.5DS requires achieve net zero emissions by 2050. UltraTech has assessed the financial impact arising from emerging carbon regulations i.e. Emission Trading Scheme and cost of transitioning to low-carbon technology.

Below 2 Degree Scenario Description

- Production projection is based on higher growth in short term (till FY26) and sector average growth in long term.
- Till 2032 the company will follow its target trajectory aligned with SBTi targets of reducing Scope 1 and Scope 2 emission intensity by 27% and 69% respectively from base year 2017.
- Post 2032 decarbonization rate will continue to be aligned with B2DS SBTI Trajectory for cement sector

1.5 Degree Scenario Description

- ► Till 2032 emissions trajectory is aligned with B2DS
- Post 2032 emission intensity will reduce at a rate culminating in net zero emissions in 2050
- The 2050 net zero target leads to steeper emission reduction from FY32 to FY50 as compared to B2DS

Transition risk analysis findings

Emerging climate-related regulations and carbon pricing mechanisms may financially impact business in the long run. For example, Emission Trading Scheme ("ETS") and Carbon

Tax have been adopted in several geographies around the world. India has committed to reducing its emission intensity by 33-35% by 2030 and is on track to achieve this target five years in advance (2025). National level commitments may, in the future, cascade down to various industry sectors through the introduction of new climate change policies. The estimated impact of a policy such as ETS on your Company is estimated to be less than 1% of EBITDA, considering commitments already made to decarbonise the business.

The company is prepared to mitigate emerging risks pertaining to climate change policy changes through its existing voluntary GHG reduction targets which are SBTi validated,

sustainability-linked bonds, its commitment to the GCCA announced '2050 Climate Ambition', GCCA Net Zero roadmap and so on. Delay in adopting low-carbon technologies may lead to increased indirect operating costs. This could be through early retirement of existing assets. The company has strategically reduced its dependence on coal-based power generation and is focused on increasing the share of WHRS and renewable energy. Further, initiatives to utilise waste or by-products from other industries, and reducing clinker ratio are driving down emissions intensity. There are also efforts to track the technology and cost trends in emerging areas such as carbon capture, utilisation and storage ("CCUS"), and hydrogen and kiln electrification. Also, the company is committed to aligning with the Paris Agreement Goals and is judiciously monitoring climate change performance at the Board-level, Unit-level and across all relevant functions.

Transition Risk	Actions from UltraTech Cement			
Policy Influencing the policy to cement regulatory & policy environment	Carbon pricing and markets Working towards transparent carbon pricing that reflects the true cost of GHG emissions in India	 Sectoral changes Policies and infrastructure to increase renewables into total energy consumption Policies and infrastructure maximize waste management, increase recycling and facilitate circular economy. 	Environmental Claims Advocating for national & internationally recognized standards to ensure claims are standardized for better comparability.	
Technology	Ingredients	Manufacturing	Logistics	
Change the way we manufacture our products	R&D investment in new technologies to increase recycled material and reducing emissions	Adoption of best available technology to substitute thermal energy. Improving energy efficiency of our units	We are pursuing to reduce emissions by reducing fuel consumption and switching to lower emission fuels	
Market	Transforming our portfolio	Evolving our business	Carbon neutrality	
Adapt and embrace			Individual product meeting carbon	

Transition Risk	Actions from UltraTech Cement			
sustainability to move alongwith market demand	Acceleration of innovation to lower the environmental footprint of our products	Continuing to invest in new business models that help waste going to landfill and reduce carbon emissions	neutrality to meet growing market preferences for more transparent and sustainable products.	
			Use of high-quality, verified offsets and insets	

Collaborating to Combat Climate Change

We believe that collaboration within the cement and concrete industry as well as outside the sector is essential for optimizing the effectiveness of our climate actions. This has been the driving force for working with the Indian cement industry while also collaborating with academia and not-for-profit sector on various initiatives such as:

- GCCA: UltraTech Cement is a founding member of the Global Cement and Concrete Association (GCCA), which aims at reducing the environmental impacts of cement production and promoting the unique properties of concrete as a sustainable, durable, and resilient building material. GCCA India focuses on driving cement sector's sustainability efforts in India. UltraTech Chief Sustainability Officer (CSO) is Co-Chair for the GCCA global working group - Good Practices and Benchmarking and chairing its India Working Group - Water Biodiversity and SDGs.
- Innovation challenges: Through the IndiaNext initiative, UltraTech Cement has successfully established an annual platform that offers the most noted professionals and brightest of students from the engineering and architecture sector to bring forth solutions to the most pressing need of the hour of independent India and help set a revolution of innovation in building solutions. Examples of previous winners include: the 'Aqueous Communes' entry of MAD(E) in Mumbai Team for providing a replicable model solution for flood resilient homes and M A Architects for providing a versatile solution derived from light concrete that utilises recycled waste.
- Working with institutes: We work with institutes to enhance the effectiveness our climate adaptation initiatives aimed at making communities more resilient. As part of our commitment to innovation, we have collaborated with national and international universities to further our research efforts. Specifically, we have collaborated with IIT-Chennai, NIT-Rourkela, and IIT-Delhi in FY 23. In terms of our R&D investment, our revenue expenditure for the year is INR 11.61 crores.
- At unit level, various engagements are done, for e.g. Andhra Pradesh Cement Works adopted Ayyavaripalli (Anantapur district) and Petnikota (Kurnool district) villages and their surrounding areas in Andhra Pradesh for implementing integrated watershed projects in collaboration with International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). The objective was to address the twin issues of water scarcity and land degradation and extend support to nearby villages for better livelihood opportunities.

As we continue to our enhance strategy, governance and risk management framework to address climate change, we believe that combining our resources and capabilities with other institutions will brighten the prospects of solving the complex challenges as well as capitalizing exciting opportunities presented.

Alignment with TCFD

UltraTech is aligned with TCFD guidelines for the climate-related disclosures. The details on TCFD disclosures can be found on the following pages:

S.no	Disclosure	TCFD disclosure	Section	Page
1	Disclose the organization's governance around climate-related issues and opportunities	Governance 1: Describe the board's oversight of climate-related risks and opportunities. Governance 2: Describe management's role in assessing and managing climate-related risks and opportunities.	Climate Change Governance at UltraTech Cement	Page 8-9
2	2 Disclose the actual and potential impacts of climate- related risks and opportunities on the organization's business, strategy, and financial	Strategy 1: Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Climate change risk management	Page 18-23
planning where such information is material.	Strategy 2: Describe the impact of climate- related risks and opportunities on the organization's businesses, strategy, and financial planning.		Page 23-25	
	Strategy 3: Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	UltraTech Cement's Climate Strategy and Performance Climate Change Risk Management	Page 10-13 Page 18-23	
3	Disclose how the organization identifies, assesses,	Risk Management 1: Describe the organization's processes for identifying and	Climate Change Risk Management	Page 22-24

S.no	Disclosure	TCFD disclosure	Section	Page
	and manages climate-related risks.	assessing climate-related risks.		
		Risk Management 2: Describe the organization's		
		processes for managing		
		climate-related risks.		
		Risk Management 3: Describe how processes for		
		identifying, assessing, and		
		managing climate-related risks		
		are integrated into the		
		organization's overall risk		
		management.		
4	Disclose the metrics and targets used to assess and manage relevant climate- related risks and opportunities where such information is material.	Metrics and targets 1: Disclose the metrics used by the organization to assess climate- related risks and opportunities in line with its strategy and risk management process. Metrics and targets 2: Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks. Metrics and targets 3: Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Climate performance against targets	Page 19-22