

# **WATER MANAGEMENT**

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## PURPOSE OF THE DOCUMENT

This document sets out HZL's approach to water stewardship. Water stewardship is the use of water in ways that are socially equitable, environmentally sustainable, and economically beneficial. Effective stewardship requires collaboration and concerted action from all parties, including government, civil society, business and local communities through inclusive stakeholder engagement.

Water is a precious shared resource with high social, cultural, environmental and economic value. Access to water has been recognized as a right; integral to wellbeing and livelihoods and the spiritual and cultural practices of many communities. It is also essential to the healthy functioning of ecosystems and the services they provide. As per World Economic Forum's Global Risk Report, natural resource crises which includes water, occupies a place among the top ten most severe risks identified on a global scale over the next 10 years. With climate change and associated increase in the frequency and intensity of extreme weather events, water challenges are increasing around the world.

In order to address the water-related risks/impacts that are mostly experienced at local/catchment level, companies need to have a holistic understanding of hydrology, hydro-geology and land use, along with other factors that influence water availability and its quality such as economic, political, social, and economic aspects.

Through the UN Sustainable Development Goals, world's leaders have publicly acknowledged the urgency of using and managing water sustainably. The business sector can play a significant role in supporting this approach including through ensuring access to clean water, sanitation and hygiene (WASH) for employees in the workplace. There is further opportunity for the business sector to support government initiatives through leveraging capital or expertise to improve community WASH and other water related outcomes.

## OUR IMPACTS

In the manufacturing industry, water stewardship is critical because processing of mined materials often uses large volumes of water. This use can also potentially affect water quality, which in turn can affect other water users in the watershed if not managed appropriately. Water is a vital input for all mining and metals operations – required for the health and wellbeing of employees and at every stage of an operation's life cycle including closure. The dependency and impact on a shared resource creates material risk for the mining and metals sector that requires effective management.

Mining industry involves the usage of significant amounts of water for its operations such as mineral processing and

dust suppression. In addition, ensuring access to clean water, sanitation, and hygiene (WASH) for employees in the workplace is equally important. At HZL, we understand that to demonstrate leadership in water stewardship (i.e., use of water in ways that are socially equitable, environmentally sustainable, and economically beneficial), innovative water management practices and commitment to protect water quality and water access in our operating areas is crucial. With majority of our operations based in the water-scarce state of Rajasthan, water management has been identified as one of our material issues.

HZL recognizes that access to water is a human right, and that water is essential to stakeholders in the watersheds where we operate. Communities with whom we share watersheds care about clean water for physical and spiritual health, quality of life, economic well-being and ecosystem health, and we share these values. Responsible water management is fundamental to maintaining trust in the watersheds where we operate.

## PARTNERSHIPS & COMMITMENTS

We work with various local, national and international organizations and programs to support improvements in water stewardship across the industry:

**UN Global Compact Water Action Platform (CEO Water Mandate):** A commitment to adopt and implement the mandate's strategic framework and its six core elements for water management

**International Organization for Standardization (ISO) 14001:** All of our mine operations and smelters are certified to ISO 14001 for their environmental management systems.

In accordance with the International Council on Mining and Metals (ICMM) guidelines on water stewardship, HZL is committed to:

- Apply strong and transparent corporate water governance
- Manage water at operations effectively
- Collaborate to achieve responsible and sustainable water use

## GOVERNANCE

The Board Level Sustainability and ESG Committee is aligned with our Water Stewardship commitment and facilitates our efforts towards the accomplishment of our 2025 goals and Environmental, Social and Governance priorities.

The committee is led by an independent director as the chairperson of the committee. The role of the Sustainability and ESG Committee is to assist the Board in meeting its responsibilities in ESG matters and to ensure a strong

governance on sustainability matters. It is also responsible for providing oversight on sustainability strategy, setting long-term goals & targets, ensuring continual improvement of our sustainability related performance as well as implementation of appropriate processes and policies across the Company. It also plays a key strategic role in eliminating potential damage to the environment and enhance our commitment towards stakeholders.

The Board Committee is supported by the Executive Sustainability Committee at the corporate level, chaired by CEO and includes senior executives to oversee delivery of the programs. The Executive Committee is responsible for sustainability, health and safety, environment, community, including waste management. The Committee is also meant to oversee the resolution of all grievances in a timely manner. The ESC consists of multi-functional representation of senior leaders.

**Water Management Community** at HZL is responsible for managing all the water-related risks and opportunities. This community meet every month to review the progress against their respective goal and comprises of champions of all the units. It is authorized for the implementation of following aspects:

- Water conservation at source
- Zero discharge from operations
- Rainwater harvesting and water accounting
- Reduction in specific water consumption
- Advisory or steering groups to provide focus or advice on water management related risks and their mitigation

## POLICIES & STANDARDS

At HZL, the Water Management Policy and Water Management Standard aligned with UN SDG 6 together facilitate the integration of the best water management approach by incorporating the water related risk factors into decision-making in our operations and new projects.

Our Environmental Policy gives general guidance on water management. HZL's Environment Technical Standard provides guidance to manage our impacts to the environment through effective management systems and processes and that work towards improving our environmental performance.

## RISK ASSESSMENT

HZL conducts water risk assessment on once in three years taking a comprehensive approach by covering all the required segments for the business includes our Own Operations", "Upstream & Downstream value Chain.

The assessment employs three primary tools: the WRI Aqueduct Water Risk Atlas, Water Risk Monetizer & WWF Water Risk Filter. Both dependency and impact-related water risks are considered in the risk assessment process. The objective of this assessment is to conduct a sensitivity analysis and stress testing for water-related risks in 2030 and 2050 scenario along with defining a water pricing structure for the Company.

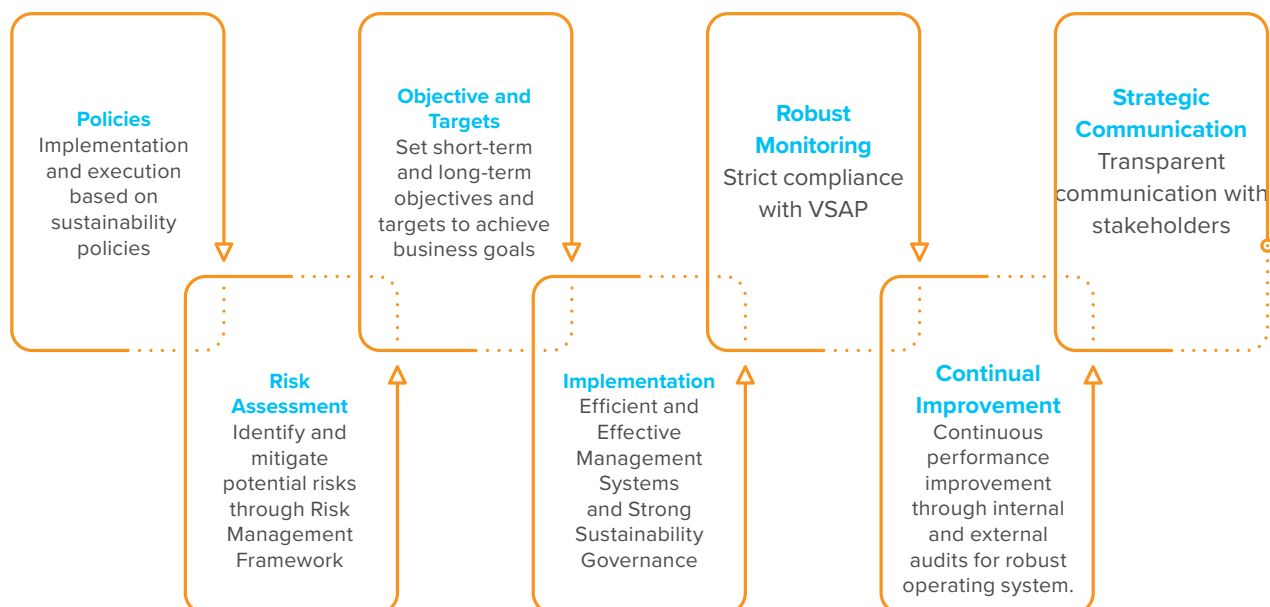
### 1) WRI Aqueduct Water Risk Atlas Tool

In conjunction with use of WRI Aqueduct Tool, HZL's process to identify key water-related risks and opportunities which is driven by:

- Identifying and understanding the key water-related risks affecting water strategy and opportunities to

## SUSTAINABILITY MANAGEMENT FRAMEWORK

Our Sustainability Management Framework is aligned with both, the Vedanta Sustainability Framework (VSF) and the Integrated Management System (IMS).



achieve business goals.

- Engaging with key stakeholders to ensure risks are addressed systematically.
- Ensuring that identified water risks/ opportunities consider the challenges faced by mining sector.
- Assessment of future water quantities available in the particular region of operations
- Evaluation of future water quality-related risks in the particular region of operations
- Assessment of impacts on local stakeholders
- Adherence to current and future national and international water commitments and regulatory changes at local level to identify emerging risks/ opportunities.

## 2) Water Risk Monetizer Tool

We use “Water Risk Monetizer Tool” to quantify the financial implications for water related risk and its further incorporation in the business strategy. With the help of this tool-based assessment we prioritize and invest in water conservation that deliver the greatest value to our business

and make the business case for projects to reduce our reliance on freshwater. It uses best-in-class local water basin datasets and scientific methodologies to monetize business water risks by providing Risk levels for individual facilities in comparison to current water costs.

## 3) WWF Water Risk Filter

We use this tool to conduct a Water Risk Scenario Analysis, which evaluates physical, regulatory, and reputational risks across three-time frames: the present, 2030, and 2050 covering both our own operations and the supply chain.

Apart from these tools we also conduct ecosystem service review, and the Ecosystem Services Review process conducted typically involved gathering data on the specific ecosystem services utilized or impacted by company's operations within a buffer of 10 km. This included identifying the provisioning, regulating, and cultural services that play a role in supporting company's activities. Fresh water is part of provisional Ecosystem services.

**Table 6: Summary of Sites with High/Medium Dependencies and Impacts**

Business Operations	Indicators	Dependency	Impact
Zawar Mines (ZM)	Crops	M	H+
	Freshwater	M	M+
	Regulation of water timing and flows	L	M-
Kayad Mines (KM)	Crops	M	L
	Regulation of water timing and flows	L	M-
	Ethical & spiritual values	M	H+
Rampura Agucha Mines (RAM)	Freshwater	M	M+
	Regulation of water timing and flows	L	M-
	Erosion Control	H	L
Rajpura Dariba Mines (RDM)	Crops	M	H+
	Regulation of water timing and flows	L	M-
Sindesar Khurd Mine (SKM)	Crops	M	H+
	Regulation of water timing and flows	L	M-
Chandaria Lead Zinc Smelter (CLZS)	Freshwater	M	M-
	Erosion Control	H	L
	Recreation & ecotourism	M	L
	Ethical & spiritual values	M	H+
Dariba Smelting Complex (DSC)	Crops	M	H+
Zinc Smelter Debari (ZSD)	Crops	M	H+
Pantnagar Metal Plant (PMP)	Crops	M	L

## Water risks in the operation & its management

The analysis performed using WRI revealed that all our sites are located in water-stressed regions of the country. Key risks identified include drought at our Rajasthan-based operational sites and extreme rainfall at our Pantnagar Refinery in Uttarakhand.

Site Name	Site Basin Risk				Site Operational Risk			
	Overall Basin Risk	Basin Physical Risk	Regulatory	Reputational	Overall Risk	Physical Risk	Regulatory	Reputational
Chanderiya Lead-Zinc Smelter, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Medium Risk	Medium Risk	Low Risk	Low Risk
Rajpura Dariba Mine, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Low Risk	Low Risk	Very Low Risk	Low Risk
Rampura Agucha Mine, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Medium Risk	Medium Risk	Medium Risk	Low Risk
Kayad Mines, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Low Risk	Low Risk	Very Low Risk	Low Risk
Zinc Smelter Debari, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Low Risk	Low Risk	Very Low Risk	Low Risk
Dariba Smelter Complex, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Low Risk	Low Risk	Very Low Risk	Very Low Risk
Pantnagar Metal Plant, Uttarakhand	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Low Risk	Medium Risk	Very Low Risk	Low Risk
Sindesar Khurd Mine, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Low Risk	Low Risk	Very Low Risk	Low Risk
Zawar Mines, Rajasthan	Very High Risk	Very High Risk	Medium Risk	Very High Risk	Medium Risk	Medium Risk	Very Low Risk	Low Risk

■ Very High Risk   
 ■ Medium Risk   
 ■ Low Risk   
 ■ Very Low Risk

To address these risks, we have implemented effective mitigation strategies at these sites, ensuring that none of our facilities faces water risks with the potential to significantly impact our financial performance or strategic objectives. Each site has a risk review committee that conducts quarterly evaluations of identified risks and the effectiveness of mitigation measures.

Furthermore, at the site level also, Water risk analysis and calculation of risks for current and future trends are conducted. The assessment took account of internal site surveys, external data sets and third-party expertise to predict future water risks (up to 2060).

As per the assessment, while all our sites are located in high basin risk areas, the majority exhibit low operational water risk. This is attributed to the proactive water efficiency and conservation initiatives implemented across our operations.

## Water risks in the Value chain and its management

HZL adopts a comprehensive approach to managing water-related risks across its value chain—both upstream and downstream. To address risks associated with critical suppliers, particularly those with water-intensive operations, we have completed a targeted supply chain water risk assessment using globally recognized tools such as the WWF Water Risk Filter. Additionally, all suppliers undergo a rigorous ESG onboarding and due diligence process, which covers parameters that could significantly impact HZL's sustainability performance.

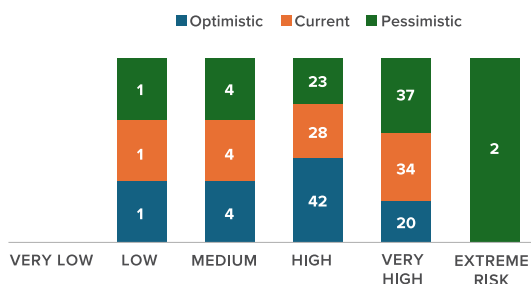
In FY 2024–25, we performed scenario-based water risk assessments for key supplier locations using the WWF Water Risk Filter, applying Shared Socioeconomic Pathways (SSPs)—Optimistic (SSP1), Current (SSP2), and Pessimistic (SSP5)—to model basin-level physical risks for 2030 and 2050. This proactive approach enables us to anticipate future supply disruptions due to water stress and informs our supplier engagement strategy.

On the downstream side, we conducted a basin-level risk screening of 54 major customer sites and 67 supplier sites, enabling us to evaluate water-related challenges in product application geographies. To further understand the environmental posture of our customers, we used WWF's Biodiversity Risk Filter to analyze climate-related dependencies, revealing that many have established science-based targets and resource efficiency goals.

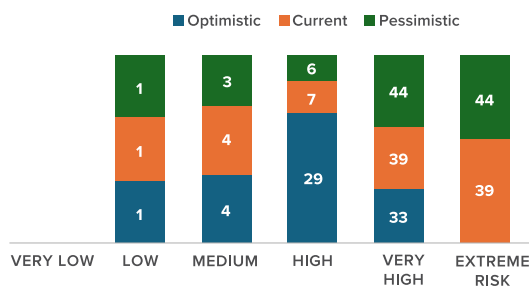
In response to these findings, HZL engaged with key customers to co-develop solutions that support their sustainability objectives. A key outcome of this collaboration is the development and deployment of CGG zinc alloy—a ready-to-use product tailored for the galvanizing industry that eliminates the need for on-site conversion, thereby reducing water and energy use by up to 10% and improving process efficiency. This initiative not only supports customer decarbonization and water conservation goals but also reflects HZL's commitment to delivering innovative, low-impact solutions across the product life cycle.

Through these integrated efforts, HZL strengthens resilience across its value chain while contributing meaningfully to global water stewardship and sustainable development.

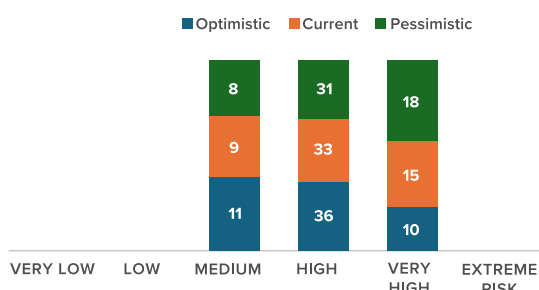
### BASIN PHYSICAL RISK 2030 - UPSTREAM



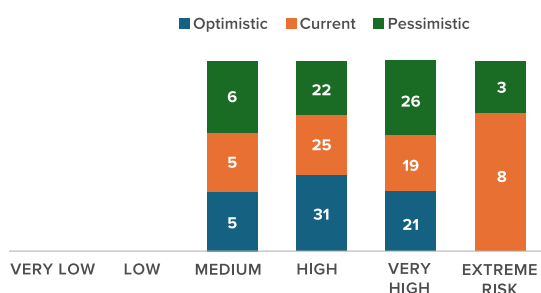
### BASIN PHYSICAL RISK 2050 - UPSTREAM



### BASIN PHYSICAL RISK 2030 - DOWNSTREAM



### BASIN PHYSICAL RISK 2050 - DOWNSTREAM



**To manage these value chain risks, we are actively collaborating with our suppliers and customers in the following by:**

- **Raising Awareness and Building Capacity:** We are working to increase awareness and enhance capacity for effective water management, aiming to promote responsible water stewardship within their operations.
- **Setting Targets and Providing Resources:** We assist them in setting water management targets and offer the necessary resources to help achieve these goals.



## STRATEGY

We work to be a leader in water stewardship by moving beyond compliance and towards collaborative water management practices that focus on sustaining and restoring water resources. Except for a refining plant in Uttarakhand, HZL's mining and smelting operations are fully in the state of Rajasthan. Therefore, 99% of all our water withdrawals are in the state of Rajasthan which is categorized as water stressed region as per the WRI's Aqueduct Country level water risk atlas.

At HZL, we are adopting the 4R approach (Reuse, Reduce, Recycle & Recover) towards Water Management:

**Reuse-** Wastewater generated after a particular process in the smelter/mill is reused in another application such as washing, cleaning, etc. thereby reducing dependency on freshwater.

**Reduce-** Adoption of alternate sources of water such as Municipal Sewage treated water or by new technology intervention for reducing freshwater demand.

**Recycle-** Installation of Zero Liquid Discharge facility across smelter/mines to increase recycling efficiency by wastewater treatment.

**Recover-** Dry tailing plant installed at our mines helps to recover water from our tailing waste.

### Improving Water Management and Use Efficiently

We continuously work on optimizing our water use, thereby minimizing our consumption of fresh water. We focus on reducing our fresh water intake and maximizing the reuse of water to increase water availability for others near our operations in water-scarce regions. We use water to support mining and material processing activities, for cooling and for dust control. and we are increasingly moving to using alternative source of water such as municipal treated sewage water in water-scarce regions.

We have process in place for reviewing and analyzing the water use, identifying activities and functions of significant water use, determining processes and services that affect used water quality, and monitoring water use quantities in our operations. This helps us to identify opportunities for water efficiency improvements.

#### a) Water Use Assessment

We continuously work on optimizing our water use, thereby minimizing our consumption of fresh water. We focus on reducing our freshwater intake and maximizing the reuse of water to increase water availability for others near our operations in water-scarce regions. We use water to support mining and material processing activities, for cooling and for dust control. and we are increasingly moving to using alternative source of water such as municipal treated sewage water in water-scarce regions.

#### b) Procedure and System for Monitoring

We have proper water management & governance structure at all the sites for reviewing and analyzing the water use, identifying activities and functions of significant water utilization, determining processes and services that affect used water quality, and monitoring water use quantities in our operations. This helps us to identify opportunities for water efficiency improvements.

Water meters are installed at all points of source to capture accurate water withdrawal quantities. Direct real time monitoring of data is done on a daily basis with a fully digitized and automated closed loop distribution system (DCS). For assessing the effectiveness of flow meters calibration is done. In addition, we have established in-house water monitoring laboratories and online analyzers to regularly assess the quality of water and wastewater. These facilities enable us to promptly take corrective and preventive actions when necessary.

Furthermore, we perform regular groundwater monitoring using piezometers for both underground mines and wells located inside and outside the lease area. HZL conducts internal and external audits-ISO14001 surveillance audit, hydrogeological studies for surface and UG. Internal audit-conducted semi-annually by our water managers covers the water withdrawal aspect. We conduct annual external water assurance on GRI standards and VSAP.

#### c) Water recycling procedure

We have implemented a comprehensive water recycling system to minimize the use of fresh water by reusing produced water. Our operations are equipped with integrated effluent treatment plants (ETPs), Zero Liquid Discharge (ZLD) systems, Mechanical Vapor Recompression (MVR), and Reverse Osmosis (RO) technologies, at all smelters. These facilities ensure the maximum recycling of process water, enabling us to reintroduce treated water back into our processes and reduce our dependence on fresh water. By incorporating wastewater recycling into our operations, we have significantly reduced our reliance on scarce freshwater resources and minimized our environmental footprint.

#### D) Actions to reduce water consumption and to improve wastewater quality

To reduce our freshwater consumption and to create an alternative source of recycled water, we have undertaken extensive upgradation and improvement projects across all our sites over the past few years. Using cutting-edge technologies, we have successfully recycled and reused the wastewater effectively in the operations at our sites to reduce our dependency on fresh water.



Company has taken several initiatives to increase water efficiency to reduce overall water consumption by-

- Increasing efficiency in water usage and exploring less water-intensive technologies includes dry tailing & paste fill technology, ETP, RO, MVR plants
- Strengthening water recycling and installation of ZLD across all plants
- Using alternative water sources like treated water from sewage treatment plant to reduce dependency on freshwater

We have also taken several Technological Interventions and Water Conservation Initiatives includes -

- Installation of Dry Tailings Plant
- Initiated ZLD plant construction
- Rainwater harvesting structures in nearby communities (RAM)

## Maintaining Zero Effluent Discharge

We are maintaining zero liquid discharge at all our locations. We operate in India with existing stringent effluent discharge standards, and use three-level treatment. Local standards are also used as a starting point to inform site-specific water criteria. The Consent to Operate under section 21(4) of Water Prevention & Control of Pollution Act, 1981, is dependent upon our ability to maintain zero discharge status from the premises, meaning no trade effluent shall be discharged outside operations. To comply with these requirements, we strictly monitor our water balance parameters. We also conduct a third-party assessment of our sites to ensure the proper management of controls. Pan-tilt-zoom (PTZ) camera and flow meters are installed at the plant outlets to prevent accidental discharge. We track the process water which is recycled after undergoing treatment. Each operation maintains a Water Management Plan (WMP). Annually, we update WMPs in conjunction with the update of each operation's water balance. Implementation of Zero Liquid Discharge facilities across our locations have reduced our fresh water withdrawal.

As we are endorsing CEO Water Mandate, there are six core areas of water stewardship practice that we focus on and following are the actions undertaken/ to be undertaken by HZL over time, under each of those:

## WATER MANAGEMENT

### Direct Operations

- Setting targets for water conservation as well as wastewater management.
- Exploring new technologies and other alternatives to achieve the targets set. For instance, we are exploring less water-intensive technologies, using alternative water sources to reduce dependencies on freshwater, etc.
- Carrying out water risk assessment across all operating sites, installing water meters at all key processes, online

monitoring of water consumed at all the processes, and detailed water audit through third party.

- Raising awareness within the company culture on the significance of water stewardship.
- Considering water sustainability while making business decisions such as due-diligence, production processes, etc. based on our Water Management Policy.

### Supply Chain and Watershed Management

- Encouraging our suppliers to improve their water management practices (i.e., water conservation, water quality monitoring, wastewater treatment, and recycling) and to conduct assessment of water usage and impacts.
- Encouraging major suppliers to report their progress on water management.
- Sharing our existing and emerging water management practices with suppliers.

### Collective Action

- Collaborating with civil society organisations at regional and local level.
- Working with national/regional/local governments towards long-term solutions for water crisis. For instance, we partnered with the State Government of Rajasthan under their four-year program Mukhyamanthri Jal Swavlamban Yojana and constructed / renovated over 120 water replenishments structures in 50 villages across four districts of Rajasthan.
- Involving actively in the UN Global Compact's Country Networks.

### Public Policy

- Partner with governments, businesses, civil society, and other stakeholders on basic issues of water governance.
- Taking part in global and local policy discussions to emphasize the role and impact of companies like ourselves in supporting integrated water resource management.

### Community

- Recognising the water and sanitation challenges faced by communities in our operating areas.
- Taking initiatives to develop adequate water infrastructure, including water and sanitation delivery systems. For instance, rainwater harvesting structures.

### Transparency

- Publishing and sharing the water targets, progress against each of the targets set, and other initiatives through HZL's Integrated Annual Report and Sustainability report.



- Disclosing actions and investments taken in relation to the CEO Water Mandate as part of HZL's annual communication on progress to UN Global Compact.
- Ensuring transparency in dealings and conversations with government/public authorities on water-related issues.

All these interventions will further result in reduced dependencies on fresh water and thereby, greater availability of water for the communities surrounding our sites, improve the efficiency as well as bring down the operating costs. We ensure full compliance with regulatory information, tariffs, and water withdrawal restrictions, with the assistance of in-house and field experts. We also facilitate the provision of high-quality drinking water to the surrounding communities, thereby reducing the risk of stakeholder conflict.

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